Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

❖ PHYSICAL EDUCATION AND SPORT

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 396-403

EFFECT OF HYBRID LEARNING ON STUDENT'S SATISFACTION IN FACULTY OF PHYSICAL EDUCATION

ALY ELSISSY[1]

Abstract
Purpose. Hybrid learning is becoming one of the important applications by integrating e-learning and traditional face-to-face instruction together. The purpose of this study was to determine the effectiveness of a hybrid learning approach on student's satisfaction with faculty of physical education.
Methods: A forty first year university students were equally randomly assigned into two teaching method groups: traditional lecture instruction (TLI) and hybrid lecture instruction (HLI). Each group received of instruction program for eight weeks, three days in the week. At the beginning and the end of this study students completed a 17-item multiple choice of basketball test. And students' satisfaction scale, T test analysis, was conducted to determine the effect of method groups (TLI, HLI) and measures (pre-test, post-test) on basketball test.
Results: The results revealed that significant Differences in mean ratings of basketball performance and student's satisfaction between the two teaching groups for the second group.
Conclusions: The findings indicated that HLI approach might be a superior option for undergraduate students with learning of basketball course.
Key words: hybrid learning, student's satisfaction, basketball

Introduction

In recent years, with the development of ICT (Information and Communications Technology), computer and the internet have become widely used in the higher education, and the trend of higher education is globalized and sharing. According that, the higher education has implemented educational opportunities for adult learners to be taught face-to-face in the class setting along with additional course instruction via the internet, using on-line instructional tools such as web logs (blogs), discussion boards, and chat rooms. This learning format is known as hybrid learning or blended learning (Buzzetto-More & Sweat-Guy, 2006; Lindsay, 2004). As a modern instructional method, "hybrid learning" or "blending learning" is increasingly popular throughout the world.

This course design has the potential to improve student satisfaction with their course because the learner experiences a dynamic learning model that enables them to become more involved in their educational experience (Gulsecen, et al., 2004). Involvement of the student in the learning process can support personal ownership of the learning experience because the student becomes empowered to relay personal experiences or to incorporate ideas that have been learned within the context of the course (Young, 2002).

Traditions in sports involve players wearing uniforms, the use of referees, announcers, beginning play with a jump ball in basketball and a coin toss in football, keeping statistics on game play, etc. Traditions can play a powerful role in education in students' understanding of how various traditions relate to the content of what educators teach and how the content is taught (Regina, 2008). Traditions can also transform students' minds to think beyond themselves and be used as tools the students' can use to understand and change the world.

Hybrid learning can be considered an advantageous instructional model because it can be designed in a manner that can encourage students to become actively engaged in the instructional process. Student involvement in the hybrid course design supports self-directed learning, social engagement, and reflections (Dodd, 2001; Lindsay, 2004; Mezirow, 1991; Scardamalia & Bereiter, 1994). Each facet listed is a characteristic of transformative learning, Clauburg (2004) described transformative learning as the students' ability to engage in learning that is independent guided, involving interactive communication, and revised meanings schemes through critical reflections.

This process of learning is important to the student'seducational experience because transformations support change or self-improvement.

[1]Faculty of physical education Menia University, EGYPT
Email: ashamza@zu.edu.eg

This pedagogical interpretation of sports with its multiple perspectives in the reformed syllabuses goes hand in hand with an opening up of content. Besides classic types of sports, topics involving multifaceted cultural exercise activities are categorised into varying fields of exercise. This means that physical education provides specific opportunities for updating educational potential that transcend pure proficiency mediation and are particularly to be found in a didactic interpretation of educational content as well as in a methodical shaping of the mediation process.

Clauburg (2004) suggested that the students' acquisition of knowledge depends on their ability to seek information through research of the course materials provided by the instructor. In evaluating the hybrid design, it is most suitable for the instructor to design the course in a way that requires the student to direct the learning outcomes. When the student enters the Internet for instruction, the course designer should have the required instructional tools available to enable the students to share what they have learned as well as to explore other ideas presented by others in the course (Muirhead, 2004; Perry & Edwards, 2005). The hybrid course design can present opportunities for the student to experience a process of personal evaluation of the course content along with the ability to establish an interactive voice in the learning process (Smart & Cappel, 2006). As a result of this process, the learner becomes a deliberate director of the instructional experience. The student can investigate how the concepts shared in the course can be applied to real-life settings when the facilitator of learning can present the student with opportunities to share how they perceived the material and how the new information can be applied in a real-world setting. Through this instructional process, the student can experience a learning transformation when the student can take ownership of the learning experience (Meizrow, 1991).

The hybrid instructional design can support the student in achieving transformative learning outcomes when the student has the opportunity to work collaboratively with peers in a process of discovery of meaning schemes within the course. Students in the hybrid course can work closely with peers to explore ideas and concepts presented in the reading material. Hybrid learning is advantageous because learning is not limited to a one-time event in the classroom. For example, hybrid instruction is an extension of the classroom discussions that encourages further dialogue over Internet protocol to support revised meaning schemes because the course can be designed with discussion boards, chat sessions, e-mail, and web logs (Smart & Cappel, 2006; Picciano, 2002). Learning continues when all students convene in an on-line environment to explore concepts and ideas shared in the classroom and the virtual environment. When incorporating the best instructional design, students can actively engage in learning that will be meaningful to them educationally and personally.

A transformative learning approach in a hybrid instructional design can be the optimal way to attempt to instruct students. Student involvement can be increased when the student has opportunities to expand on the shared ideas in the classroom and to delve deeper into the application process in the Internet setting (Smart & Cappel, 2006). In the virtual environment, the student can become responsible for building knowledge in the educational experience. Students gain the benefit of extended time to reflect on the course discussions in and out of the classroom as part of directing their learning process.

Superficial knowledge is stressed as opposed to knowledge-in-action which emphasizes understanding the meaning and the way of a particular content. Knowledge-in-action stresses critical thinking on the part of the students and allows opportunities for students to understand the content's deeper meaning. Traditions, meaning the handing down of statements, beliefs, legends, and customs can provide students tools with which to understand various experiences and use that understanding to learn from the past to better the future.

Transformative learning has been achieved when the student becomesthe owner of the learning outcomes in the Internet environment.

Mezirow (1991) suggested that observable personal and philosophical ideas are shared by the student when a learning transformation has occurred. So, the desired outcome expected for studentsexperiencing the hybrid course design is for them to share practical applications of the content and course discussions in the virtual learning environment resulting in a transformation of knowledge, which in turn can be put into daily practice by the student. Thus, the purpose of this study was to determine the effectiveness of a hybrid learning approach on student's satisfaction with faculty of physical education.

Method

Participants

The participants in this study were forty (N=40) first-year undergraduate students from the faculty of Physical Education at the Menia University during the first semester 2010/2011. Four classes were selected for this experiment. These classes were taught and instructed by the same instructor according to the designed teaching plan throughout the entire course. Participants were randomly assigned into two teaching method groups: traditional lecture instruction (TLI) and hybrid lecture instruction (HLI). Each group received of instruction program for eight weeks, three days in the week. At the beginning and the end of this study students completed a 17-item multiple choice of basketball test. And students' satisfaction scale. Each

student was asked to give consent to participate in the study and was informed that participation was voluntary.

Course Context

The course under study purpose was to introduce students to the fundamentals of multimedia design. The course provided students with the fundamental skills and knowledge to define a problem and design a multimedia application to solve it, to understand and recognize the characteristics of good multimedia design, to begin to use and apply popular multimedia development tools, and to work as part of a team to produce a workable multimedia solution.

Specifically, students in both environments (TLI, HLI) were required to build a prototype of their multimedia application in the end stage of this course. In particular, each student was asked to assume the knowledge skills in basketball, and to prepare a video presentation aimed at introducing to the lecture asa specific physical activity. In the first 10-minutes of each class, the teacher lectured on the guidelines or mistakes and bugs of the video presentation frames. Then, the students had 35-minutes to discuss with their team members about how to implement what they learned.

When the online classes were delivered, students could synchronously discuss and collaborate on the construction of their video presentations through online messenger and chat room. They could also asynchronously interact with team members in their exclusive forums. Moreover, when the classes were delivered in the classroom, students discussed and assigned their tasks in this physical learning environment. Students had to reconsider and modify the prototypes of their video presentations according to the new knowledge they had just acquired.

In this experiment, the instructor initiated students in the TLI and HLI in the field of multimedia application development, planning and creation. The use of a course management system (open e-Class platform) environment was the main difference between the two groups. The amount of material covered in the hybrid learning course, and the depth with which it is covered, was in general equal that of a classroom face-to-face course.

Satisfaction Scale

One of the most widely used student feedback questionnaires in the education field is the Student Evaluation of Educational Quality (SEEQ) (Marsh, 1982). The SEEQ is not based on student learning research but on psychometric analysis. Survey to measure teaching effectiveness. The SEEQ is multi-dimensional in design, measuring nine Factors related to teaching effectiveness: (a) Learning / Value, (b) Instructor Enthusiasm, (c) Organization / Clarity, (d) Group Interaction, (e) Individual Rapport, (f) Breadth of Coverage, (g) Examinations / Grading, (h) Assignments / Readings, and (i) Workload / Difficulty. Additionally, the SEEQ used in this study included a 10^{th} Factor, Student Evaluations of Teachers, used to measure participants' reaction to students evaluating teachers using a 5-point Likert scale with the following variables: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1.

Concurrently, from 1978 through 1982, students at the University of Southern Californiacompleted over 250,000 SEEQs in over 24,000 courses (Marsh &Hocevar, 1990). Data from these studies indicated that students in both feedback and no-feedback groups were similar to pre-test achievement scores and midterm evaluations of their instructors. Instructors receiving midterm feedback consisting of SEEQ data earned higher end-of-term SEEQ scores as compared to instructors who did not receive the midterm SEEQ data. Also, students earned higher scores on standardized final exams and scored higher on affective outcome scales if their instructors received midterm SEEQ data. It is appropriate to analyse SEEQ data bycomparing class-average scores for the SEEQs factors based upon the total group and thosebased on each separate group (Marsh &Hocevar, 1990). The current study compares class-average scores of the SEEQs factors based upon the total sample of students and uponindividual classes of students.

The researcher modified the SEEQ and translated it to Arabic languish and discover the validity and reliability in pilot study, SEEQ has an exceptionally high level of reliability (Cronbach's alpha from 0.90 to 0.98). It also has a reasonable level of validity in that scale scores correlate significantly with a wide range of measures of learning outcome such as student marks on standardised examinations, student feelings of mastery of course content, plans to apply skills learnt on the course and plans to pursue the subject further.

Cognitive test

Cognitive testing refers to tests that measure performance, if the work of the individual in the area of sports training, it is not uncommon to be able to set up multiple forms of cognitive tests associated with the nature of the types of sporting activity practiced, in order to learn the technical aspects of the information obtained and collated by the cognitive test that may help determine the individual cognitive tests, and facilitate planning to develop successful programs for players.

There is no doubt that the knowledge test was prepared with good accuracy, bearing fruit which was designed and for which, as he gained coaching experience in building cognitive tests — which may be a test of cognitive skill – the lack of difficulty of the performance of the coach for his work at cognitive tests requires sufficient time and well planned, so that the test is not intended to be provided with sufficient time

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

for its preparation does not bear fruit that was designed for. Knowledge is the most complex levels in the Division, where he plays a major role to remember for the rest of the levels of perceived to begin more complex behaviour and trial also includes recovery of generalities and specificities.

The researcher with the preparation of the test including the number 40 questions the student answer to each question is Yes or no, and complement the missing sentence

Cognitive goals in sport:

- Learn the history of sports heroes.
- Knowledge of mathematical concepts and terms in basketball
- Knowledge performance art movement in basketball
- Know the laws and rules of play in basketball.
- Learn offensive and defensive line in basketball
- Know security and safety rules to avoid injuries in basketball
- Know the general health information.
- Know the fitness for basketball.
- Social values gained from practice as well as behavior.
- Learn basketball skills

Statistical Analysis

All statistical analyses were calculated by the SPSS statistical package. The results are reported as means and standard deviations (SD). Differences between two groups were reported as mean difference ±95% confidence intervals (mean diff ± 95% CI). Student's t-test for independent samples was used to determine the differences in parameters between the two groups. The $P<0.05$ was considered as statistically significant.

Results

Table 1. Mean ± SD and T sign between pre measurements and post measurements in SEEQ factors and Cognitive testfor the traditional lecture instruction (TLI) group

No.	Variables	Pre		Post		Change	T Sign
		Mean	± SD	Mean	± SD	%	
1	Learning / Value	15.12	2.11	17.25	2.64	14.09	Sign
2	Instructor Enthusiasm	14.16	2.36	18.91	2.87	33.55	Sign
3	Organization / Clarity	16.35	2.15	18.88	3.55	7.06	No Sign
4	Group Interaction	17.90	1.99	21.04	3.47	17.54	Sign
5	Individual Rapport	14.09	3.05	16.44	3.55	16.68	No Sign
6	Breadth of Coverage	14.36	3.12	15.29	2.91	6.48	No Sign
7	Examinations / Grading	15.17	2.88	18.36	3.72	21.03	Sign
8	Assignments / Readings	14.22	2.41	17.83	2.81	25.39	Sign
9	Workload / Difficulty	13.72	2.01	15.45	3.13	12.61	No Sign
Total		15.01	2.65	17.67	5.92	17.72	Sign
Cognitive test		22.50	5.37	28.86	6.25	28.27	Sign

Table.1 Shows that there are significant differences between responses pre measurements and post measurements in learning / value, instructor enthusiasm, group interaction, examinations / grading, assignments / readings and the SEEQ total. And no significant differences between responses pre measurements and post measurements in organization / clarity, individual rapport, breadth of coverage and workload / difficulty. The improvement rate between 7.06% to 33.55% with average 17.72%.Adding there are significant differences between responses pre measurements and post measurements in all questions of Cognitive test. The improvement rate is 28.27%.

Table.2 Shows that there are significant differences between responses pre measurements and post measurements in all SEEQ factors. And the improvement rate between 7.06% to 33.55% to average 17.72%.Adding there are significant differences between responses pre measurements and post

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

measurements in all questions of Cognitive test. The improvement rate is 28.27%.

Table 2. Mean ± SD and T sign between pre measurements and post measurements in SEEQ factors and Cognitive testfor the hybrid lecture instruction (HLI) group

o.	Variables	Pre		Post		Change %	Sign
		Mean	± SD	Mean	± SD		
	Learning / Value	15.64	2.76	22.36	2.81	42.97	Sign
	Instructor Enthusiasm	15.55	2.58	23.45	2.73	50.80	Sign
	Organization / Clarity	14.98	2.22	19.91	3.01	32.91	Sign
	Group Interaction	18.02	2.36	25.25	3.11	40.12	Sign
	Individual Rapport	14.15	2.89	18.69	2.68	32.08	Sign
	Breadth of Coverage	15.22	3.11	21.05	2.86	38.30	Sign
	Examinations / Grading	14.96	2.75	19.34	2.55	29.28	Sign
	Assignments / Readings	16.02	2.96	22.67	2.71	41.51	Sign
	Workload / Difficulty	14.11	2.77	19.99	2.94	41.67	Sign
	Total	15.41	2.88	21.41	2.99	38.95	Sign
	Cognitive test	23.15	5.47	36.27	6.24	56.67	Sign

Table 3. Mean ± SD and T sign between post measurements in SEEQ factors and Cognitive test for the traditional lecture instruction (TLI) group and hybrid lecture instruction (HLI) group

o.	Variables	TLI group		HLI group		T Sign
		Mean	± SD	Mean	± SD	
	Learning / Value	17.25	2.64	22.36	2.81	Sign
	Instructor Enthusiasm	18.91	2.87	23.45	2.73	Sign
	Organization / Clarity	18.88	3.55	19.91	3.01	No Sign
	Group Interaction	21.04	3.47	25.25	3.11	Sign
	Individual Rapport	16.44	3.55	18.69	2.68	No Sign
	Breadth of Coverage	15.29	2.91	21.05	2.86	Sign
	Examinations / Grading	18.36	3.72	19.34	2.55	No Sign
	Assignments / Readings	17.83	2.81	22.67	2.71	Sign
	Workload / Difficulty	15.45	3.13	19.99	2.94	Sign
	Total	17.67	5.92	21.41	2.99	Sign
	Cognitive test	28.86	6.25	36.27	6.24	Sign

Table.3 Shows that there are significant differences between responses traditional lecture instruction (TLI) group and hybrid lecture instruction (HLI) groupofall SEEQ factors except Organization / Clarity,Individual Rapport and Examinations / Grading.

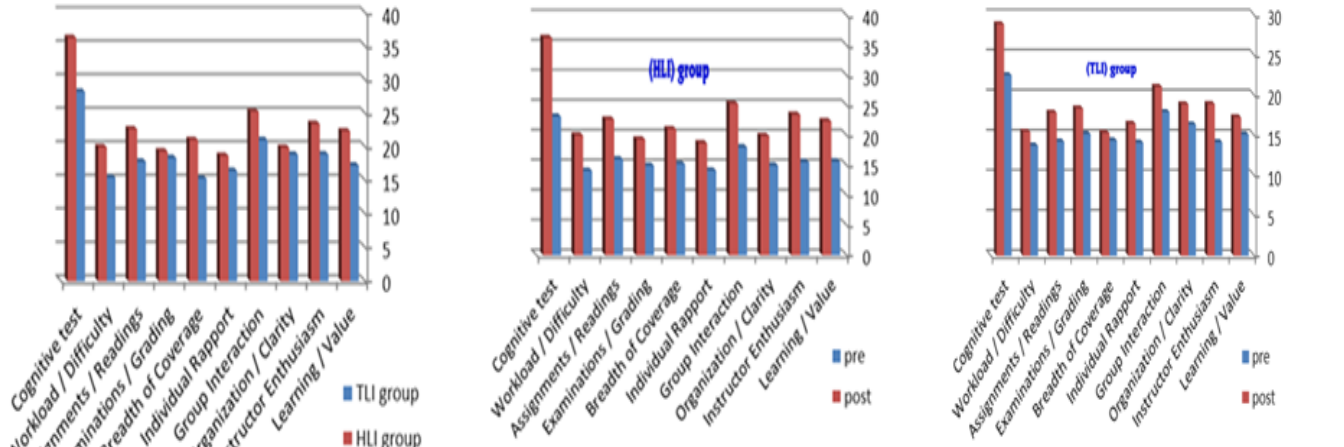


Fig. 1 explain the differences in SEEQ factors and Cognitive testto the traditional lecture instruction (TLI) groupand hybrid lecture instruction (HLI) group

Discussion

Hybrid learning seems to improve students' learning experience by developing their capacity for reflection (Cooner, 2010). Furthermore hybrid learning enables the student to become more involved in the learning process (Wang, et al. 2009). Hybrid learning and blended learning are two terms that have been used synonymously (So & Brush, 2008).

According to (Nikolaos, et al. 2012) hybrid learning is thus a flexible approach to course design that supports the merger of different times and places of learning, offering some of the convenience of fully online courses without the complete loss of face-to-face contact. This is one of the reasons that hybrid learning courses have been well-received (Melton, et al., 2009). Other advantages obtained include its greater flexibility (Macedo-Rouet, et al., 2009) and reduced costs (Nikolaos, et al. 2011) in comparison to traditional classes (Woltering, et al., 2009), especially when large classes are involved.

Hybrid learning can be delivered in a variety of ways. A common model is the delivery of "theory" content by e-learning prior to actual attendance at a training course or program to put the "theory" into practice. This can be a very efficient and effective method of delivery, particularly if travel and accommodation costs are involved. This mixture of methods reflects the hybrid nature of the training. (Stockley, 2005)

While research recognized a number of advantages in employing hybrid learning, insufficient learning satisfaction has long been an obstacle to the successful adoption of this new educational approach (So & Brush, 2008). Therefore, more research has centred on student satisfaction with this type of learning (Melton, et al., 2009). Student satisfaction is defined as "the student's perceived value of his or her educational experiences at an educational institution" (Astin, 1993). The degree of student learning satisfaction with hybrid learning courses plays an important role in evaluating the effectiveness of hybrid learning adoption. Hence, comprehending the essentials of what determines student learning satisfaction can provide management insight into developing effective strategies that will allow educational institution administrators and instructors to create new educational benefits and value for their students (Wu, et al., 2010).

Student satisfaction is one of the five pillars of quality, together with faculty satisfaction, learning effectiveness, access, and institutional cost-effectiveness (Moore, 2002). Components of the student satisfaction need to be investigated as hybrid education becomes more prevalent and dynamic forces such as adoption rates, learner expectations, levels of support, and other conditions continue to change.

Many studies have found students in online classes to be less satisfied with their course experiences as compared to their traditional, face-to-face colleagues (McFarland & Hamilton, 2005; Roach & Lemasters, 2006) and still others have reported online students to be significantly more positive in their evaluations (Kleinman & Entin, 2002; Iverson, et al., 2005). However, much of the research literature has focused on comparing student satisfaction in face-to-face and online environments, or face-to-face and computer-mediated environments.

This results was fairly consistent with other studies in the literature which seem to indicate that student satisfaction and success rates in hybrid courses

was equivalent (Larson & Chung-Hsien, 2009) or slightly superior to traditional courses (Melton, et al., 2009). In addition, studies have shown that most online learners do prefer some face-to-face contact with instructors and tend to be more successful when this occurs, thus supporting the hybrid course model (Riffel & Sibley, 2005).And not Constance with (Larson & Chung-Hsien, 2009) who conducted a comparison of three delivery modes (traditional, hybrid, and online) using student exams and final grades. The results reported that despite the delivery mode there was no significant difference regarding student satisfaction, learning effectiveness, and faculty satisfaction.

Conclusion

In conclusion, this study has revealed that hybridlearningfor eight weeks could enhance the cognitive test andcould increase student satisfaction for physical education students.

References

Astin, A. 1993, What matters in college? Four critical years revisited. San Francisco, Jossey-Bass Inc.

Buzzetto-More., N., A., Sweat-Guy, R., 2006, Incorporating the hybrid learning modelinto minority education at a historically black university.Journal of InformationTechnology Education, 5.Retrieved June 19.

Clauburg, M., 2004, Comparison of learning theories. Retrieved June 19, 2006, from http://clauburg.com/nova%20web%20page/instructional%20systems/learning%20theory%20comparison.pdf

Cooner, T., S., 2010, Creating opportunities for students in large cohorts to reflect in and on practice: lessons learnt from a formative evaluation of students' experiences of a technology-enhanced blended learning design. British Journal of Educational Technology, 41(2), 271–286.

Dodd, J., 2001, Innovative teaching showcase: Experiencing teaching and learning. Retrieved June 19, 2006, from http://pandora.cii.wwu.edu/showcase2001/text_only/dodd/portfolio.htm

Gulsecen, S., Urlu, I., Ersoy, M., 2005, A comparative research in blended learning: State university vs private university. Retrieved December 5.

Iverson, K. M., Colky, D. L., Cyboran, V., L., 2005, E-learning takes the lead: an empirical investigation of learner differences in online and classroom delivery. Performance Improvement Quarterly, 18(4), 5-18.

Kleinman, J., Entin, E., B., 2002, Comparison of in-class and distance-learning students' performance and attitudes in an introductory computer science course. Journal of Computing Sciences in Colleges, 17(6), 206-219.

Larson, D., Chung-Hsien, S., 2009, Comparing student performance: online versus blended versus face-to-face. Journal of Asynchronous Learning Networks, 13(1), 31-42.

Lindsay, E., B., 2004, The best of both worlds: Teaching a hybrid course. AcademicExchange Quarterly, 8.Retrieved June 18.

Macedo-Rouet, M., Ney, M., Charles, S., Lallich-Boidin, G., 2009, Students' performance and satisfaction with Web vs. paper-based practice quizzes and lecture notes. Computers & Education, 53, 375-384.

Mcfarland, D., Hamilton, D., 2005, Factors affecting student performance and satisfaction: Online versus traditional course delivery. The Journal of Computer Information Systems, 46(2), 25-32.

Melton, B., Graf, H., Chopak-Foss, J., 2009, Achievement and Satisfaction in Blended Learning versus Traditional General Health Course Designs. International Journal for the Scholarship of Teaching and Learning,3(1), 1-13.

Mezirow, J., 1991, Transformative dimension of adult education. San Francisco, CA: Jossey-Bass.

Moore, J., C., 2002, Elements of quality: the Sloan-C framework. Needham, MA, Sloan-C.

Muirhead, B., 2004, Encouraging interaction in online classes. International Journal of Instructional Technology and Distance Learning.

Nikolaos, V., Antoniou, P., Giannousi, M., Zetou, E., Et Al., 2011, Comparing hybrid learning with traditional approaches on learning the Microsoft Office Power Point 2003 program in tertiary education. Computers & Education, 56(1), 188-199.

Nikolaos, V., Maria, G., Efi, T., Panagiotis, A., Efthimis, K., 2012, A comparison of student satisfaction between traditional and blended technology course offerings in physical education, Turkish Online Journal of Distance Education-TOJDE January 2012 ISSN 1302-6488 Volume: 13 Number: 1Article 8.

Picciano, A., G., 2002, Beyond student perceptions: Issues of interactions, presences, and performance in an on-line course. Journal of Asynchronous Learning Networks (1).

Regina, H., 2008, Hybrid learning environments in higher education can transformational learningoutcomes be achieved? PHD. Thesis Submitted to the Faculty of Trevecca Nazarene University, School of Education.

Riffell, S., Sibley, D., 2005, Using web-based instruction to improve large undergraduate biology courses: An evaluation of a hybrid

course format. Computers & Education, 44(3), 217-235.
Roach, V., Lemasters, L., 2006, Satisfaction with online learning: a comparative descriptive study. Journal of Interactive Online Learning, 5(3), 317-332.
Scardamalia, M., Bereiter, C., 1994, Computer support for knowledge-buildingcommunities. The Journal of the Learning Sciences, 3 (3), 265-283.
Smart, K., Cappel, J., 2006, Students perceptions of online learning: A comparativestudy. Journal of Information Technology Education, (5) (201-219).
So, H., Brush, T., A., 2008, Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. Computers & Education, 51(1), 318-336.
Wang, M., Shen, R., Novak, D., Pan, X., 2009, The impact of mobile learning on students' learning behaviours and performance: report from a large blended classroom. British Journal of Educational Technology, 40 (4), 673–695.
Wu, J., Tennyson, R., D., Hsia, T., 2010, A study of student satisfaction in a blended e-learning system environment. Computers & Education, 55 (1), 155-164.
Young, J., 2002, „Hybrid teaching seeks to end the divide between traditional and online instruction. The Chronicle of Higher Education Information Technology, 48 (28), (pp. 1-6).

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 403-408

AN ASSESSMENT OF THE ATTITUDE OF THE STUDENTS OF SPORT MANAGEMENT DEPARTMENT TOWARDS THE DEPARTMENTS OF PYHSICAL EDUCATION AND SPORT TEACHING AND COACHING TRAINING

BIRINCI M. CEYHUN[1], SAHBAZ SEZGIN[3], ERKIN ALPEREN[2], YILMAZ A. KERIM[2], ATASOY F. SAMET[3], AKSOY ALI[3], OZIVGEN H. DOGAN[3]

Abstract
Purpose. The purpose of this study is to assess the attitude towards the department of Sport Management in Turkey.
Methods. collected through a Likert style questionnaire prepared by the researcher. The data collected from the questionnaire was assessed by SPSS statistical program and the findings at the level of $p<0,05$ were considered to be significant. The data was analyzed by using SPSS package program.
Findings. Statistically significant differences were found in the attitudes of the students of Sport Management towards their department when compared with the departments of Physical Education and Sport Teaching and Coaching Training ($p<0.05$). While a significance was found in the Sport Management department students' wish to transfer to Physical Education and Sport department, there was no significance in the same students' wish to transfer to the department of Coaching Training. Although the Sport Management department students' responses to the efficiency of undergraduate programs, faculty members and courses were significant, the students' responses to the efficiency of internship program were not clear.
Conclusions. When the views of the students of the department of Sport Management were reviewed, it was concluded that the students of the department of Sport Management considered their department was less important than the departments of Physical Education and Sport Teaching and Coaching Training. It was also concluded that to increase this importance, the students' anxieties about finding work should be resolved, the quality of education should be increased and the students' needs should be met.
Key Words: sport, sport management, management, sport management education.

Introduction

Sports, a field present in community life and contributing to formation and dissemination of culture, is the system of symbols employed in the creation of dominant ideologies and the communal consensus (Talimciler, 2006). Sports, especially in recent years, has turned out to be a crucial element to the sustainability of human life in a better, more qualified

[1]Faculty of Physical Education and Sport, Ondokuz Mayıs University, TURKEY
[2]Institution of Health Sciences, Ondokuz Mayıs University, TURKEY
[3] Faculty of Physical Education and Sport, Ondokuz Mayıs University, TURKEY
Email: sezgin0644@hotmail.com

and more balanced manner. Today, it is widely accepted that sportive activities along with cultural activities prepare individuals for daily life psychologically (Atasoy, 2005). Today success achieved in sports plays a very significant part in everyday life of society and serves as a morale booster. With new records broken via the improvement of science and technology, not only athletes but also the technical, education and economic standards of the countries the athletes represent are competing (H. Sunay, 1998). In today's world, countries use sport as a means to publicize and to be in the forefront, they want to make use of sport the best way they can and they have begun to make huge investments in sport and sportspeople. Thus, sport sector has made big advances in time and it has introduced a new economy branch called sport economy. Today, the sport sector which ranks as the 22nd in the world and which is ahead of automotive sector in terms of total endorsement (www.sporbilim.com) is in need of qualified managers trained in this field who knows sport and sportspeople, who can find out the needs and shorts of this sector, who can manage the administration of sport services and facilities, who can predict the trends of the market and take precautions and make investments accordingly. In order to make up for the needs in this field, our country has begun to attach more importance to sport management just like the rest of the world. The very first practices in this field started with the establishment of "Gazi Secondary Teacher School and Education Institute" in 1932 in accordance with the principles of Physical Training Law numbered 3530 and with the opening of "Physical Training" department in 1933 (Karakucuk, 1988). As years passes, sport manager training activities were assigned to academies and to sport colleges after the academies were closed. Currently, sport manager training activities are continued by Sport Schools within universities. However, it is thought that the students studying in the department of Sport Management have some doubts about the efficiency of their department. The purpose of this study is to examine the attitudes of the students of Sport Management department compared with their attitudes of the departments of Physical Education and Sport Teaching and Coaching Training.

Method

A total of 232 students, 65 female and 167 male, studying in the department of Sport Management of Ondokuz Mayıs University School of Physical Education and Sport volunteered in the study. As the data collection tool, a 26 item Likert type personal questionnaire including the responses "Strongly Agree" "Agree" "Neither Agree nor Disagree" "Disagree" "Strongly Disagree" prepared by the researcher to find out the students' reasons to choose this department and to compare this department with the other departments in the school was used. During the preparation of the questionnaire, experts were consulted and the reliability coefficient (cronbach alpha) of the questionnaire was found to be r:0,521. The data obtained was measured with the SPSS statistical analysis program and the findings at the level of $p<0,05$ was considered to be significant.

Findings

Table 1 presents the year of study, gender, age, HEE (Higher Education Examination) scores range and order of choices in the School of Physical Education and Sport entrance exam (n - %). When Table 1 is reviewed, it can be seen that 72% of the students were male and 28% were female; the age range of most of the students (56,9%) was between 21-23 years; the students' scores in the university entrance exam were between 210-230 (30,6%) and most of the students (34,1%) were in their second year.

Table 1 also shows that the majority of the choices (32,8%) that the students made in the School of Physical Education and Sport entrance exam was 1 (I. Department of Physical Education and Sport Teaching II. Department of Coaching Training III. Department of Sport Management).

Table 1. Distribution of the students' Defining Characteristics

GENDER	**Percentage (%)**	**n**
Female	%28	65
Male	%72	167
Total	%100	232
CLASS	**%**	**n**
1	%21,1	48
2	%34,1	84
3	%29,7	67
4	%15,1	33
Total	%100	232
AGE	**%**	**n**
18-20	%22	51

21-23	%56.9	132
24-26	%15.9	37
27-29	%3.4	8
30 +	%1.7	4
Total	%100	232
HEE Score	**%**	**n**
180-200	%17,2	40
210-230	%30,6	71
240-260	% 26,3	61
270-290	%25,4	59
300 +	%0,4	1
Total	%100	232
PESD Choice	**%**	**n**
1-) I-II-III	%32,8	76
2-) I-III-II	%31,9	74
3-) II-I-III	%10,8	25
4-) II-III-I	% 3,4	8
5-) III-I-II	, % 8,6	20
6-) III-II-I	% 12,5	29
Total	%100	232

Note: The choices are numbered as such: 1-) I-II-III 2-) I-III-II 3-) II-I-III 4-) II-III-I 5-) III-I-II 6-) III-II-I (Table 1.)

Table 2. Frequency Analysis Results for the student acceptance to School of Physical Education and Sport with HEE

HEE and Sport Background	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%10,3	%12,9	%14,2	%28,4	%34,1	%100
n	24	30	33	66	79	232
Only HEE Score	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%28,9	%24,6	%20,3	%14,7	%11,6	%100
n	67	57	47	35	26	232
Only Ability Test	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%22,4	%29,3	%15,5	%17,7	%15,1	%100
n	52	68	36	41	35	232

Table 2 shows the frequency analysis (%) of the results of the questionnaire which was conducted to find out the views of the students of the department of Sport Management on the student acceptance with HEE and to determine how these views affect their views on their department. The statistical significance of the data obtained was considered to be at the level of $p<0,05$. Table 1 shows that there is a significant relationship between HEE score and sport background, only HEE score and only ability test in the student acceptance to School of Physical Education and Sport($p<0,05$).

Table 3. Frequency Analysis Results of the Efficiency of the Department

Undergraduate Program	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%19,4	%28,9	%28,4	%16,8	% 6,5	**%100**
n	45	67	66	39	15	**232**

Faculty Members	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%22,8	%28,9	%20,7	%18,5	%9,1	**%100**
n	53	67	48	43	21	**232**
Internship Program	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%11,6	%11,6	%27,6	%22	%27,2	**%100**
n	27	27	64	51	63	**232**
Efficiency of Courses	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%12,5	%25,9	%28,9	%22	%10,8	**%100**
n	29	60	67	51	25	**232**
Sport Management Some Courses	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%13,4	%17,2	%24,6	%25	%19,8	**%100**
n	31	40	57	58	46	**232**

Table 3 shows the frequency analysis (%) of the results of the questionnaire which was conducted to find out the views of the students of the department of Sport Management on the efficiency of their department and to determine how these views affect their views on their department. The statistical significance of the data obtained was considered to be at the level of $p<0,05$. Table 3 shows that there is a significance in the students' responses to the efficiency of the undergraduate programs, faculty members, efficiency of the courses and efficiency of some courses while no clear result was found out about the efficiency of the internship program ($p<0,05$).

Table 4. Frequency Analysis results of the students' preferences about the other Sport Departments

Transfer to Physical Education and Sport Teaching	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	Total
%	%10,3	%12,9	%15,9	%24,6	%36,2	**%100**
n	24	30	37	57	84	**232**
Transfer to the department of coaching training	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	**Total**
%	%32,8	%28	%18,5	%12,1	%8,6	**%100**
n	76	65	43	28	20	**232**

Table 4 shows the frequency analysis (%) of the results of the questionnaire which was conducted to find out the views of the students of the department of Sport Management on their preferences about the other sport departments and to determine how these views affect their views on their department. The statistical

significance of the data obtained was considered to be at the level of p<0,05. Table 4 shows that there is a significance in the students' wish to transfer to the department of Physical Education and Sport while there is no significance in their wish to transfer to the department of Coaching Training (p<0,05).

Table 5. Frequency Analysis of the Students' Views on the Difficulty of Being a Sport Manager

Sport Management Department	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	Total
%	%12,1	%23,3	%17,7	%27,6	%19,4	**%100**
n	28	54	41	64	45	**232**
The easiest department of Yaşar Doğu	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%38,4	%34,9	%12,5	%9,5	%4,7	**%100**
n	89	81	29	22	11	**232**
The easiest department in Turkey	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%39,7	%30,2	%16,8	%8,6	%4,7	**%100**
n	92	70	39	20	11	**232**

Table 5 shows the frequency analysis (%) of the results of the questionnaire which was conducted to find out the views of the students of the department of Sport Management on the how easy their department is and to determine how these views affect their views on their department. The statistical significance of the data obtained was considered to be at the level of p<0,05. Table 5 shows that there is a significance in the students' views about Sport Management department being an easy department while there was no significance in the students' views about Yaşar Doğu School of Physical Education and Sport being the easiest department among the departments of the School of Physical Education and Sport Teaching in Turkey (p<0,05).

Table 6. Frequency Analysis Results of the students on foreign language and internship

Foreign Language	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	Total
%	%8,2	%10,3	%18,1	%27,2	%36,2	**%100**
n	19	24	42	63	84	**232**
Internship program	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**	**Total**
%	%8,2	%16,4	%9,9	%28,9	%36,6	**%100**
n	19	38	23	67	85	**232**

Table 6 shows the frequency analysis (%) of the results of the questionnaire which was conducted to find out the views of the students of the department of Sport Management on foreign language and internship. The

statistical significance of the data obtained was considered to be at the level of p<0,05. Table 6 shows that there is a significance in the students' views about foreign language and internship (p<0,05).

Discussion

The most important outcome of the study can be summarized as thus: When the views of the students of the department of Sport Management were reviewed, the students of the department of Sport Management considered their department was less important than the departments of Physical Education and Sport Teaching and Coaching Training. It was also concluded that to increase this importance, the students' anxieties about finding work should be resolved, the quality of education should be increased and the students' needs should be met. In a study, Yıldız et al (Yıldız, 2008) stated that the students of the department of Sport Management can find work, however, they are not too many in number.

Manager candidates who graduate from the department have a general idea about the duties and responsibilities of the occupation in the light of the information, skills and experiences that they have gained during their four year education. However, the students are concerned about whether they will succeed or not. The results of a study by Taşğın (Tasgın, 2006) about teachers point out to similar concerns. Moreover, a study by S. Devecioğlu (Devecıoglu, 2005) found out some problems about sport management and stated that a national policy on sport sector should be formed, targets and plans should be determined in accordance with this policy and financial sources should be used efficiently and based on objective criteria. The study also stated that there should be coordination among Ministry of State for Sport, General Directorate of Youth and Sport, State Planning Organization and universities and expert sport managers educated by the Schools of Physical Education and Sport, departments of Sport Management should speed up the work on sport sector which supports our study's views on resolving the concerns of management discussed in our study.

Conclusion

Some problems were found in the education that the students of the department of Sport Management receive, on the difficulty of the department, on the academic efficiency, on the efficiency of the facilities and these findings did not show any difference depending on the gender, age and year of study of the students.

References

Atasoy, B., Fusun, O.K., 2005, Globalization and Sport, Journal of Education Faculty, Uludağ University, XVIII (1), p:11-22.

Devecıoglu, S., 2005, Development of strategies of sports sector in Turkey, Journal of Productivity, No:2005/ 2, p: 117-134.

http://www.sporbilim.com/index.php?s=icerik&katid=92

Karakucuk, S, 1988 ,Educations of Sports Managers in Turkey, p.47.

Suna,Y H, 1998, Qualifications and Education of Sports Managers, Journal of Physical Education and Sports Science, Gazi University p.59-63.

Talımcıler, A., 2006, As an Ideological Justification for Sports and Sport Science, Journal of Sport Managment and Information Technologies, Vol:1 No:2, p:35-40.

Tasgın, O., October, 2006, Candidates of teachers who are read in physical education and sports department levels of vocational anxiety ınvestıgatıon in terms of some varıables, Journal of Education, Kastamonu, Vol:14 No:2 679-686.

Yıldız, S.M, Ozdag, et al., 2008, Higher education institutions which providing education in physical education and sports and intended to the student perceive of the employment status. Journal of International Human Sciences, Vol:No. Access: http://www.insanbilimleri.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 409-418

IDENTIFICATION AND EVALUATION OF PHYSICAL QUALITIES SPECIFIC TO HANDBALL

CAZAN FLORIN[1], RIZESCU CONSTANTIN[1], GEORGESCU ADRIAN[1], GIDU DIANA[1], NEGREA VALENTIN[1]

Abstract
Aim.The content of the handball game is very complex requiring speed, strength, skills and stamina. Analytical presentation of the development of each physical quality is imposed by general physical education goals, which have not disappeared from training of the economy. But the considerable increase of the role of specific training imposed by the increase of the number of international sport competitions and hence the national sport competitions, has specialized the content and methodology of trainings consistent with the necessities of the competition.
Experts in the field claim that physical actions in the handball game involve in the competition, especially in preparation, a mixture of strength, stamina, speed, flexibility and skill in a indistinguishable rate.
Given the characteristics of modern handball game (permanent aggression of defence), and the conditions of progress, the development of force is impetuous required. It does not have to be made in order to become stronger. On the contrary, the goal of force development is to serve to specific needs, to develop its specific strength or its combinations, in order to increase the performance of athletes at the highest possible level.
As it happens in most team sports, handball players are required to have the ability to sprint with maximum of speed over distances of 20 to 25 meters and to be able to repeat these sprints several times during the game (speed – strength , strength – stamina).
Conclusions.Internationally, especially in countries with highly developed handball, the scientific research has focused on those physical qualities specific which determine the quality of execution of technical and tactical actions. This is an expression that specifies very precisely the essence of specific physical training, so a shot on goal may be made by a particular process for which there is an optimal model of execution and which requires certain skills, but the most important aspect is that of the specific qualities which ensures its quality and efficiency, meaning execution speed, explosive speed, throwing accuracy, etc..
*Key words***:** specific physical qualities, handball, evaluation.

Introduction

The content of the handball game is very complex requiring speed, strength, skill and stamina. Analytical presentation of the development of each physical quality is imposed by general physical education goals, which have not disappeared from training of the economy. But the considerable increase of the role of specific training imposed by the increase of the number of international sport competitions and hence the national sport competitions, has specialized the content and methodology of trainings consistent with the necessities of the competition.

Experts in the field claim that physical actions in the handball game involve in the competition, especially in preparation, a mixture of strength, stamina, speed, flexibility and skill in a indistinguishable rate.

Given the characteristics of modern handball game (permanent aggression of defence), and the conditions of progress, the development of force is impetuous required. It does not have to be made in order to become stronger. On the contrary, the goal of force development is to serve to specific needs, to develop its specific strength or its combinations, in order to increase the performance of athletes at the highest possible level (Cazan, 2010b). As it happens in most team sports, handball players are required to have the ability to sprint with maximum of speed over distances of 20 to 25 meters and to be able to repeat these sprints several times during the game (speed – strength, strength – stamina) (Buchheit, 2008a).

A good level of aerobic endurance is a necessity, since the player must provide the same quality game even at the end of a game and because aerobic endurance also means a good rate of recovery after the game and between workouts/trainings.

High capacity and endurance is also the solid guarantee that the player will be able to cope with fatigue accumulated in the game and, as a result, there is less likelihood of technical or tactical mistakes.

Power is an important factor in handball, highlighted in game situations involving sprinting, changing of direction, jumping and physical contacts with the opponent. However, since the force actions are repeated several times during the game, the power-resistance has to be trained (Buchheit, 2008b).

In the game of handball we identify the following physical qualities specific to handball game, which should be measured:

- **Getaway speed**. In direct combat with the opposite, taking into account the limited space of the

[1]Faculty of Physical Education and Sport, Ovidius University Constanta, ROMANIA
Email: cazan10florin@yahoo.com

field, it is very important for the player to have a quick start in order to overcome their opponent directly. This can only be achieved if at the start of muscle contraction, the athlete is able to generate maximum force in order to create a high initial speed. The getaway speed is found in the structure of the following moments and technical and tactical actions: triggering the counterattack, quick attack, kick-off of the ball after goal, demarcation on the free spot in order to receive the ball, changes of the direction with or without the ball, direct or indirect demarcation, entering through defenders, retreat on defence after losing the ball or after a goal is scored, the entrance to intercept the ball which flies at low and medium height..

- **Speed of acceleration**. In a very short time from the start of the run, the athlete reaches maximum speed. This time depends on the strength and speed of muscle contraction, the acceleration depends both on force of arms and legs. The speed of acceleration is seen in the structure of the following moments and technical and tactical actions: counter attack, quick attack, kick-off of the ball after goal, changes of direction with or without the ball, demarcation, defensive retreat after losing the ball or after a goal is scored.

- **Travelling speed.** The modern game of handball today takes place in an alert rhythm, the streak of game phases is increasing which means a continuous flow of players, and increased travelling speed to be sustained for a longer period of time. The speed of acceleration is seen in the structure of the following moments and technical and tactical actions: counter attack, quick attack, kick-off of the ball after goal, defensive retreat after losing the ball or after a goal is scored.

- **Coordination Speed (turn of speed)**. The dynamics of handball game changes so suddenly that the athlete must change the direction quickly, with the least loss of speed and to speed back in the direction from whence he came. In order to increase the ability of rapid braking, for a rapid movement in the other direction, the turn of speed of movement must be trained. The speed of coordination is found in the structure of following moments and in technical and tactical actions: changes in direction with the ball or without the ball, demarcation, passing the ball in avourable entering threatening the goals, movement in lateral fundamental position, forward, backward, attacking the opponent with the ball, retreat on the semicircle.

- **Resistance at speed**. It refers to the ability to maintain or to repeat a high speed. This quality is found in handball, where it is necessary to repeat the same kind of speed, several times per game, as if counterattacks, or in quick kick-offs after goal. Therefore the players need to train and to develop an appropriate speed resistance.

- **Detention**. The power of detachment from the soil is a crucial element in handball, in which the handball player is trying to design the body in highest point in order to throw the ball to the goal. The height of jumping directly depends on the vertical force of the athlete applied to the ground in order to overcome the force of gravity. Detention is found in jumps of all handball players, for the players to shot on goal from 9m (inner and middle) but also from 6m (extremes and pivots), and in defence at jumps in order to block balls.

- **Resistance in jumps.** In the game of handball, the jumps are actions that have power as dominant motion. However, it would be a mistake if we consider that we need trainings only to develop power, given that in a game of handball, a large number of jumps are executed. While it is very important to high jump in order to block a ball thrown from the jump or in order perform a tossing from jumping, it is same important to double such jump. Consequently, in handball you must train both for power (power of detachment, tossing power, power of response at landing) but also for muscle resistance.

- **Explosive force of the tossing arm (detent of the arm).** All tossings on goal require speed and power, both for immediately/ from the spot tossings (tossing from 7m, 9m, launch of the counterattack) but also for tossing on the run, on foot or from jumps.

- **Segmentary strength.** In the game of handball, the force of a muscle contraction or the player's ability to manifest its force, is the determining factor in making quick movements. During trainings and matches, the external resistance to rapid movements of the players is determined by weight, environment and opponents. In order to overcome these adverse forces, the players must improve their strength, so that the increased muscle strength of muscle contraction should make them able to increase acceleration and to make a rapid item or technique (Cazan, 2010a).

Handball ultimately requires speed (mental and physical), coordination and skills in jump and every coach knowing all this will give a certain time for development exercises of these qualities.

Identification of specific physical qualities can be achieved by studying physical skills, which ensure the quality and efficiency of the game actions. To this end, we have prepared a table stating specific physical skills and activities in which these qualities are present in the game of handball (Table 1).

Objective measurement tools of specific physical qualities

Interdisciplinary scientific foundation

Data on physical development are very important and useful in all sports and at all levels of performance. And by the way we obtain them, they are of two kinds:

-Direct – values that we discover by measurements; it is about height, weight, diameters, perimeters, length of limbs, skin fold thickness, respectively

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

-Indirect, at which we come entering the direct ones in certain formulas: BMI (body mass index), adiposity (fat percentage), lean mass, fat mass, optimum weight, total muscle mass and, crucially, the prognosis of height that the athlete will reach in adulthood.

The complex characterization of the athlete, in terms of physical development, it is necessary first of all in the selection, and further, until the growth ends. This is because the body has continuous and significant quantitative gains, resulting in changes in the amount and ratio of its components. But after 18 -19 years is very useful the assessment of physical development. This is because the accurate knowledge of the percentage of body fat or total muscle mass are tools for evaluating the effectiveness of training and / or diet and keeping your weight under and under the limits of optimum weight, is formed in priority targets, required to be met in order to hope to achieve a sportive fit. From the multitude of tests on order to determine the level of physical development, we have chosen the followings that we consider appropriate for the game of handball.

Tab. No.1 Physical qualities specific for handball game and original forms of manifestations

FAVORABLE PHYSICAL QUALITIES	ORIGINAL FORMS OF MANIFESTATION
	Triggering the counterattack, quick attack, kick-off of the ball after goal, demarcation, entering at the goal, interception
Getaway speed	Counterattack, quick attack, kick-off of the ball after goal, changes of direction with or without the ball, demarcation, defensive retreat
Acceleration speed	Counterattack, quick attack , Kick-off after goal, retreat, travelling in defence
Travelling speed	Changes of direction, demarcation, passing the ball in entering, movement in lateral fundamental position , attacking the opponent with the ball, retreat on the semicircle
Coordination speed (turn of speed)	Counterattacks, quick avourable kick-offs after goal, retreat
	Tossing at goal from jump, blocking the balls from jumps,
Resistance at speed	accelerations, decelerations, changes of direction
Detention of lower limbs	Tossing at goal from jump, blocking the balls from jumps
	Tossing from 7m, 9m, launching the counterattack, tossings from
Resistance in jumps	running, from feet of from jump
Detention of upper limbs	Fight on semicircle, overruns, tossings, blocking of the ball, jumps.
Segmentary force/power	

FAVORABLE PHYSICAL QUALITIES	ORIGINAL FORMS OF MANIFESTATION
Getaway speed	**Triggering the counterattack, quick attack, kick-off of the ball after goal, demarcation, entering at the goal, interception**
Acceleration speed	**Counterattack, quick attack, kick-off of the ball after goal, changes of direction with or without the ball, demarcation, defensive retreat**
Travelling speed	**Counterattack, quick attack , Kick-off after goal, retreat, travelling in defence**
Coordination speed (turn of speed)	**Changes of direction, demarcation, passing the ball in entering, movement in lateral fundamental position , attacking the opponent with the ball, retreat on the semicircle**
Resistance at speed	**Counterattacks, quick avourable kick-offs after goal, retreat**
Detention of lower limbs	**Tossing at goal from jump, blocking the balls from jumps, accelerations, decelerations, changes of direction**
Resistance in jumps	**Tossing at goal from jump, blocking the balls from jumps**
Detention of upper limbs	**Tossing from 7m, 9m, launching the counterattack, tossings from running, from feet of from jump**
Segmentary force/power	**Fight on semicircle, overruns, tossings, blocking of the ball, jumps.**

Body sizes and indices of physical development

Height(size) is measured using the taliometer between vertex and plan of plants. The subject is seated in an upright position with the joints in extension so that the vertical rod of the taliometer will reach the heels, the channel between buttocks and spine in the scapula. The head will be placed so that an imaginary line connecting the extreme angle of the eye to the top of the ear canal is parallel to the plan of the plants. The cursor of the taliometer will be supported on the vertex and will be read and the value will be recorded in avourable .

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Weight – body weight measurement is carried out using scale for persons. It is measured in kilograms and grams.

The span is measured using a rigid rod graduated in avourable , placed between digital items. For measuring, the subject will be seated upright with the horizontal upper limbs and all joints in extension. It is measured in avourable .

Length of lower limbs – is measured from the ground to the trochanteric point.

The bust – represents the distance between the intertuberous line and vertex. In order to obtain exact figures, the vertical position of the trunk is well controlled, the basin is sitting on a stool of 50 cm high.

Body Mass Index (I.M.C.)

Recent studies consider body mass index (BMI) a formula for relevant and important determination of athletes body proportionality. It is calculated reporting weight in kilograms to height of the subject in square meters considering the formula:

$$\textbf{I.M.C.} = \frac{\text{Weight (kg.)}}{\text{Height (m}^2\text{)}}$$

The results are analyzed both for athletes and for sports under following criteria:

Classification of values for I.M.C.

Classification	Value I.M.C.
Skinny	under 18,5
Normal	18,5-25
Overweight	25-30
Obesity	over 30

Quetlet index(I.Q.) – (fatness or nutrition), known as anthropometric segment, is calculated with the formula :

$$\textbf{I.Q.} = \frac{\text{Weight (kg.)}}{\text{Height (dm)}}$$

The average for men is number 4, and for women 3.9 (each avourabl in height corresponds 4 respectively 3.9 kg). It is indicated the following scale for interpretation of the values: over 5 –obesity, between 5 and 4 starts obesity; between 5 and 4 the individ is very full-bodied, between 4 and 3.5 the individ is full-bodied, between 3.5 and 3 mediocre, between 3 and 2.5 debatable; below 2.5 skin.

The proportionality index (Adrian N. Ionescu)- is calculated as follows: B-T / 2 and shows the proportion of body height in centimetres in seated and standing position. With this formula it can be seen how shorter or longer the lower limbs than the bust or mid of waist is. The author gives as average values 5-6 cm for women, and 3-4 centimeters for men. These values vary with respect to constitutional type, age and sex.

Physical tests

Since the value and performance of the athlete depend on the physical performances, knowing these is very important both for the athlete himself and for those around him: coaches, physical trainers etc. It is known that an athlete's physical potential is expressed in several ways, namely:

-that of the general resistance (aerobic capacity)

- the resistance to repeated sprints,
- the speed
- the turn of speed
- the force and power.

Depending on the sport practiced – for team games – even after one or more of the aforementioned plans, they have a higher importance, they automatically become primary in defining physical potential of the athlete. For example, in road cycling, background samples of athletics, rowing, physical tests should focus almost exclusively on assessment of aerobic performance, while in other sports such as weightlifting, boxing, wrestling, etc., knowledge of anaerobic capacity (performance) and strength and power, should enjoy special attention. The most complicated situation we have in case of games, as athletes tasks they have to perform in the field, are very complex. In fact many of the activities and actions of those players, suppose the simultaneous expression of multiple physical qualities (strength, speed, proficiency), all of course due to the higher level of resistance (Weineck, 1997).

In these circumstances, it becomes clear that the choice of physical tests and establishing the most avourable moment for administration, shouldn't be done at random.

Physical tests not only assess the physical capacity of athletes to individualize training, but also allow assessment of progress in order to demonstrate the relevance of proposed physical training.

Speed test

Speed of getaway and speed of acceleration

In order to assess this component, we selected the speed running test on 5m and 10m. The test aims to determine the speed on 5m and 10m distance. Athletes

need to run individual with the highest speed on the distance of 10m.

Equipment needed:

- adequate space for marking the route, with a surface that will not slip in order to allow athletes a good contact with the ground,
- tapes for tracing
- photo-electric cells,
- stopwatches.

The test consists of speed running on the distance of 10 m, at start, at 5m and at finish, being located photo-electric cells. It is performed in handball shoes, the start takes off by feet individually, behind the start line. The stopwatch will be triggered by photo-electric cells placed at the start line, the time will be taken at 5m by photo-electric cells placed at here and also cells located at finish line at 10m, will take the final time. All results are expressed in seconds and tenths of a second.

For an accurate assessment, the start will be taken standing in a balanced position with the front foot in contact with the ground, the impulse being made in back foot. The start is made from the line, the athlete must be careful not to lift the front foot off the ground or not to move it sideways also must be careful not to go the knee of the front foot forward and not to make moose from the body. It is prohibited to take off the start with elan and to cross the finish line with plunge.

Travelling speed

In order to assess this component we selected the speed running test of 30m. The conditions are identical to the previous test. All results are expressed in seconds and tenths of a second.

Testing the turn of speed

Interdisciplinary scientific foundation

The turn of speed (A) is a very important quality in sport, but enjoyed less interest in Romania. Still, it deserves attention from coaches and athletes because:

- in many subjects, the athlete must perform a large number of sprints that contain changes in direction (SSD), and on the other hand
- it turned out that trainings for sprint in a straight line, does not affect or influence SSD.

Classic, A was simply defined as: the ability to quickly and accurately change the direction of travelling. Recently, however, scientists have realized that in sport, A must be defined in such a way as to take into account both the perceptual and the decision-making components but also proper physical component (mainly requests of force and power) which enable the instantaneous execution of those decided by the athlete in the action.

Thus, the Australian researchers – very concerned on A- defined it as a fast move of the entire body with changes of speed and / or direction in response to a stimulus. According to this vision, the A concept is applied only in open skills, ie the execution of those tasks which cannot be pre-planned, as it must be considered a response (in a reply) to one or more stimuli. Therefore, at present, in addition to simple A, it is also speaking of the so-called reactive A (AR); which can be temporal AR (the load has no doubt on the nature of space, but requires a temporal uncertainty), spatial AR (the reverse is true) and universal AR , which implies the existence of both types of uncertainty.

Therefore, according to the new guidelines, it is not only conditioned on the existence of changes of direction, the agility task of being the action of an athlete to accelerate or decelerate quickly, in straight line (in order to escape the opposite, for example) because that chain of movements is not pre-planned, but it is only in terms of, and only in response to initiatives, reactions and counter-reactions of the opponent. For these reasons, and others, which we do not develop here, the same Australian researchers claim that A is not overlapping the sprint / swiftness (quickness) concept used mainly in the U.S.A.

Seeing now how complex A is, it is easy to accept that it depends on many factors, from the anthropometric, continuing with the physical ones (force basically reactive power, and power) and technical ones (technique of footrace), and ending with the cognitive ones. Each of them has a greater or lesser involvement or influence in the implementation of A tasks. But do not forget, it must be seen in terms of specific duties and tasks that the athlete has in the proper competition.

The test of turn of speed, proved to be not only reproducible, but particularly valid for sports games.

The special value of this test (which use three pairs of photocells), is that for the first time in the history of A testing, it proposes to the tested one a complex task with spatial and temporal uncertainty, this allowing us to say that with his help, we can evaluate universal AR. What makes it particularly useful, both for identifying athletes of perspective – when given to children and youth – and to value tie-break, or to diagnose of sport form, in case of seniors (http://www. Martinbhuchheit.net).

Turn of speed test

Equipment needed:

- adequate space for marking the route, with a surface that will not slip in order to allow athletes a good contact with the ground, to allow blocking the movement for a quick turn.
- tapes for tracing,
- photo-electric cell,
- stopwatches.

Two lines of 2m will be drawn, with distance of 5m between them. Photo-electric cells will be placed next to each line.

Athletes will start individually from the feet, behind the first line, and will run with the greatest

speed to the other line that they have to touch with one foot and return quickly to the start line. The test will be held 4 times a 5m distance without stopping, with the obligation that at every return, the line should be touched with one foot.

The return must not be made by detouring but by sudden stop and turn to 180 º. For an accurate assessment it is recommended that the ground surface is not tartan, but the parquet, floor or taraflex. The conditions are identical to the previous test. All results are expressed in seconds and tenths of a second.

Testing the anaerobic capacity

Interdisciplinary scientific foundation

The concept of anaerobic capacity (C An) proved to be a difficult to assess metabolic construction, and even in this moment we don't have a broad consensus of experts, not even on its definition. However, in order to have a comprehensive vision of this concept, and on what is actually to quantify, the testing will have to start all the way from its physiological meaning:

C An is the largest amount of ATP that can be synthesized – by anaerobic mean – by the entire body (ie not only the muscles involved) when a subject performs a supreme effort (all-out, in English) as intensity and short duration.

Understandably that, given that the definition itself of the concept is still under discussion, the arsenal of methods for testing C An and is in a continuous process of renewal and (re) evaluation, which also applies to laboratory tests and for those that can be managed in "the field".

That is, until recently, under conditions of the "field" we had to be content only by indirect clues, that the sprint of 10 (or 20) m and vertical jumps (SV) gives us on anaerobic performance of the lower body. Especially on SV testing, if it is done with the help of a contact platform, it gives us very specific relationships in terms of power, which can be of great help to the coach.

For the assessment of C An, even the most reliable "field" test, credited as giving relations on the power developed by the athlete (maximum, minimum and average power) and about the fatigue that occurs in this plan, we propose sprint the Anaerobic sprint test (TSA), developed by specialists of the University of Wolherhampton (UK), and considered that it replaces, under "field" conditions, Wingate Test, the most known test and used for evaluating C An but unfortunately it is performed only in laboratory, on ergometer bicycle.

In the TSA, subjects must perform a number of sprints over a defined distance, with stops fixed to each other. After this, the achieved times are inserted in some special calculations. The fact that the sprint is the task that should be carried out, makes this test to be recommended, and very useful for all subjects based on footrace, and in which the athletic performance (competitor's performance) depends to a considerable extent on anaerobic performance (http://www. Martinbhuchheit.net).

Anaerobic sprint test

The test consists of 12 speed runnings on a distance of 20 m with a break of 25 seconds between runs. The 25 seconds pause will rigorously respected, during this athletes must move to the start line and prepare for the next start. It will run individually. The conditions are identical to the previous test. All results are expressed in seconds and tenths of a second.

In order to make the analysis of the fatigue, the average of the 12 performances will be compared with the best performance and then the difference between the best and worst performance will be made.

Testing the force and the power

Theoretical basis:

About how important strength and power are in the game of handball, we have already mentioned in previous chapters. We would like to emphasize, however, that they should not be seen only through the support that it provides to the expression of the athlete competitions, in physical and / or technical plan, but also through the involvement they have in the occurrence of injury and new injuries. For these reasons, although coaches and athletes would be tempted 'to leave them behind ", or even give up the tests of strength and power, we advise them to reconsider their options, and necessarily to include them in set of assessments / tests.

Resuming to the essence, we will say that muscle strength refers to the ability of the muscle to develop active tension while by muscle power we understand the muscle production rate of mechanical work, or work done per unit time. Knowing that the mechanical work means force multiplied with the distance (or displacement), it results that the power is a measure of the ability to rapidly produce power. We understand therefore that strength and power are inextricably linked to sport and that, in fact, power can be seen as a consequence (result) of action of force.

Without going into theoretical details, we note that in the sport practice, the functional strength is interested, so not the force itself, pure force, but rather its consequences, or effects that are obtained by its development (exercise), by the muscle.

It is known that for a long time, the attention was focused almost exclusively on general dynamic force, the force which is estimated by testing the maximum voluntary dynamic strength (FDVM). Characteristic to FDVM tests, is that they suggest that the athlete should lift as much weight, or to overcome resistance as significant, opposed from outside by specially designed machines. The problem with these tests is, however, that their movements are relatively simple (many times in a single plane) analytic and carried out at low speed. Which gives a rather low relevance in practical terms.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

In opposition to this kind of movement, there is a modern concept, which became very popular in recent years. It is the concept of integrated multidimensional movement, which takes into account the fact that movements in sport are not simple. On the contrary, most of them are movements which developed in several plans, engaging and assembling a variety of sequences of muscle contractions, performed at different speeds and with different amplitudes.

Therefore, in recent times, the dynamic explosive force (FDE) and reactive/ response dynamic power (FDR) are in trend. And an advantage of tests by which these two alternatives of power are investigated, is that the results we obtain give us both about relationships about force and about power.

A similar type of approach is now considered to have the greatest relevance and practical utility for coaches (and of course for the athletes). This is because the data obtained helps them to know the level of training that they have, and to conceive – knowingly – future training programs, to estimate the effects of different periods of application of a specific training program and, in some cases, to prognosticate the performance to be obtained of next competitions.

Given the above, we have prepared a modern battery of tests, validated by rigorous studies and worthy of the highest trust. And as a result of using the contact platform and photoelectric cells, these tests allow us to record and calculate a large number of performance parameters than usual. Subsequently, by complex interpretation of these parameters, we obtain a true and at the same time very nuanced performance of strength and power, which the athlete is capable of at the time (period) of testing.

For reasons easy to guess, most tests that we propose address to the lower body and are based on the implementation of different types of jumps, especially in the range of vertical jumps (SV).

Since some of them might seem curious, the special attention that we announced to give to SV, we believe that some clarification would be welcome. SV is a multi-articular movement, explosive, requiring substantial muscular effort at the ankles, knees and hips. Which, in case the upper limbs are left free during the jump it is added the contribution of muscles, arms, and even back. But SV is considered to be the main method for testing the strength and operational power, not only because of the many groups of muscles which they engage, but also because the results obtained by the tested athlete, give us relations on the rate of activation of physical units, all depending at the same time, in a good measure also on coordination. Moreover, generally speaking, the ability to jump gives us multifunctional information. Hence the large number of methods for evaluation of physical potential of the athletes, in which the SV or other types of jumps, it constituted in task-tests.

Turning now to SV, we all know that there are many variants. In turn, these varieties can themselves be made in several ways, depending on the type of "beating" (on both legs, on the preferred one or on the dis-preffered one), or by the rules set on the upper limbs, which can be left free or mandatorily held on the hips.

What should be noted, however, in this context of testing force and power, is the fact that, in terms of the information that we procure, all these variants and sub-variants of SV are not excluded, but they complement each other. Which is why it would be advisable that the athlete to be tested even in some of the following:

-SV with countermovement (SVC);

-SV in sitting without take-off;

SV-multiple (linked between them);

-SV in semi-squat.

Testing the explosive strength of the lower limbs

Measurement and evaluation of neuromuscular qualities of handball players in explosive effort by a simple, non-specific move, vertical jump, can guide the muscle preparation both in force-velocity relationship but also in the overall control of movement phases of lower train. Lower body muscles, isolated by arm position with hands on hip, can characterize the entire motor behaviour of the tested athlete by relatively large report that this musculature has in relation to the total musculature of the whole body, but also by the analysis of phases and of kinematic characteristics and dynamic impulses and loosening from the ground. Important parameters investigated are: height of centre of gravity, due to the design by impulse in a single maximum effort or using elastic muscle component and take-off, or the average of heights obtained by repeated jumping exercises under different effort conditions, as physical action, that by its shape is part of phases of competition exercises of basic techniques in handball and essential phases of the game (Bompa, T., 2002).

In order to assess the performance of athletes, the testing method was used by Bosco test applied force measurement platform Miron Georgescu.

SV of semi-squat (Squat jump) – the test entails a vertical jump of semi-flexible position of the knee, 90 ° or full squat without additional thrust into the ground, with arms bent, hands on hip, in order to avoid any involvement of elastic muscle component. It is important that the stand-up to be performed avoiding any countermovement, however small. The inaction of arms decreases the performance by about 10 cm, that is why the results as reference data are apparently weak but justified from 24 cm – 38 cm for women and 26 cm – 45cm for men. SV performance describes: the ability to jump and the explosive strength (maximum) of the legs, the neural – motor recruit ability, the amount of fast fibres.

SV in sitting position, (Counter movement jump) **–** the test requires the performance of a vertical jump identical with SV test, but departing from sitting. It is perfomed a vigorous flexion followed by extension and vertical jump, the arms can help for take-off. Landing

should be on your toes or on the whole foot and with stretched legs in the knee joint. The differences between the two tests are the "elastic" skills of athletes. The performance of the test describes: evaluation of explosive force FV (maximum) of legs and quality of reusing muscle elasticity, neuro-motor recruiting ability, the ability to use the visco – elastic force in the muscle tissue.

SV multiple interrelated (Continuous jump with straight legs) – series of 5 -10 maximum jumps with straight knees(short elastic contact with the ground). The test performance describes: the muscle elasticity assessment of leg extensor, jump technique and tolerance to straight impact, the amount of fast fibres. The test is more technical and in order to be validated it requires a high motility of feet. The objective is to obtain the best compromise between jump height and speed of detachment, only an active detachment with the whole sole will reduce the time of contact with the ground.

Testing the explosive force of the upper limb

Speed of tossing the ball on goal from a position

In order to test the speed of the tossing, it can be used:

- a handball field with goal
- handball balls
- a radar gun type Bushnell 101 900 in order to determine ball speed.

Athletes will toss the handball ball on the empty goal, from the tossing line of 7m, from a fixed position, without treading this line. The tossing is performed over the shoulder and not laterally with the support foot opposite to the tossing arm and space must be on the area of the goal, in order to be considered a valid attempt. Each athlete is allowed two attempts, registering the best performance. The radar gun will be located behind the gate in order to detect the speed at which the ball will enter the goal area.

Tossing speed of the ball with steps 2-3 take-off steps

This test is the same as before, only now athletes will toss at the gate with 2-3 take-off steps. The take-off can be made with added or crossed steps.

In addition to these new tests to determine the strength and power of athletes in the upper and lower limbs, we also propose several classical tests for determining the level of maximal muscle strength.

Tests of strength

Long jump off place: The player performs two consecutive jumps without a break between them, noting the best result. Before jumping it is allowed the arms take-off with a single swinging. It is measured from the top of the legs (starting position) to the heels (landing position). The results are recorded in meters.

Abdominal strength: In this test the player, in the dorsal lying position gets the trunk up to 90 ° and returns to dorsal sleep. Many repetitions are performed for the duration of 30sec. The stopwatch is started when the player starts making first lift. When the stopwatch is stopped, it is considered as a repetition and it is recorded if the player got his trunk up vertically. The results are recorded in the number of repetitions.

Squats: Standing, with feet distant at the level of the shoulder, with hands more distant than shoulders width, the bar is laid on the shoulders, with palms forward. With the straight back, looking forward, always keeping the bar parallel to the ground, bend your knees slowly down the trunk. In order to emphasize the involvement of gluteal, lower until thighs are 5-7 cm under position parallel to the ground. Without balance in the lower position, shrink the thighs and gluteal in order to lift in initial position.

Pull-upps: Din Hung from a safe bar and high enough so that the feet have no contact with the ground, catch the bar in the supine position, the distance between the arms is equal to the distance between the shoulders. From this position the lifting of the trunk is performed until the chin of the athlete passes the bar, with bent of the arms and pulling elbows back.

Pushing from reclining position: The exercise calls in particular the lower pecs, but stimulates the entire breast-deltoid-triceps area. Lying on the bench, the dumbbell is cought by using a socket twice wider than shoulder width. Lower the dumbbell slowly, elbows away from your body until the bar reaches plexus area. Push the bar, focusing on the movement until it reaches the original position.

Testing the cardiorespiratory recovery capacity

The test: 30-15 Intermittent Fitness Test

In sports, recent studies (research) on the modelling of effort in competition has allowed significant training of programming the training content. In this respect Martin Buchheit has designed and developed in March 2000 a new field test that also responds to specific requirements of handball game, 30-15 Intermittent Fitness Test (30-15IFT).

This test allows the estimation of maximum oxygen consumption (VO2 max) and the determination of the maximum aerobic speed (VMA). The difference from other tests is given in the form of shuttle flight (bout), and especially the intermittent manner of the exercise. So far the test has been applied to over 700 athletes, elite handball teams of women and men, handball training centres, allowing scientific validation and acceptance.

Presentation of the test:

The test consists of exercise period of 30 seconds interrupted by periods of active recovery of 15 seconds. In times of stress, the athlete performs a race as shuttle (bout), on a distance of 40 meters at a speed indicated by an audio CD that emits beeps at certain time intervals.

During active recovery period, the athlete will move away to the nearest line, line which will be the start for the next effort period. A period of effort and one of recovery have a duration of 45 seconds and is a resting place. Initially the run speed is 8 km / h, and then it

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

increases by 0.5 km / h at each resting place. The terms of effort and rest places determine the action of performed biochemical processes that control the supply of power needed to sustain the intermittent effort, depending on the number of performed rest places (Buchheit, 2005).

Materials needed:

- Audio-CD of 30-15IFT;
- a sports field with a minimum length of 40 meters;
- some cones (milestones) in order to delimit the different areas of interests for athletes;
- a start line (line A), an intermediate line (in the centre of the running space, line B and a return line, line C);
- 3 tolerance zones with a width of 3 meters on both sides of each line.

Progressive test of running, schuttle type on the distance of 20m

This test aims to determine maximal aerobic power (maximum aerobic capacity). Maximal aerobic capacity is obtained in ml O2/kg body/ min or in mets. 1 met is the resting metabolism and is considered arbitrarily that equals 3.5 ml O2/kg body/ min. Athletes will run as much as possible, boat on a distance of 20m at speeds imposed, growing every minute, according to reproduced sounds of a CD player (Leger and Lambert, 1982).

Equipment needed:

- adequate space in order to mark the land on which the run will be performed. The minimum distance between the athletes is 1m.
- CD with recorded sound and CD player
- visual indicator for tracking the levels of (speeds) running.

Tab. No.2 Identification of specific physical qualities and of assessment tests

Specific physical quality	Test	Materials
Speed of getaway	**Speed running at**	
Acceleration speed	**5 m**	
Speed of travelling	**10 m**	**Photoelectric cells**
Speed of coordination	**30 m**	
	4x5 m	
Resistance at speed	**Speed running at 20 mx12**	**Photoelectric cells**
	Rest= 25 sec	
Explosion of lower lumbs	**- vertical jump with arm take-off (sve)**	**Bosco test**
	- vertical jump with hands on hips and knees bent at 90 ^{0}	**Bosco test**
	6 Maximum jumps repeated with hands on hips	**Bosco test**
Index Explosive	**2x10 – (cmj/10)**	**= 2 x 10 –(sve/10)**
Explosion of upper limbs	**Tossing the ball from 7m from fixed position**	**Radar**
	Tossing the ball with 2 steps of take-off	
Maximum Force/Segmentary power	**Abdominal strength**	**Weightliftings of different weights, stopwatch, meter**
	Long jump off place	
	Squats with dumbbell on the shoulders	
	Pull-upps from hung position	
	Pushing from reclining position	
Aerobic capacity and cardiorespiratory recovery	**Schuttle-type test at 20m**	**In the room listening a CD**
	30-15 ift	**In the room listening a CD**

Conclusion

Internationally, especially in countries with highly developed handball, the scientific research has focused on those physical qualities specific that condition the quality of execution of technical and tactical actions. This is an expression that specifies very precisely the essence of specific physical preparation, so a toss on goal may be made by a particular process for which there is an optimal model of execution and requires certain skills, but the most important aspect is that of the specific qualities which ensure quality and efficiency, ie execution speed, explosive speed, tossing accuracy, etc.. The most important specific physical qualities are those that are

involved with the technical and tactical actions in order to increase the play efficiency of the team and of the players (Table No.2) and therefore requires a strict evaluation of these physical qualities with appropriate and effective assessment tools.

References

Bompa, O. T., 2003, Performanţa în jocurile sportive, Ed.Ex Ponto, Bucureşti,

Buchheit, M., 2005, The 30-15 Intermittent Fitness Test: a new intermittent running field test for intermittent sport players – Part 1]. Approches du Handball. 87: 27-34.

Buchheit, M., 2008a, 30-15 Intermittent Fitness Test and repeated sprint ability. Science & Sports. 23: 26-28.

Buchheit, M., 2008b, The 30-15 Intermittent Fitness Test: accuracy for individualizing interval training of young intermittent sport players. J Strength Cond Res. 22: 365-374.

Cazan, F., 2010A, Physical training- planning and evaluation, International Scientific Conference „Perspectives in Physical Education and Sport" Universitatea Ovidius Constanta

Cazan, F., 2010b, Specific physical preparation optimization for performance handball players, (doctoral dissertation), University of Pitesti.

Leger, L.A., Lambert, J., 1982, A maximal multistage 20-m shuttle run test to predict VO2 max. Eur J Appl Physiol Occup Physiol. 49: 1-12.

Weineck, J., 1997, Manuel d' entrainement ,Paris, Edit. Vigot.

http://www. Martinbhuchheit.net (accesat 24 februarie 2013)

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 418-424

THE RELATIONSHIP BETWEEB STUDENTS' INTEREST FOR PHYSICAL ACTIVITIES IN THEIR FREE TIME AND THEIR HEALTH

CONSTANTINESCU ANAMARIA[1]

Abstract

Nowadays society is modern and democratic and needs active people that are willing to get involved in managing and responsibly organising their activities and choices, as well as the ones of others around them. Young people are used to managing their free time and this leads to the alternation of learning and leisure activities. Due to the complexity of the performed activities, we work more than we rest, our free time is shorter and shorter, and when we have free time, we need to take advantage of it, according to our needs and interests. The way we use our free time differs from one society type to another, usually depending on the degree of social and economic development of that society. Every single person is responsible for the way he or she uses that free time.

Purpose. We wish to offer every student the possibility to develop independently their physical, intellectual and moral abilities by practicing physical activities during their free time, so that they can perform better from an economic and social point of view. We wish to maintain a permanent state of good health and to individually attain this state of well-being.

Methods. In order for our scientific endeavour to be properly conducted, we used the following research methods and techniques: the method of the bibliographic study, where the data gathered offered us starting points for our research and allowed us to have a clear image of what has been accomplished so far. The direct and indirect observation method made us have a clear picture of the scientific truth as to how the students spend their free time. We also used: the quiz method as to how they would like to spend their time, the method for testing the biological and motric potential as well as the effects of the sports activities that students performed during their free time. All these activities were organised with the student during their free time, and were measured as follows: with anthropometric parameters, functional parameters and by motric potential.

Results. After organising our program we notice significant difference between the initial tests and the final ones for certain sports competitions.

Conclusions. As a result of the operational endeavour, we reached the conclusion that student are presented with a large offer for practicing systematically sports activities that are specific to this area and they improve their quality of life as they lose weight, develop harmoniously their bodies as to cope with the requirements of the day to day life and they increase their motric indicators at superior levels. More and more students spend their free time to a sanogenetic scope (in order to improve their health). We must initiate long term strategic programs of sports activities in order to prevent inactivity, obesity, stress, fatigue, different cardio-vascular diseases, lung and ostero-articular diseases.

Key words: free time, students, diversification, valorisation**.**

[1]Petrol and Oil University of Ploiesti, ROMANIA
E-mail: anamaria78_const@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Introduction

Our modern democratic society needs active people, willing to get involved in leading and organising responsibly their own act and the activities of the ones around them. Young people are used to organise their free time and this leads to the development of their capacity to alternate the learning and leisure activities. Due to the complexity of these activities, we work more than we rest, our free time is shorter and shorter and when we do have free time, we feel the need to get advantage of it, according to our interests. The use of free time differs from one society type to another, depending mainly on its degree of social development. Every single person manages her or his free time. We haven't been taught how to manage this time, to diversify the ways we can spend it, therefore television, the internet and sleep occupy it.

Sports, if we look at it broadly, namely: sports for everybody or sports for health, is a state politics in more developed countries, as the health of its citizens depends on it. Being healthy doesn't only mean not having any health problems, but it also means that this person, as entity, is able to enjoy life and surpass any problems or difficulties that appear throughout their life. The fact that physical education and sports, through movement can lead to maintaining an optimal health state, regardless to age, sex, personal development, political beliefs etc., is a tested fact that has to be accepted by everybody.

All these abilities that are especially promoted by physical education and sports are essential and are required regardless to the field of employment. The individual has to form a healthy life style, to spend his free time practicing a sport or activities that he prefers such as walks, excursions, hiking, he has to know his body and prevent unhealthy habits such as the lack of activity, stress, cigarettes, drugs, alcohol, improving thus his life level and the quality of his life Rodriguez who was quoted by Patac (2009), states that if we wish to improve our life quality, we have to have the good habit to always search improvement and not be content with what we have, trying to implement some changes, little by little; we will try to benefit from a correct diet, cleaner air, a some subtle, more exact and a calmer way of achieving things, in conclusion, we'll try to be interested in the quality of life, not in quantity.

The activities and sports competencies represent an important interest point in speeding pleasantly free time for the Oil and Gas students. Taking as starting point the famous dictum by Juvenal ″Mens sana in corpore sano″, that means having a healthy mind in a healthy body, we have to teach our children, students, even friends to practice physical exercises under different forms of manifestation, or to practice different team sports so that they can benefit from a healthy, improved life. We must start to spend our free time in a healthy and, at the same time, prolific way. (Constantinescu, 2009). People of different ages and professions have to spend their free time in a useful, recreational way by practicing physical exercises under different forms of organisation. The sports and physical training of the younger generation (especially that in schools and universities) must be especially stressed, as it is the premises of a superior activity of this type. The sports activities organised for students, apart from those organised during classes are the ones for the university athletics, football, handball, basketball, volleyball teams as well as sportive dance, fitness, aerobics and stretching practiced by these by choice. An important role have the sports competitions that have to be as many as possible, as it is humanly natural to enjoy competing with another person, be better than him. The students are keen on open air competitions, during their free time and they prefer football, handball and basketball, while the girls prefer stretching and aerobics gymnastics.

Purpose. We wish to give the chance to every student to independently develop his physical, intellectual and moral abilities during their free time, in order to better perform from an economic and social point of view. We wish to alternate the recreational activities to those of learning. As a hypothesis, we can state that if we use programs for practicing sports activities, according to the students' preferences, then these will replace the internet and television and we will have individuals that are able to search novelty.

Methods

In order to properly conduct our experimental endeavour we used the following research methods and techniques: the method of the bibliographic research, where the data was gathered and offered us an actual starting point in our research and allowed us to have a clear picture over what we had accomplished till that point. The method of direct and indirect observation allowed us to scientifically quantify the way young people truly spend their free time. The quiz method reflects their opinions about the way they wish to spend their free time. The method of testing their biological and motric potential as well as the effects of sports activities that youngsters performed in their free time, were evaluated using the following measurement categories: anthropometric parameters, functional parameters and motric potential. The motric potential was tested using competitions within a series of tests. In order to interpret and calculate the data obtained we used the statistical and mathematical method as well as the Anova unifactorial method.

The prorgam during their free time took place during university school year 2011-2012. The students of the five faculties in the Oil and Gas University took

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

part in these tests, and these were chosen randomly. They are of ages between 19 and 24 years old, and there are 20 boys and 10 girls and were separated in there experimental groups, as follows: E_1 – football (10 boys), E_2 – handball (10 boys), E_3 – stretching and Pilates (10 girls). The program we established took place three times per week during the students' free time. They were compared to witness objects – M – of 10 students that take part in a classical way to the classes of physical education and sports, and have no other physical activity during their free time, instead they surf the internet and watch TV. The students were tested before the beginning of the program and after it finished.

Results

After applying the suggested program we noticed some significant differences between the initial results and the final:

Table no.1. Cardio frequency

Group	Code	Statistic Indicators – Final tests								
		Average	Median	Standard Deviation	Maximum	Minimum	Amplitude-de	C.V. (%)	Difference (m_E - m_M)	Cohen Indicator
Whiteness	M	72.25	72.50	5.70	86	62	24	7.89%		
Experiment	E_1	82.95	83.50	6.47	96	68	28	7.80%	10.70	0.90
	E_2	82.15	81.50	4.90	91	72	19	5.97%	9.90	0.96
	E_3	82.90	82.50	3.57	89	77	12	4.30%	10.65	1.15

Table 2 – Anova unifactorial Results – cardiac frequency

ANOVA UNIFACTORIAL RESULTS					
M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
30.796	< **0.05**	34.67	< **0.05**	50.14	< **0.05**

Table.3.Movement Speed – Sprint from a standing start for a distance of 50 meters

Group	Code	Statistic Indicators – Final Tests								
		Average	Median	Standard deviation	Maximum	Minimum	Amplitude-de	C.V. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	8.08	8.00	0.73	10	7	3	9.1%		
Experiment	E_1	8.28	8.35	0.97	10	6	4	11.7%	0.20	0.12
	E_2	7.91	8.00	0.66	9	7	3	8.3%	-0.18	0.13
	E_3	7.77	7.70	0.99	9	7	3	12.7%	-0.31	0.18

Table 4 – Anova Unifactorial results – Sprint for a distance of 50 meters

Results ANOVA UNIFACTORIAL					
M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
0.541	> **0.05**	0.63	> **0.05**	1.28	> **0.05**

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 5 – Statistic indicators– Final Testing – Cardio-respiratory Resistance Test

Group	Code	Statistical Indicators – Final Tests								
		Average	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Whiteness	M	6.10	5.92	1.38	8	4	4	22.6%		
	E_1	6.65	7.10	1.39	9	4	5	20.9%	0.55	0.20
Experiment	E_2	5.15	5.12	0.71	6	4	2	13.8%	-0.96	0.45
	E_3	6.45	6.63	1.22	8	5	3	18.9%	0.34	0.14

Table 6 – Anova unifactorial results –Cardio-respiratory Resistance Test

Results ANOVA UNIFACTORIAL					
M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
1.552	> **0.05**	7.58	< **0.05**	0.70	> **0.05**

Table 7 – Statistic indicators– final tests- vital capacity Vital capacity

Group	Code	Statistical Indicators – Final Tests								
		Average	Median	Standard deviation	Maximum	Minimum	Amplitude	C.V. (%)	Difference (m_E - m_M)	Cohen Indicator
Whiteness	M	3413	3200	640	4400	2300	2100	18.76%		
	E_1	3705	3475	850	5400	2600	2800	22.95%	292.50	0.20
Experiment	E_2	3650	3550	582	5200	2600	2600	15.94%	237.50	0.20
	E_3	4665	4650	821	5850	3300	2550	17.61%	1252.50	0.87

Table 8 – Anova unifactorial results – vital capacity

ANOVA UNIFACTORIAL Results					
M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
1.510	> **0.05**	1.51	> **0.05**	28.93	< **0.05**

Table no.9. Naveta run Test

Group	Code	Statistic indicators – Final tests								
		Average	Median	Standard deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Whiteness	M	14.18	13.93	1.49	17	12	5	10.5%		
Experime	E_1	14.74	14.94	1.37	17	12	4	9.3%	0.56	0.20

nt	E_2	12.58	12.56	0.69	14	11	3	5.5%	-1.59	0.70
	E_3	13.40	13.18	1.00	15	12	3	7.4%	-0.78	0.32

Table 10 – Anova unifactorial results –Naveta run Test

ANOVA UNIFACTORIAL Results

M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
1.511	> **0.05**	18.88	< **0.05**	3.79	> **0.05**

Table 11. Flamingo static balance test

Statistic indicators – Final tests

Group	Code	Average	Median	Standard deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Whiteness	M	2.50	2.00	1.79	6	0	6	71.7%		
	E_1	4.30	4.00	1.98	8	0	8	46.0%	1.80	0.49
Experiment	E_2	0.95	1.00	0.89	2	0	2	93.4%	-1.55	0.56
	E_3	1.45	1.50	1.05	4	0	4	72.4%	-1.05	0.37

Table 12 – Anova unifactorial results – Flamingo static balance test

ANOVA UNIFACTORIAL Results

M - E_1		**M - E_2**		**M - E_3**	
F	P	F	P	F	P
9.107	< **0.05**	12.02	< **0.05**	5.11	< **0.05**

Discussions

In Table 1 and Table 2 in cardio frequency we note

- group E_1: medium 82.95, higher by 10.70 beats/min than the one of the witness group. Cohen indicator (0.90) shows a higher difference, if not a very high one between the average of groups E_1 and M. The difference reached the quota of statistical significance, $p < 0.05$.
- group E_2: medium 82.15, higher by 9.90 beats/min than the average of the witness group. Cohen indicator (0.96) indicates a high if not a very high difference between groups E_2 and M. The difference if statistically relevant, $p < 0.05$.
- group E_3: medium 82.90, higher by 10.65 beats/min than the average of the witness group. Cohen indicator (1.15) expresses a high if not very high difference between the average of the groups E_3 and M. The difference reached statistical significance, $p < 0.05$.

In Table 3 and 4 in Movement Speed – Sprint from a standing start for a distance of 50 meters remark

- group E_1: average 8.28, higher by 0.20 sec than the average of the witness group. Cohen indicator (0.12) shows a little towards medium difference between the average of groups E1 and M. The difference didn't reach the threshold of statistical significance, $p > 0.05$.
- group E_2: average 7.91, smaller by 0.18 sec than the witness group. Cohen indicator (0.13) indicates a small towards medium difference between the average of groups E_2 and M. The difference isn't significant from a statistic point of view, $p > 0.05$.
- group E_3: average 7.77, lower by 0.31 sec than the average of the witness group. Cohen indicator (0.18) expresses thus a high if not very high difference between the average of groups E_3 and M. The

difference didn't reach the threshold of statistical significance, $p > 0.05$.

In Table 5 and 6 cardio-respiratory resistance remark

- group E_1: average 6.65, higher by 0.55 min than the average of the witness group. Cohen indicator (0.20) shows a small difference towards average between groups E_1 and M. The difference didn't reach the threshold of statistical significance, $p > 0.05$.
- group E_2: average 5.15, smaller by 0.96 min than the average of the witness group. Cohen indicator (0.45) shows high difference towards a very high one between the average of E_2 and M. The difference is statistically significant, $p < 0.05$.
- group E_3: average of 6.45, higher by 0.34 min than the average of the witness group. Cohen indicator (0.14) still shows a high towards very high difference between the average of E_3 and M. The difference didn't reach the threshold of statistical significance, $p > 0.05$.

In Table 7 and 8 vital capacity we note

- group E1: average 3705, up 292.50 cm3 arm. Cohen index (0.20) shows little difference between the average for middle and M. E1 group difference did not reach statistical significance, $p> 0.05$.
- group E2: average 3650, up 237.50 cm3 arm. Cohen index (0.20) indicates a difference between the average small to medium groups E2 and M. The difference is not statistically significant, $p> 0.05$.
- group E3: 4665 average higher than 1 252.50 cm3 arm. Cohen index (0.87) to express a very big difference between the means of the groups E3 and M. The difference reached statistical significance threshold of $p <0.05$.

In Table 9 and 10 Naveta run test remark

- group E1: mean 14.74, up 0.56 sec average arm. Cohen index (0.20) shows little difference between the average for middle and M. E1 group difference did not reach statistical significance, $p> 0.05$.
- group E2: mean 12.58, lower by 1.59 sec average arm. Cohen index (0.70) indicates a high to very large difference between the means of groups E2 and M. The difference is statistically significant, $p <0.05$.
- group E3: 13.40 average, lower by 0.78 sec average arm. Cohen index (0.32) expresses the middle of the sea, however, a difference between averages of groups E3 and M. The difference did not reach statistical significance, $p> 0.05$.

In Table 11 and 12 we note

- group E1: mean 4.30, 1.80 points higher than average arm. Cohen index (0.49) shows a very large difference between the averages for groups E1 and M. The difference reached statistical significance threshold of $p <0.05$.
- group E2: mean 0.95, lower by 1.55 points average arm. Cohen index (0.56) indicates a high to very large difference between the means of groups E2 and M. The difference is statistically significant, $p <0.05$.
- group E3: mean 1.45, 1.05 points lower than average arm. Cohen index (0.37) expresses the difference between the average medium to large groups E3 and M. The difference reached statistical significance threshold of $p <0.05$.

From measurements made, significant differences between the experimental groups and the control group to measure heart rate in normal physiological as components of the control group sports activities every two weeks.

The same can be observed by testing on samples Speed running distance of 50 meters and cardio-respiratory resistance testing.

After studies of Patac (2009) and Constantinescu, (2012), we observed significant improvements in young students should benefit from preferential programs which they can apply in their free time. Emphasis should be placed on maintaining and continuously improving health, body shaping by adopting rational activity programs and sporting life.

Same reported and observed new Clemson (2012) and Noakes (2009) In the study, pointing out that an increased level of exercise leads to improvements in muscular system, skeletal, cardio-respiratory and reduces the risk of disease.

Conclusions

As a result of the operational endeavour undergone we can reach the following conclusions: namely that if students are presented with sports programs that imply systematically practicing physical and sports activities during their free time, the quality of their life will improve by a smaller corporal weight, by a harmonious physical development and the increase in the level of motric qualities to superior indicators and a significant increase in their attention and memorisation capacity. More and more students use their free time to a gamogenetic purpose (to improve their health status).

The undergone programs and activities should have a permanent character and should take place at the gymnasium as well as in the open air throughout the year. According to the students' requests to spend as much time in a pleasant way in open air, practicing sports activities there is possible to promote a weekly timetable that brings indirect benefits to physical fitness.

Strategic programs must be initiated on a long term regarding the development of sport activities in order to prevent lack of activity, obesity, stress, different cardio-vascular, respiratory and ostero-articular diseases.

As to the way students spend their free time, we can state that oxygenation, diet and movement are synonymous to a state of good health, this being our main objective in physical education and sports, as well as the essential element in developing the quality of life.

Bibliography

Bîrzu, M., 2002, Medical control and self-control in physical education and sport, Publishing House Miron, Timişoara.

Bota, A., 2006, Physical exercise for working life – Free time leisure activities, Publishing House Cartea Universitară, Bucureşti.

Clemson, L. , 2012, Integration of balance and strength training into daily life activity to reduce rate of falls in order people (the life study): randomised parallel trial, http://dx.doi.org/10.1136/bmj.e 4547.

Colibaba-Evuleţ, D., Bota, I., 1998, Sports Games - Theory and Methodology, Publishing House Aladin, Bucureşti.

Constantinescu, A., 2012, Improving the quality of student life on college campuses through physical education and sport specific activities – PhD thesys, Piteşti University.

Constantinescu, A., 2009, Comparativ study concerning the somatic-functional aspect of the students from the petroleum field, Piteşti: 2nd Annual International Conference "Physical Education, Sports and Health", held Nov 20th-22nd, p. 202-204 .

Noakes, T.D., 2009, The role of the faculty of sports and exercise medicine for public health and elite athlete care, Br. J. Sports Med 2010; 44:14 998-1001.

Patac, L., 2009, Contributions on the role of sport to improve the lives of the students of the University of Medicine - PhD thesys, Piteşti University.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 424-430

THE IMPACT OF PHYSICAL PARAMETERS VALUE OF THE „OIL AND GAS" STUDENTS AS A RESULT OF TAKING PART IN AEROBIC GYMNASTICS TRAINING

CONSTANTINESCU ANAMARIA[1]

Abstract

The perception of improving the quality of life for the „Oil & Gas" students by taking part in activities specific to physical and sport education, aims at all conditions that ensure the integrity of life and at tending to all social and economic requirements that are in close connection to life standards, social status, professional status, social group, types of relationships between people and groups that appear during the sports activities.

Purpose. The purpose of this research is to identify the physical development parameters that are susceptible to improvement with the help of this aerobic gymnastics program.

*Methods***.** During the experimental endeavour, the following research methods and techniques were used: The Method of the Bibliographic Research where the gathered data supplied allowed us to get a clear picture of what has been achieved so far in the researched field. The observation method made us scientifically research the instructive and educative process in its first stage.

The bio-motric potential as well as the effects of the physical education effects of the sports activities organised with the students were carefully observed and measured using the following means:

- Anthropometric parameters: waist, body weight, bust, thorax perimeter while expiring, thorax perimeter while deeply inspiring.
- Functional parameters: heart beat frequency, systolic arterial tension, diastolic arterial tension, vital capacity.

Results. After applying the aerobic gymnastics program we notice that the anthropometric and physiologic values have their own significance and can stand for objective criteria of individual and collective measurement of the physical development processes and phenomena. After performing correlative operations between some of the indicators (morphologic and functional) we arrive at anthropometric and functional indicators that show a series of complex anthropometric and physiologic traits such as: body weight, stamina, proportion of segments, body harmony, and nutrition status.

[1]Petrol and Oil University of Ploiesti, ROMANIA
E-mail: anamaria78_const@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Conclusions. The scope of our research aims at showing the implications that the aerobic gymnastics program has in order to improve the values of development indicators. We start from the premises that lack of sports culture leads to a weak body and motric development. After implementing the aerobic gymnastics programme we noticed that that the development of the individual, from a biological, psychological and social point of view requires creating preferential programs that aim mainly at improving the health and quality of life of students.
Another pertinent problem would be that of creating flexible, modern programs. There should be specific laws that clearly define their applicability.
Key words: students, aerobic gymnastics, strategic program, body indicators.

Introduction

We live in a computerised century, where, due to technical development and science, life became anti-natural and individuals risk diminishing their perception on sensitivity. One of the purposes of education will be contributing to maintaining the functions that everyday life won't stimuli efficiently. (Mialaret, 1981)

Physical education is one of the oldest forms of exercitation and formation of the formation of the structure of human personality. This educative component contributes to the formation and development of the human being by establishing equilibrium between the physical elements and the physical ones, between motric and intellectual, affectivity and emotions. The physical and sports activities represent the main factor for preventing lack of activity, every-day stress and obesity, offering technical and functional support that no other type of activity can provide. A good physical condition is associated with the decrease of the percentage of adipose tissue and muscular force. (Niculescu, Georgescu, Marinescu, 2006)

Among the physiological effects that are favourable to health due to systematically practicing physical activities we can mention: the decrease of systolic and diastolic arterial tension, maintaining a normal body weight, achieving a slender, equilibrated figure, cleansing the arteries from cholesterol and reducing the congestion of blood vessels, improving posture; increasing physical resistance, stabilising the systolic arterial tension, improving the tolerance threshold to pain, improving the overall volume of lung capacity and the increase of pectoral muscular; the increase in the force of the myocardia muscle, reducing osteoporosis risks, the increase in mobility, the increase of artery elasticity and in the diameter of capillary vessels at muscle level. (Bocu, Lupu, 2009)

According to some studies conducted by Sporting Goods Association, (2004), sedentarism represents a real danger for health, being one of the main causes of death. The great majority of the population doesn't practice any physical activities as there is no information about the benefits it has over the human body, they don't know that by systematically practicing them, even at a moderate scale, the quality of life will be greatly improved.

In the technical university education we must stress the importance of practicing differentially physical activities and sports, so that each student can practice and participate in one or more fields of sports, or take part in a complex of activities that harmoniously develops their bodies, so that they can prevent obesity and practice sports according to their personal needs. We must make changes, starting from mentality and also by promoting physical education as, more and more children and young people should have sports culture, to practice for pleasure, enthusiastically physical exercises under any form they may be organises, taking into consideration the benefits that they bring to the body and also keeping in mind that they improve the quality of life. Sports games, gymnastics elements and specific means to athletics are at the basis of the physical education system in Romania, bringing an important contribution to reaching the general and specific objectives in this field, stressing the health of each individual, their harmonious physical development, the prevention of obesity, the development of motric qualities and physical vigour so that they can cope with social demands. (Constantinescu, 2012).

Purpose: the purpose of this research is to identify the indicators of physical development that are susceptible to amelioration with the help of an aerobic gymnastics program.
If we use structured training programs that correspond to the student's preferences then we'll be able to achieve a series of immediate bio-psycho-motric effects and to create a custom to systematically practice physical exercise in active free time activities as means of giving up sedentarism and in order to socially integrate their families.

Used Research Methods: in our experimental endeavour we used the following methods and techniques of research: the method of bibliographic study, where the data gathered offered us solid starting points in our research and allowed us to make a full picture of what has been accomplished so far in the research field. The observation method authorised us to scientifically master the truth about the education and training process as first phase of fully knowing it.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

The bio-motric potential as well as the effects of the physical education activities that were organised with the students was evaluated using the following measurement categories.

The anthropometrical parameters: waist, body weight, bust, thoraces perimeter at ease, thoracic perimeter in deep inhalation.

The evaluation of the motric potential is performed through a series of tests for physical skills that test flexibility and force. The tests are thus conceived so that they can be performed in a span of 20-30 minutes, using simple equipment.

The parameters and indicators of physical development: Quételet indicator, Adrian Ionescu indicator, Amar indicator, nutrition indicator.

The experimental part as such was performed throughout university year 2011/2012, and was finalised at the end of this school year. The students were tested in preferential groups (a witness group and 2 experimental groups). In this endeavour, the groups performed activities as follows:

The experimental groups are 2, and are made out of two identical samples, each made up of 10 students, between the ages of 19-26. The girls worked during their free time, a program of aerobics gymnastics, focused on specific activities to physical education and that aim at didactical means and training objectives that we particularly wanted to test. The training program was performed 3 times a week, during the students free time and was 90 minutes long.

The control group worked following an analytical program that was conceived and approved by the University Senate at the beginning of university year 2011 / 2012. The training program was organised by university professors in the Department of Motric Activities and University Sports. Each training lasted for 90 minutes and was organised once a week. The groups are made of 20 female students between the ages of 19-26.

The anthropometrical measurements were made in collaboration with the personnel the medical department within Oil & Gas" University, Ploiești before starting the coordinated program and when it finished

Results

After applying this gymnastics program we can notice the fact that the anthropometrical and physiological values have a great significance and can be the basis for establishing objective criteria in individual and collective evaluation of the process and phenomena of physical development. After performing correlative operations between the values of some indicators (morphological and functional) the following anthropometric and functional indicators can be observed that represent a series of anthropometric and physiologic characteristics such as: fatness, robustness, the proportion between segments, body harmony, and nutrition status. Among the results obtained, the most relevant are:

Table 1. Body weight

Statistic Indicators – Final Tests

Group	Code	Average	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	69.45	69.50	9.94	89	55	34	14.3%		
Experim	E1	54.75	55.50	8.06	67	41	26	14.7%	-14.70	0.83
ent	E2	78.00	77.00	6.35	90	70	20	8.1%	8.55	0.53

Table 2 – Anova Unifactorial Results – Body weight

ANOVA UNIFACTORIAL RESULTS

M - E_1		**M - E_2**	
F	P	F	P
26.36	**< 0.05**	10.50	**< 0.05**

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 3 – Statistic Indicators– Final Tests – Quetelet Indicator

Group	Code	Statistic Indicators – Final Tests								
		Average	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	413.10	417.29	46.63	536	352	184	11.29%		
Experiment	E_1	363.38	346.69	53.39	508	309	199	14.69%	-49.72	0.51
	E_2	375.41	375.06	49.90	484	296	188	13.29%	-37.69	0.40

Table 4 –e Anova Unifactorial Results– Quetelet Indicator

ANOVA UNIFACTORIAL Results			
M - E_1		**M - E_2**	
F	P	F	P
9.840	< **0.05**	6.09	< **0.05**

Table 5 – Statistic Indicators– Final Tests Adrian Ionescu Indicator

Group	Code	Statistic Indicators – Final Tests								
		Medium	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.V. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	-8.38	-9.50	6.09	5	-17	22	-72.7%		
Experiment	E_1	-11.05	-11.25	7.75	3	-23	26	-70.1%	-2.68	0.20
	E_2	-13.73	-15.75	7.32	-2	-26	24	-53.3%	-5.35	0.41

Table 6 – Anova Unifactorial Results – Adrian Ionescu Indicator

ANOVA UNIFACTORIAL Results			
M - E_1		**M - E_2**	
F	P	F	P
1.473	> **0.05**	6.31	< **0.05**

Table 7 – Anova Unifactorial Results – Adrian Ionescu Indicator

Group	Cod	Statistic Indicators – Final Tests								
		Average	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	24.65	24.08	2.69	32	22	11	10.9%		
Experiment	E_1	21.33	20.56	2.31	28	19	9	10.8%	-3.32	0.68
	E_2	21.46	21.27	2.55	26	17	9	11.9%	-3.19	0.62

Table 8 – Statistic Indicators – Final Tests – Body Mass Indicator

ANOVA UNIFACTORIAL Results			
M - E_1		**M - E_2**	
F	P	F	P
17.511	< **0.05**	14.79	< **0.05**

Table98 –Anova unifactorial Results– Body Mass Indicator
Resistance in Force Regime of abdominal force
Statistic Indicators – Final Tests

Group	Code	Average	Median	Standard Deviation	Maximum	Minimum	Amplitude	C.v. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	23.25	23.00	1.80	27	21	6	7.8%		
Experiment	E_1	26.30	26.00	3.87	33	19	14	14.7%	3.05	0.52
	E_2	29.15	29.50	2.48	32	22	10	8.5%	5.90	1.40

Table 10 – Statistic Indicators– Final Tests – abs for 30 seconds

ANOVA UNIFACTORIAL Results			
M - E_1		**M - E_2**	
F	P	F	P
10.218	< **0.05**	74.19	< **0.05**

Table 11. Mobility of the Vertebral spine and Coxofemural articulation in flexion

Statistic Indicators – Final Tests

Group	Code	Average	Median	Standard Abreviation	Maximum	Minimum	Amplitude	C.V. (%)	Difference (m_E - m_M)	Cohen Indicator
Witness	M	3.15	3.00	3.20	9	-4	13	101.6%		
Experiment	E_1	7.60	7.00	4.49	15	1	14	59.1%	4.45	0.59
	E_2	8.05	8.50	2.78	14	4	10	34.5%	4.90	0.84

Table 12 –Anova Unifactorial results – Coxofemural mobility

ANOVA UNIFACTORIAL Results			
M - E_1		**M - E_2**	
F	P	F	P
13.034	< **0.05**	26.72	< **0.05**

Discussion

In **Table 1 and 2** body weight we note

- group E_1: average 54.75 with 14.70 Kg less than the average of the witness group. Cohen index (0.83) shows a very large difference between the averages for groups E1 and M. The difference reached statistical significance threshold of $p < 0.05$.
- group E_2: average 78.00, up 8.55 Kg average arm. Cohen index (0.53) indicates a high to very large difference between the means of groups E2 and M. The difference is statistically significant, $p < 0.05$.

In **Table 3 and table 4** Quetelet Indicator remark

- group E_1: medium 363.38, smaller by 49.72 than the average of the witness group. Cohen indicator (0.51) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance, $p < 0.05$.
- group E_2: average 375.41, smaller by 37.69 than the average of the witness group. Cohen indicator (0.40) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance, $p < 0.05$.

In **Table 5 and 6** Adrian Ionescu Indicator remark

- group E_1: average -11.05, smaller by 2.68 than the average of the witness group. Cohen indicator (0.20) shows a small difference towards medium between groups E_1 and M. The difference didn't reach the threshold of statistic significance, $p > 0.05$. We accept the null hypothesis.
- group E_2: average -13.73, smaller by 5.35 than the average of the witness group. The Cohen indicator shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator, $p < 0.05$. We accept the research hypothesis.

In **Table 7 and 8** Body Mass Indicator we note

- group E_1: average 21.33, smaller by 3.32 than the average of the witness group. Cohen indicator (0.68) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator, $p < 0.05$. We accept the research hypothesis.
- group E_2: average 21.46, smaller by 3.19 than the witness group. Cohen indicator (0.62) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator, $p < 0.05$. We accept the research hypothesis.

In **Table 9 and 10** Resistance in force regime of abdominal force

- group E_1: average 26.30, bigger by 3.05 abs than the average of the witness group. Cohen indicator (0.52) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator, $p < 0.05$.
- group E_2: average 29.15, bigger by 5.90 repetitions than the witness group. Cohen indicator (5.90) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator, $p < 0.05$.

In **Table 11 and 12** Mobility of the vertebral spine and coxofemural articulation in flexion remark

- group E_1: average 7.60, higher by 4.45 cm than the witness group. Cohen indicator (0.59) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator , $p < 0.05$.
- group E_2: average 8.05, higher by 4.90 cm than the witness group. Cohen indicator (0.84) shows a great difference towards very high between the average of groups E_1 and M. The difference has reached the threshold of statistical significance Cohen indicator , $p < 0.05$.

Following these tests carried out significant differences between the control group and a two experimental groups both Quetelet Index measurement and the measurement of Body Mass Index.

Significant differences found and endurance testing strength of abdominal muscles and spine mobility testing and coxofemoral joint in flexion, which can be seen above.

In our opinion, significant differences are normal in terms of anatomical and physiological as control group, perform one module physical education every two weeks.

In this regard it should be noted the study by Yoshizawa, Yokoyama, Sakato (2009) that have implemented health promotion based on lifestyle type exercise programs conducted at convenient and suitable personal style of each individual life. The results of these highlighted changes in attitude towards sports activities and results achieved in terms of body composition, muscle growth and weight loss.

Anecdotal evidence from studies of Teodoropoulou, and Karteroliotis, (2009). Obesity is a risk factor for Diseases and adversely Affects Health-Related Quality of Life, Which has been defined as individual year's Perceived physical and mental health over time. However, the effects of obesity in the Greek Population Examined have not been previously.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Conclusions

The finality of our research aims at proving the impact that gymnastics program has in order to improve the values of physical development indicators. Starting from the premises that the lack of sports culture leads to a poor body development and motricity. After having implemented the aerobics program we first of all noticed a development on the part of the individual from a biological, psychological and social point of view. There is a need to create programs that aim at improving and mentaining the students health state and quality of life.

Promptly finding solutions by initiating long-term strategic programs of sports activities that prevent sedentarism, obesity, fatigue, stress, different cardio-vascular, respiratory or osteoarticular disease.

A healthy individual, with real aptitudes towards a high level life quality needs to continually practice sports activities during their free time and after finishing the courses at university, implementing physical exercise as a way of life.

Bibliography

Bocu, T., Lupu, I., 2009, Contribution of physical education and sport to improve quality of life, in „Palestrica mileniului III", year VI, no.4, pages 27-29.

Constantinescu, A., 2012, Improving the quality of student life on college campuses through physical education and sport specific activities , PhD thesis, I.O.S.U.D. Pitesti.

Damian, M., Popescu, R., 2000, Acrobatic gymnastics. Technique - Methods , Ovidius University Press Publishing House, Constanţa.

Mialaret, G., 1981, Introduction to pedagogy, Didactic and Pedagogic Publishing House, Bucureşti, page. 30.

Niculescu, M., Georgescu, L., Marinescu, A., 2006, Fitness and health, Universitaria Publishing House, Craiova.

Sheehy, K., 2001, Terapy by fitness - complete guide to home with instructions to keep the body strong and accident prevention, Bucureşti: Aquila'93 Publishing House.

Sport Goods Asociation, 2004, online sports - www.csga.ca

Teodoropoulou, E., Karteroliotis, K., 2009, Bady fat distribution and health related qulity of life, in the 14 th Congress of the European College of Sport Science, Oslo/Norway.

Yoshizawa, Y., Yokoyama, N., Sakato, Y., 2009, Relation to corporate health promotion which aims to prevent metabolic syndrome and using e-wellness system, , in the 14 th Congress of the European College of Sport Science, Oslo/Norway.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 430-436

STUDY ON DEVELOPMENT OF MOTOR ABILITIES IN PHYSICAL EDUCATION LESSONS

DEACU MARCEL[1]

Abstract

Purpose. The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

Methods. In sporting training, it rarely occurs that only one quality dominates both effort and movement, this usually is the product or the combination of at least two driving qualities. There are situations when force and speed are equal, the combination of endurance and force produces muscular endurance; the result of combining endurance and speed is speed-resistance; agility is a combination of speed, power and coordination; agility and flexibility results in mobility. It is recommended that specific exercises are practiced, concurrent with the exercises specific to the development of the driving exercises. The development of the dominant driving qualities can have a positive or a negative transfer effect.

Results. There was significant differences, the biggest progress were made by the experimental group, and for the control group the progress was insignificant.

Conclusions. Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.

Key word: swing, plyometric, leaps, anaerobic-alactacide power

[1]Petroleum - Gas University Of Ploieşti, ROMANIA
Email: marceldeacu@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Introduction

Sporting and physical education activities make up a direct stimulus, nearly exclusive for the morfo-functional development, and their absence can lead to situations harmful to health, of which dimensions are hard to anticipate. The mobility represents the key element for the tasks that target the instructive content of any physical education programme (Colibaba-Evulet, Bota, 1998). In the physical education and sporting activity in the non-specialized universities we are interested in the exhausting effort which, through its parameters (intensity, volume, complexity), obliges their bodies to react intensive and generalized (Deacu, Finichiu, 2010).

Generally, moving qualities represent a more interesting subject among specialists, the methodology of the development of these qualities, being the centre preocupation of the experts from different sporting branches. During the driving act, the driving qualities influence each other and constantly depend on one another, and this leads to the so-called manifestation regime of the driving qualities (Bompa, 2001). This regime represents the differencial way of manifestation of a driving quality, determined by the influence of one or more driving qualities, with which the first manifests in the same time or even entirely and represents functional combinations of speed, force, skill and stamina.

The force and speed are found in a reverse proportion rapport: if the speed is bigger, the charge used is smaller (Bompa, 2003).

Testing of anaerobic processes relevant to athletes practicing speed efforts, strength, sports and for those whose samples (5 "-6") requires a maximum energy flow.

Power is defined as the M. Epuran, the amount of work (energy, work, work) that can be performed in a unit of time. Strength and speed are involved to ensure a maximum body movement values. In this category are explosive movements: throwing weights, flat 50m, high jump, long jump.
Power = (Force x Distance) / Time
Power = Work (Mechanical) / time
Power = Force x Velocity, because distance / time = speed, so power expresses how quickly the work is performed (mechanical). Measurement of the high jump (flashing) consists of reports made to weight using height nomogram Lewis (Epuran, 2005).

Since force is a measure instantaneous and all human movements are executed over a period of time, continuous force-time relationship, and not just once in a power point determines interest to study this relationship. In many sports, strength exercises are performed mainly aimed improving strength, speed of movement to a given resistance (body weight, weight of the object) and not force itself. In these cases, the maximum force is considered the basic condition for a high speed motion (Zatsiorski, 2005).

For this we chose that in our research we approach the conditional capacities, especially those combined of speed and strength, in physical education classes with the students of the Petroleum Gas University of Ploiești. Through this process we followed the effects which resulted after applying the preparal program in the research, adressed especially to the development of the combined driving capacities, through plyometria (Deacu, 2008).

Purpose

The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

Hypotheses

1. If we use the plyometric exercises during training, the raise of the swing of students who practice sporting games during the physical education lesson will be possible.
2. A higher manifestation of the maximum anaerobic-alactacide power during the sporting game will be realised based on the gatherings from the preparation program.

Tasks

- Fixing some methodical priorities and the principles of the plyometric training;
- Fixing the tests;
- Elaborating a training program using the plyometric method;
- Fixing the development level of the the combined driving qualities of the subjects (initial and final testing);
- Arranging and grouping the gathered data necessary for the statistical-mathematical processing;
- Processing the obtained data and drawing the conclusions.

Research methods

- Scientific documentation;
- The descriptive method – the observation;
- The experimental method;
- Processing and interpretation methods: the logical method, the statistics method, the grafical method.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

The content of the experiment

The experiment took place during the physical education lessons with the students of the Petroleum Gas University of Ploieşti.

The subjects of the research are 40 students from the Petroleum Gas University of Ploieşti and falls within the 15-20 years age, 20 students belonging to the experimental group and the other 20 to the control group. The subjects of the experimental group were trained with the use of plyometric exercises during the physical education classes.

➢ **The applied tests** – *The Ion Grinţescu Test* to measure the height of the vertical jump, and to measure the maximum anaerobic-alactacid power the Sargent Test was used, with the following formula:

$P = \sqrt{4{,}95xGx\sqrt{D}}$; where

P = power in kg/s,
G = corporal weight,
D = swing in cm.

Tabel 1. The interpretation of assessment test Sargent for men (Dal Monte, 1988)

Mark	**Age**		
	15-20 ani	*20-30 ani*	*30-40 ani*
Weak	**<113**	<106	<85
Satisfactory	**113-149**	106-139	85-111
Mediu	**150-187**	140-175	112-140
Well	**188-224**	176-250	141-168
Very good	**>224**	>210	>168

Three vertical jumps are performed -the best jump is considered - (Tudor, 2005). The estimation of the power was made in comparison with the values presented by dal Monte 1988 (Bota, 2000). For the technique not to influence the height of the jump, only one vertical jump without a big upsurge is recommended. This type of jump is called the „Sargent jump", named after the man who analysed it from a biomechanic point of view. It is one of the most relevant proofs concerning the estimation of the swing at the lower limbs level, in a vertical plan. It is executed standing next to a 4 meter long wooden ruler, the performer streches his arm up, leaves a mark on the ruler, then jumps with a small upsurge and makes another mark on the ruler. The distance between the 2 marks is measured. To measure the height of the jump we used the Ion Grinţescu method (Tudor, 2005).

➢ **The training program** included the following exercises (Deacu, 2008):

- **Multiple or sequential jumps** – the on-the-spot jumps are combined with the from the spot horizontal jumps. These require a maximum effort utilised in a sequence. The distance must not be bigger than 30 meters.
- **In-depth jumps** – counter-movement jumps are used from a high crate, followed by counter-movement jumps off boxes, benches, low fences.
- **On-the-spot jumps** – a jump in which the detachment and the landing is executed on the same spot. These jumps are of a somewhat small intensity, but they still have a short damping phase and require a fast comeback. The jump is executed sequentially, with a short damping phase between jumps.
- **From the spot horizontal jumps** – the maximum effort used when detaching from the ground horizontally or vertically is stressed.
- **Exercices with boxes** – ths type of exercises utilises jumps successive with the jumps in depth. These exercises depend on the height of the boxes. They have both horizontal and vertical components.

Results

Table 2. The values of the maximum anaerobic-alactacide power – Experimental Group

Student	T.I.			T.F.		
	Stature (cm)	**Weight kg**	$P = \sqrt{4{,}95xGx\sqrt{D}}$ **kg/s**		**Stature (cm)**	**Weight kg**
1.	175	80	115- satisfactory	119- satisfactory	175	79
2.	183	79	119- satisfactory	123- satisfactory	183	78
3.	184	67	138- satisfactory	144- satisfactory	181	67

4.	178	57	120- satisfactory	128- satisfactory	178	56
5.	180	78	122- satisfactory	127- satisfactory	180	78
6.	175	64	100-weak	107-weak	175	63
7.	175	92	121- satisfactory	128- satisfactory	175	90
8.	181	64	113- satisfactory	119- satisfactory	181	63
9.	177	71	138- satisfactory	148- satisfactory	177	70
10.	166	62	114- satisfactory	120- satisfactory	167	61
11.	176	72	128- satisfactory	135- satisfactory	176	71
12.	166	63	104-weak	111-weak	166	64
13.	172	60	115- satisfactory	121- satisfactory	172	61
14.	173	64	129- satisfactory	132- satisfactory	173	64
15.	180	70	130- satisfactory	134- satisfactory	180	69
16.	176	74	137- satisfactory	145- satisfactory	176	74
17.	172	58	112-weak	119- satisfactory	172	57
18.	178	96	138- satisfactory	142- satisfactory	178	95
19.	164	64	136- satisfactory	144- satisfactory	164	64
20.	168	50	102- weak	107- weak	169	49

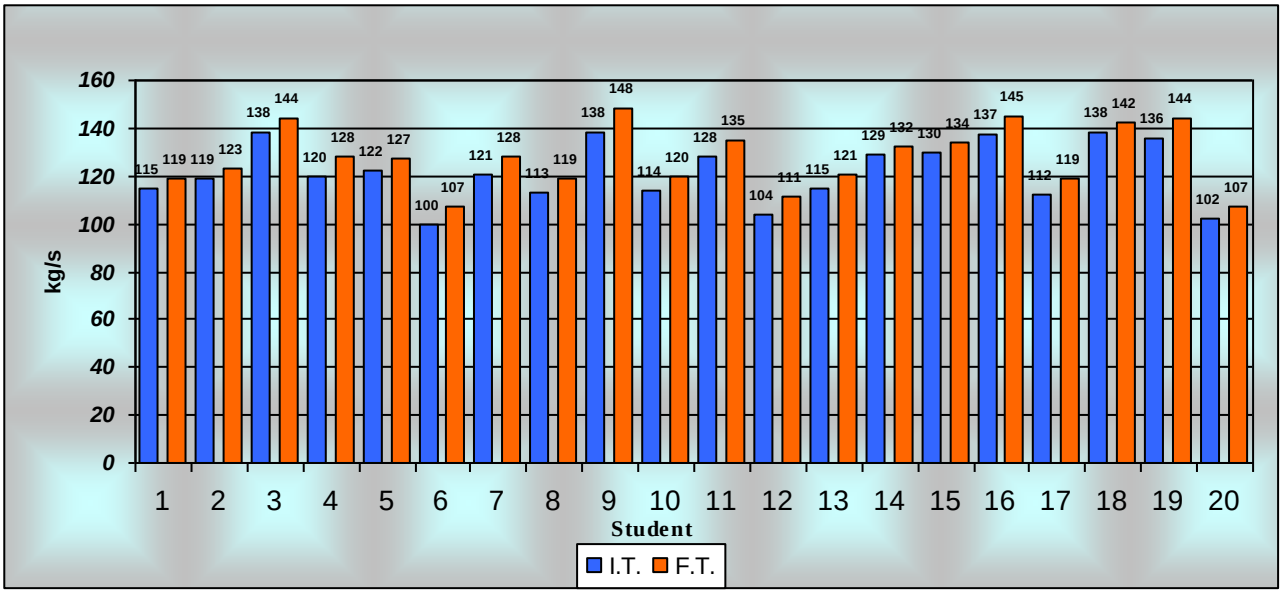


Figure 1. The values of the maximum anaerobic-alactacide power – Experimental Group
Kg/s, kilo/second; IT, initial testing; FT, final testing.

Table 3. The values of the maximum anaerobic-alactacide power – Control Group

Student	T.I.		T.F.			
	Stature (cm)	**Weight kg**	$P = \sqrt{4,95xG}x\sqrt{D}$ **kg/s**		**Stature (cm)**	**Weight kg**
1.	172	85	129- satisfactory	132- satisfactory	172	85
2.	181	79	113- satisfactory	113- satisfactory	181	78
3.	169	96	127- satisfactory	130- satisfactory	169	95
4.	186	71	108- weak	111- weak	186	70
5.	166	52	113- satisfactory	113- satisfactory	166	52
6.	174	62	105- weak	106- weak	174	62
7.	177	75	135- satisfactory	137- satisfactory	177	75
8.	172	73	105- weak	105- weak	172	72
9.	175	89	143- satisfactory	145- satisfactory	175	89
10.	180	66	129- satisfactory	127- satisfactory	180	66
11.	183	61	116- satisfactory	116- satisfactory	183	61
12.	188	92	129- satisfactory	128- satisfactory	188	91
13.	170	62	114- satisfactory	112- weak	170	62
14.	166	61	115- satisfactory	116- satisfactory	166	61
15.	180	61	108- weak	110- weak	180	60
16.	175	69	129- satisfactory	129- satisfactory	175	69
17.	175	61	111- weak	112- weak	176	61
18.	174	59	111- weak	112- weak	174	58
19.	178	56	110- weak	112- weak	178	56
20.	174	61	113- satisfactory	114- satisfactory	174	60

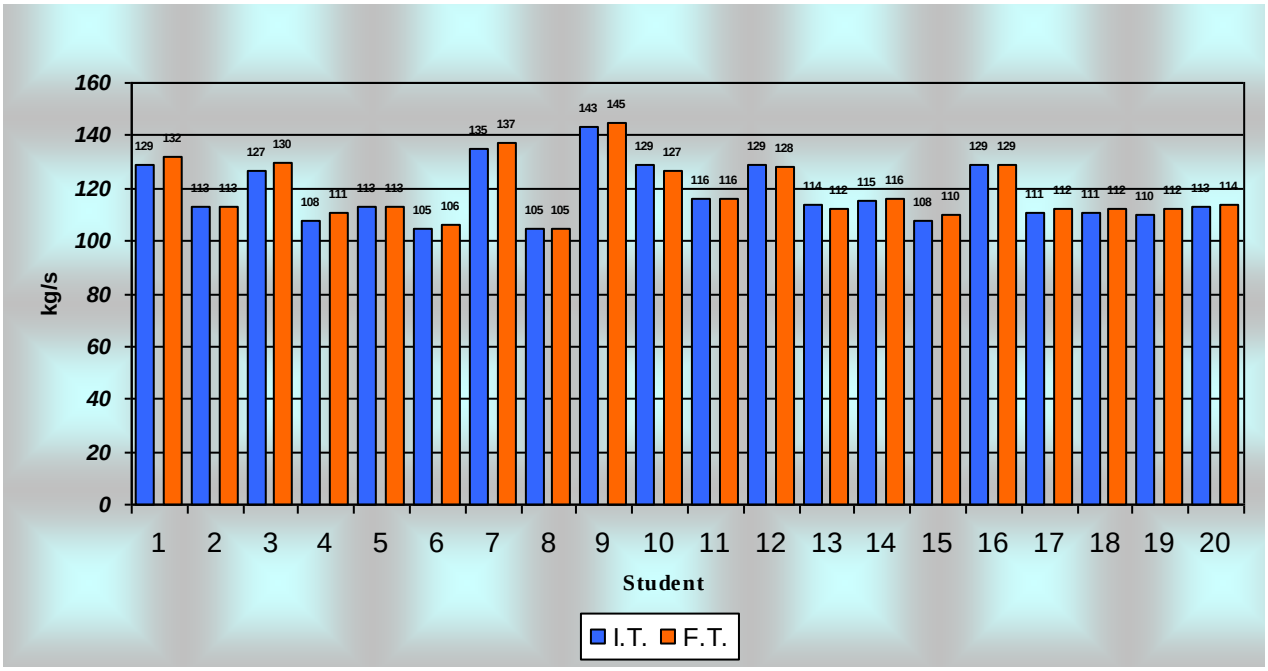
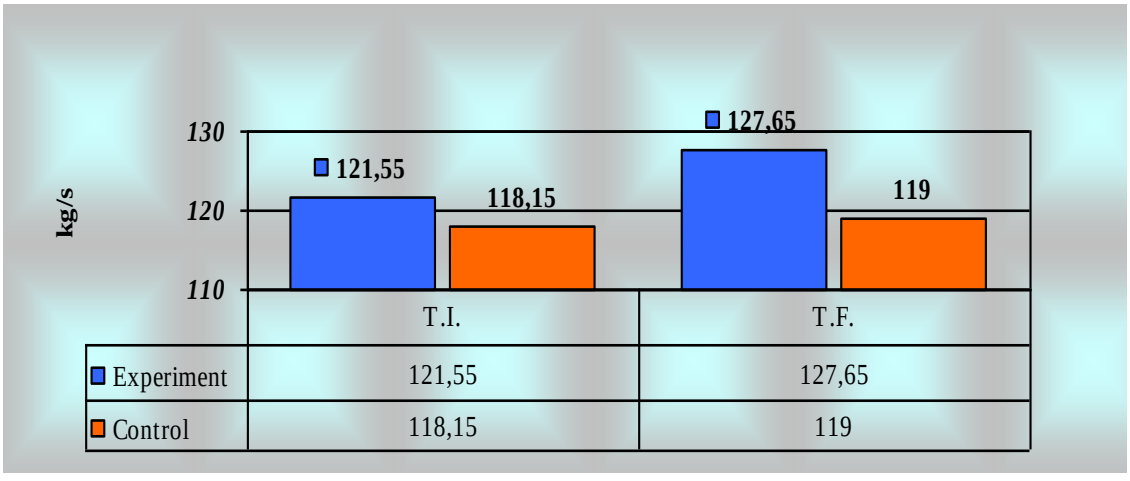


Figure 2. The values of the maximum anaerobic-alactacide power – Control Group
Kg/s, kilo/second; IT, initial testing; FT, final testing.

Table 4. The progress realised by each group (average) – Sargent Test (kg/s)

Group	Sargent Test			
	T.I.	**T.F.**	D = T.F. - T.I.	$D_{T.F. - T.I.}$ (%)
Experimental	121,55	127,65	6,1	5,01
Control	118,15	119	0,85	0,72

Figure 3. Values of the arithmetical mean - Sargent test



Kg/s, kilo/second; IT, initial testing; FT, final testing; Control Group; Experimental Group

Discussions

The result of the Sargent Test for determining the maximum anaerobic-alactacid power is:

The Experimental Group, at the final testing, registers a gain in power of 5,01% (6,1 kg/s) in comparison with the initial testing. One student modified his grade from weak to satisfactory.

The Control Group, at the final testing, registers a gain in power of 0,72% (0,85 kg/sec) in comparison with the initial testing. One student modified his grade from satisfactory to weak.

In terms of the coefficient of variation, all the groups have a high homogeneity both in the initial test and final testing. Similar studies have been addressed by Bocioaca, 2003 and Vaida, 2011.

Conclusions

- At the Sargent test which evaluates the maximum anaerobic-alactacid power, the biggest progress were made by the experimental group, and for the control group the progress was insignificant. On a whole, it can be appreciated that regarding the anaerobic-alactacid capacity of the subjects, there still is the possibility of improvement in a significant quantity through the use of plyometric exercises, which concludes to the fact that the functional reserves of young people are insufficiently explored.
- Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.
- Strength training is essential for jumpers and sprinters as body weight (during the beat movement with vertical separation) and body mass provide a very high resistance.

References

Bocioaca, L., 2003, Power in judo, , Publishing BREN, Romania,

Bompa, O. T., 2001, Developing the biomotor qualities , Publishing Exponto, Romania, pp 108-126.

Bompa, O. T., 2003, Performance in sportive games – Theory and methodology of the training. S.N.A.. Publishing Ex Ponto, Romania, pp 118-123.

Bota, C., 2000, Ergophysiology, Publishing Globus, Romania, 133.

Colibaba-Evuleț, D., Bota, I., 1998, Sportive games – Theory and method, Publishing Aldin, Romania, pp 99-105.

Deacu, M., 2008, Developing of motion qualities combined "force-speed" and „speed-force" through sportive games in the universital class of Physical Education, Ph Thesis, Bucharest, I.O.S.U.D. A.N.E.F.S., pp 180-253.

Deacu, M., Finichiu, M., 2010, Management of physical education and sports lesson, Publishing Universitară, Romania, pp 81.

Epuran, M., 2005, Methodology bodily activities - Second Edition, Publishing Fest, Romania, pp 362

Tudor, V., 2005, Measurement and evaluation in physical culture and sports, Publishing Alpha, Romania, pp 106-114.

Vaida, M., 2011, Improving the detent – the explosive strength at the inferior limbs through means specific to the sport games at an adult age, Studia Universitatis Babeș–Bolyai, Studia Educatio Artis Gymnasticae no. 1 / 2011, pag. 49-58, Cluj -Napoca

Zatsiorski, V.M., 2005, Science and practice of strength training, High-Performance Sports no. 444-446, Publishing ANS-INCS , Romania, pp 35,235.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 436-442

STUDY ON THE INFLUENCE OF SPORTS GAMES` IN THE DEVELOPMENT OF THE MOTRIC CAPACITIES

DEACU MARCEL[1]

Abstract
Purpose. Sporting games are characterized by a complex manifestation of all driving capacities, and in training their development - in order of requirement for competition - must be the most important aspect. Considering the characteristics and the involvement of the games, especially the sporting games, and their influence on the formation and the development of the human personality, as well as the incresing number of students who choose to play them.

[1]Petroleum - Gas University Of Ploieşti, ROMANIA
Email: marceldeacu@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Methods. We chose that in our paper to refer to the methods of the sporing games and at how these influence the development of the combined driving capacities during the physical education classes at the Petroleum Gas University of Ploiești.
Results. The subject were subdues to the measurement of several driving tests consisting of force and speed, and in this paper we will present only the result of two tests: on-the-spot vertical jumps and from the spot horizontal jumps.
Conclusions. Following the statistical processing of the results, it was observed that at all the applied tests, the experimental groups were superior to the control group, the difference between the averages at the final test were significant. The methods of the sporting games can contribue to the improvement of the manifestation values of the conditioned capacities in the physical education and sporting classes.
Key words: sporting games, conditional capacities, tests, measurement

Introduction

All sports programs must include fundamentals of training namely: physical, technical, tactical, physiological and theoretical. Physical training has an important role in the whole process of training, leading ultimately yield athletes in training and competitions. Physical training is one of the most important factors, and in some cases even constitute the starting point for the entire process of preparation.

Physical training encompasses a whole system (whole) measures ensure high functional capacity of the body, the high level of development of basic qualities biomotrice specific optimal values of morpho-functional indices, full mastery exercises used perfect condition health. Physical training is important at all levels of education, being different from one sport to another branch in relation to specific requests. Thus, groups of beginners, physical training has high share in saving time and resources used reported the preparation tactic, technique etc. Groups both beginners and professional athletes in physical training is the starting point and create the necessary foundation to address other components of training.

Specific physical training content is mainly focused effort to develop an industry specific sports and driving qualities combined and differentiated primarily involved, leading ultimately specific performance ". In some branches of sports performance is strictly limited by the development of motor skills (weightlifting, rowing) or a complex motor skills (sports, combat sports and so on). Specific physical preparation is done strictly specialized means developing quality combinations priority determined by the particular branches of sports, muscle groups involved in the effort, so such request (Dragnea, 1996).

Sports games include higher forms of motion and is conducted using combinations of already known and held in the form of driving skills, which improve motor skills specific form that can be optimal if the parameters driving qualities are high. By using complex media such as team sports in physical education lessons and sports training to move from quantity to quality with the increased efficiency and better able they produce motor speed to all participants. Students practice sports games even if they are not endowed with exceptional skills required major competitions or creativity great athletes. They practice at the level where they are accessible and become what A. Dragnea calls "sport consumers". "Consumers sport is a direct beneficiary of sporting activities involved with practice and participate as knowledgeable sports show (Dragnea, 1981).

In sports training, seldom as one effort to dominate the movement, it is often the product or combination of at least two qualities. There are times when force and speed dominate equal strength to strength combination produces muscle endurance, strength and speed is the product of speed, strength, agility is a combination of speed, strength and coordination, agility with flexibility given mobility. The act (gesture) motor, motor skills influence each being in a relationship of interdependence, leading to so-called regime manifestation driving quality. Regime is the manifestation of a different driving qualities determined by the influence of one or other driving qualities, which first manifested simultaneously or integrative and functional couples are speed, strength, skill and endurance.

Strength and speed are in an inverse relationship: the higher the speed, the load used will have to decrease. Manifestation of maximum force in minimum time is known as the sport explosive force, a designation used by some experts and if under the speed force (Baroga, 1980).

The components of the motion capacity are dealt precisely for each category: conditional, intermediate and coordinative capacities, motion skills and abilities, attitudes and habits.

In this part we have also considered sport games as means of university physical training from their definition, history, characteristics, organization to their objectives, education principles and methods concerning the application of sport's games in the physical training course (Deacu, Finichiu, 2010).

Speed force under combined driving is a quality found in throwing, weightlifting, rugby, bobsleigh, gymnastics, the dominant power. "The power and absolute power is manifested in the game by flashing

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

feet (V-F) and the explosive force of arms (F-V) (Tudor, 1999).

Speed mode combined driving force is a quality that we find in all speed running, jumping and all sports games handball, football, volleyball, basketball, tennis, water polo, the acyclic sports: gymnastics, wrestling, fencing, climbing, boxing etc.(Colibaba-Evuleț, Bota 1998).

Considering the games' characteristics and implications, especially sport games, concerning the formation and development of the human being, and also the increasing number of students who choose to practice those games we have chosen in our work to refer to the most solicitated sport games within physical training courses accomplished in the Petroleum-Gas University of Ploiesti, that is: basketball, football and handball.

The purpose of the research

The purpose of our research is to stress the efficiency of some sporting disciplines regarding the evolution of the conditional capacities, especially of those combine at the physical education classes with the students of the Petroleum Gas University of Ploieşti. Through this approach we followed the identification of the obtained results following the use of the briefing programs and the operational structures suggested in the research, destined especially to the development of the combined driving qualities.

Hypothesis

If we used the methods from the sporting games in the physical education classes, then the improvement of the driving capacities of students would be possible

Tasks

- A complex and multidisciplinary documented awareness regarding the setting of the theoretical and methodical characteristics of the theme (Moanță, 2006);
- Establishing the work group regarding the testing of the operational didactic project;
- Establishing the level of development of the combined driving qualities of the subjects (initial testing);
- Making the verification experiment;
- Fixing the level of development of the combined driving qualities of the subjects (final testing);

Research methods

- The analytical method – the study of the documents;
- The descriptive method: the observation;
- The experimental method;
- The evaluation and measuring methods

For force measurement under speed (explosive force) present the following tests (Tudor, 2005) :

1. Running speed of 30m to start standing trial in which subjects were run individually.

2. Throwing the ball rounders place. Throwing away the ball rounders preferred arm, the place, the foot opposite throwing arm was attached to the line of demarcation, the body placed in the opposite side facing the throwing arm throw, throwing arm stretched backward. Run two throws, recorded the longest throw. Record length in meters disposal.

- The processing and interpretation methods: the grafical, statistical and logical methods.

The content of the experiment

- The experiment took place during the physical education classes with the students of the Petroleum Gas University of Ploieşti.
- The Experimental group consisted in a group of students who chose the following sports: basketball, football and handball, and the Control group consisted in a group of students who chose classical physical education classes (general preparation classes).
- The subject were subdues to the measurement of several driving tests consisting of force and speed, and in this paper we will present only the result of two tests: on-the-spot vertical jumps and from the spot horizontal jumps.
- Processing the obtained data and drawing the conclusions from the experiment.

Results

***1. Throwing the ball at oină (TBO*)**

Table 1. The values of the statistical indicators for TBO

Statistical parameters	Basketball		Football	
	I.T.	F.T.	I.T.	F.T.
Average	46,1	49	43,9	45,6
Standard deviation	6,59	6,29	9,62	9,64
Median	46	49,5	42,5	44,5
Minimum	36	39	27	28,5
Maximum	58	61	63	64
Amplitude	22	22	36	35,5

Variability coefficient	14,30	12,85	21,93	21,15
Standard error	1,47	1,40	2,159	2,15
The scatter	43,46	39,68	92,72	93,01
Trust level (95%)	3,08	2,94	4,50	4,51

Table 2. The values of the statistical indicators for TBO

Statistical parameters	Handball		Control	
	I.T.	F.T.	I.T.	F.T.
Average	46,85	51,95	43,97	44,71
Standard deviation	9,63	8,97	6,58	6,29
Median	46	53	45,5	46
Minimum	30	36	26	28
Maximum	65	67	61	61
Amplitude	35	31	35	33
Variability coefficient	20,55	17,27	14,96	14,07
Standard error	2,15	2,00	1,04	0,99
The scatter	92,76	80,57	43,30	39,61
Trust level (95%)	4,50	4,20	21,02	20,11

Table 3. Accomplished progress by each group for TBO (m)

Group	I.T.	F.T.	D = F.T.- I.T.	$D_{F.T.-I.T.}$ (%)
Basketball	46,1	49	2,9	6,29
Football	43,9	45,6	1,7	3,87
Handball	46,85	51,95	5,1	10,88
Control	43,97	44,71	0,74	1,68

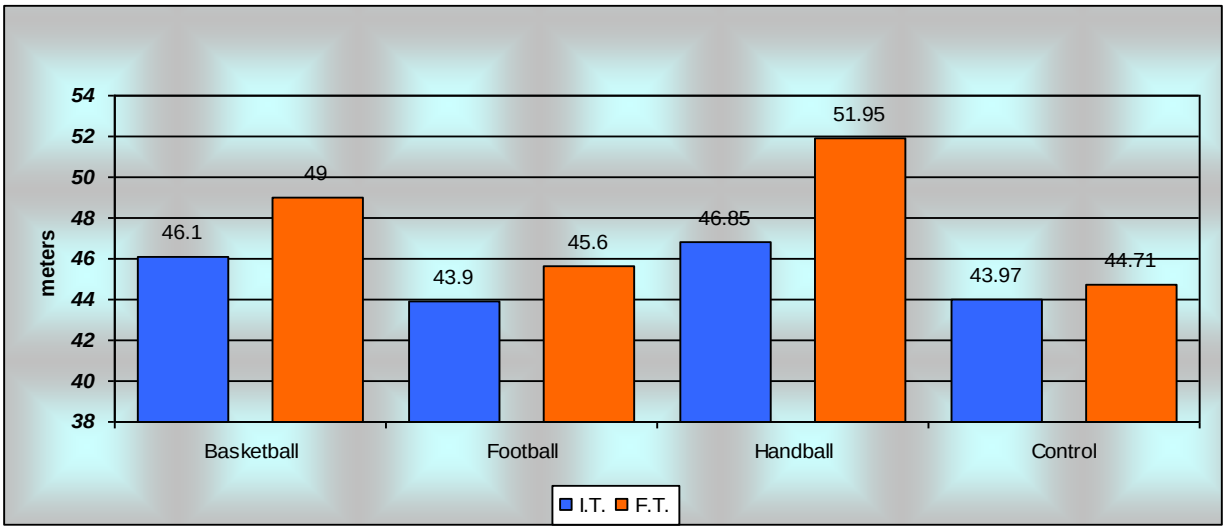


Figure 1. Values of the arithmetical mean - TBO (m)IT, initial testing; FT, final testing; m, meters;Group of Basketball, Football, Handball, Control; TBO, Throwing the ball at oină .

2. The test 30m Running

Table 4. The values of the statistical indicators for 30m Running

Statistical parameters	Basketball		Football	
	I.T.	F.T.	I.T.	F.T.
Average	4,23	4,07	4,32	4,14
Standard deviation	0,23	0,17	0,26	0,26
Median	4,29	4,12	4,29	4,04
Minimum	3,78	3,7	4,02	3,88
Maximum	4,64	4,28	5,19	5,01
Amplitude	0,86	0,58	1,17	1,13
Variability coefficient	5,52	4,38	6,19	6,37
Standard error	0,05	0,03	0,05	0,05
The scatter	0,05	0,03	0,07	0,06
Trust level (95%)	0,10	0,08	0,12	0,12

Table 5. The values of the statistical indicators for 30m Running

Statistical parameters	Handball		Control	
	I.T.	F.T.	I.T.	F.T.
Average	4,36	4,14	4,40	4,37
Standard deviation	0,26	0,25	0,22	0,22
Median	4,31	4,06	4,37	4,34
Minimum	4,02	3,8	3,9	3,85
Maximum	4,97	4,6	5	5
Amplitude	0,95	0,8	1,1	1,15
Variability coefficient	6,01	6,18	5,01	5,11
Standard error	0,05	0,05	0,03	0,03
The scatter	0,06	0,06	0,04	0,05
Trust level (95%)	0,12	0,11	0,70	0,71

Table 6. Accomplished progress by each group for 30m Running

Group	I.T.	F.T.	D = F.T.- I.T.	$D_{F.T. - I.T.}$ (%)
Basketball	4,23	4,07	- 0,16	- 3,78
Football	4,32	4,14	- 0,18	- 4,16
Handball	4,36	4,14	- 0,22	- 5,04
Control	4,40	4,37	- 0,03	- 0,68

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

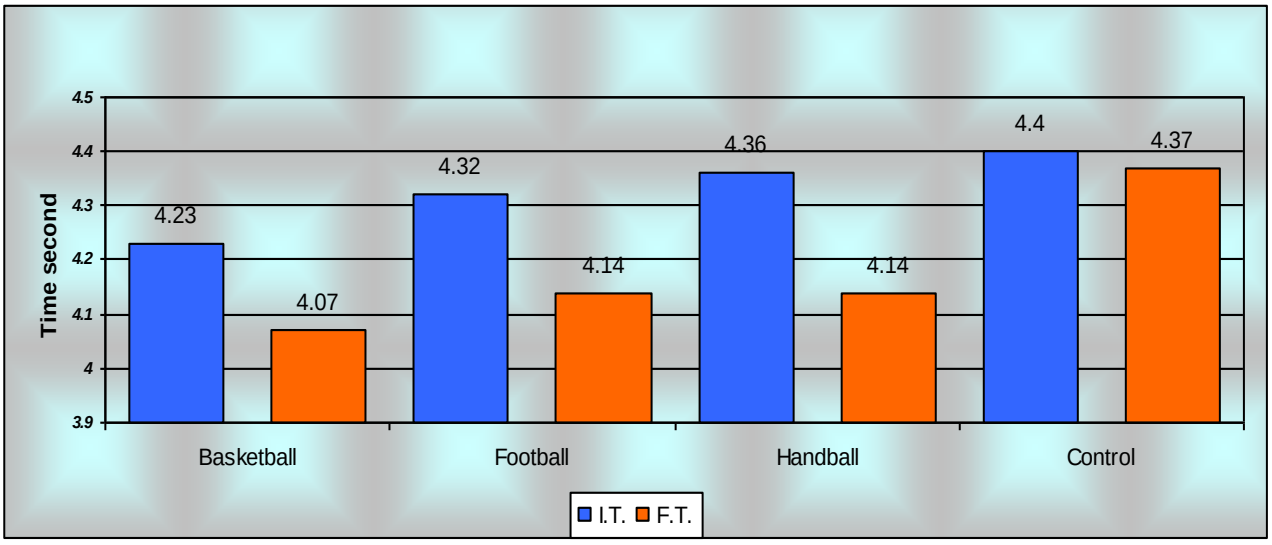


Figure 2. The values of the arithmetical mean - 30m Running**;**IT, initial testing; FT, final testing; Group of Basketball, Football, Handball, Control;

Discussions

***Throwing the ball at oină (TBO*)**

The Basketball tester group, at the final test, records an increase of 6,29% (2,9 m) from the initial test (see table 3).

The Football tester group, at the final test, records an increase of 3,87% (1,7 m) from the initial test (see table 3).

The Handball tester group, at the final test, records an increase of 10,88% (5,1 m) from the initial test(see table 3).

The Control group, at the final test, records an increase of 1,68% (0,74 m) from the initial test(see table 3).

From the variability coeficient's point of view, the basketball and the control group show a high homogenousness both in the initial test and the final one, whereas the football and handball groups show a moderate homogenousness at the two tests (see table 1 and 2).

Applying the dependant t test for the two tests, for each group, to check my hypothesis, it results that the differences between the arithmetic medians of the two tests ($p<0,05$) are statistically significant for the experimental groups and insignificant for the control group. From the statistic calculus and the analysis of the data using the simple dispersional analysis method ANOVA to compare the results of the final test between the control group and the experimental group, we can see that there is no statistically significant difference between the control group and the football group, the value of calculated F is lower than the critical F $p<0,05$, but there is a statistically significant difference between the control group and the handball and the basketball groups, F's calculated value resulting from the calculus being greater than critical F's value (Deacu, 2008).

The test 30m Running

The Basketball tester group, at the final test, records an increase in time of 3,78% (0,16 sec) from the initial test (see table 6).

The Football tester group, at the final test, records an increase in time of 4,16% (0,18 sec) from the initial test (see table 6).

The Handball tester group, at the final test, records an increase in time of 5,04% (0,22 sec) from the initial test (see table 6).

The Control group, at the final test, records an increase in time of 0,68% (0,03 sec) from the initial test (see table 6).

From the point of view of the variability coefficient, the groups present a high homogenousness both in the initial, and in the final test (see table 4 and 5).

Applying the dependant t test for the two tests, for each group, to check my hypothesis, it results that the differences between the arithmetical medians of the two tests ($p<0,05$) are statistically significant for the experimental groups and insignificant for the control group. From the statistic calculus and the analysis of the data using the simple dispersional analysis method ANOVA to compare the results of the final test between the control group and the experimental group, we can see that there is no statistically significant difference between the control group and the other tester groups, F's calculated value resulting from the calculus being greater than critical F's value $p<0,05$ (Deacu, 2008).

In terms of the coefficient of variation, all the groups have a high homogeneity both in the initial test and final testing. Similar studies have been addressed by (Finichiu, 2011) and (Vaida, 2010).

Conclusions

- Following the statistical processing of the results, we observed that at every test applied, the tester groups were superior to the control group, the differences between the arithmetic means at the final test were significant.
- The training program applied to the tester groups proved to be effective in correlation with the specific details of the driving qualities at the age of the subjects for the experiment who can no longer improve their values a great deal, because of the limited number of hours granted to practice and the surpassing of the critical periods of intervention.
- The methods of the sporting games can contribue to the improvement of the manifestation values of the conditioned capacities in the physical education and sporting classes.
- Through the use of the methods in the sporting games during the physical education classes with the students, a growth in the level of manifestation of the combined driving qualities at the experimental group through the results registered at the second test was observed, which confirms the correctness of the elaboration of the concept and the organised methodology, the development and the evaluation of the realised research.
- Identification tests for measuring motor qualities combined could be achieved, literature presenting these tests;
- Tests for measuring motor qualities combined can be supported in physical education and sports lessons without sophisticated equipment, sports grounds with equipment necessary to achieve them. Students quickly adapted to the requirements and tests have been sparked interest in knowing things about their movements.

References

Baroga, L., 1980, Force in professional sports, Bucureşti, Publishing Sport-Turism, pp 26.

Bompa, O. T., 2001, Developing the biomotor qualities , Publishing Exponto, Romania, pp 108-126.

Bompa, O. T., 2003, Performance in sportive games – Theory and methodology of the training. S.N.A.. Publishing Ex Ponto, Romania, pp 75-76.

Colibaba-Evuleț, D, Bota, I., 1998, Sportive games – Theory and method, Publishing Aldin, Romania, pp 249-257.

Deacu, M., 2008, Developing of motion qualities combined "force-speed" and „speed-force" through sportive games in the universital class of Physical Education, Ph Thesis, Bucharest, I.O.S.U.D. A.N.E.F.S.

Deacu, M., Finichiu, M., 2010, Management of physical education and sports lesson, Publishing Universitară, Romania, pp 114-138.

Dragnea, A., 1996, Sports training, Publishing Didactică şi Pedagogică, Bucharest.

Dragnea, A. et al., 2000, Theory of physical education and sport, Publishing FEST, Bucharest, Romania, pp 81

Finichiu, M., Evaluation ways of the effort's capacity – physical condition by using the functional tests during the physical education class. Revista Educatio Artis Gymnasticae, anul LVI, 2/2011, Universitatea Babeş – Bolyai, Cluj – Napoca,

Moanta, A.D., 2006, Basketball-Methodology, Publishing Alpha, Romania, pp 184-203.

Tudor, V., 1999, The conditional capacity, coordination and intermediate - components of motor ability, Publishing RAI, Romania, pp 34.

Tudor, V., 2005, Measurement and evaluation in physical culture and sports, Publishing Alpha, Romania, pp114

Vaida, M., 2010, Practical-methodical methods concerning the motor capacity strength development during the physical education class, Buletinul Universităţii Petrol-Gaze din Ploieşti, Seria Ştiinţele Educaţiei, Vol LXII, No.2/2010.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 Supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 443-448

THE ANALYSIS AND INTERPRETATION OF THE EXPLOSIVE POWER VALUES CONCERNING THE STUDENTS IN THE 12TH GRADE AT, LAZAR EDELEANU" COLLEGE, PLOIESTI

DULGHERU MIRELA[1]

Abstract
Purpose. The research conditions allowed us to choose three easy methods that can be applied in high school: the Grintescu method, throwing the rounders' ball, in order to measure the explosive power of the superior limb and the depth jump without take-off.
Method. The research was conducted during school year 2011/2012 during the physical education classes at LazarEdeleanu College, and it was performed on 60 students of the 12th grade. The initial tests were conducted during the month of September and the final tests began at the beginning of June.
*Results.*The endeavour of our research meant using some research methods and techniques that had at their basis: the experimental method, the investigation method, the measuring and registering results method, and investigation methods such as; the mathematical-statistic method and the graphic one.
Conclusion and discution. Our research leads us to the conclusion that the methods as well as the means used to develop the explosive power were correctly chosen and took into the account the psyche-motric particularities under all their aspects. By studying different papers that have as subject aspects in this field, I came to the conclusion that the methods selected were in accordance with the objectives I intended to reach, and Finichiu, M. (1998) paper,,The Efficiency Degree of measurement and Evaluation Methods of the Explosive Force '', confirmed through the analysis and comparative technique of the tests that the means selected were the appropriate ones.
Key words: students, explosive power, measurement, evaluation, interpretation

Introduction

The world we live in, the sped of evolution and transformation, the lack of activity, the stress and unhealthy food impose the necessity of physical education at all levels of education, so that we can ensure a rational equilibrium in adapting the body to the changes that occur during the physical and motric changes characteristic to every age stage. The goal of physical education is to preserve the health, to increase the physical and intellectual capacity and to prepare the college graduate to cope with a superior stressful stage of his life. The development of motric capacities at this stage registers remarkable progress, that can be quantified by a brief analysis of the power and factors that condition it, by stressing the fact that the neuromuscular coordination depends on it, as well as the training of its capacity and the enlargement of muscular mass that is so important in a harmonious physical development and for an ideal performance of any activity and by increasing work capacity.

The muscular power is part of the important motric abilities, being used in the great majority of work fields, and especially in motric activities. In the absence of motric abilities, the works in this field confirmed the fact that there can be no normal physical development.

The absence of the power, and in general of motric abilities, makes it impossible to form and consolidate any motricity. There is a tight relation between the motric ability (conditional and coordinative) and the motric skills, relation that is important from a methodology point of view. It is known that, in order to achieve a motric activity, it necessary to move at least one segment of our body, having a bigger or smaller weight. This movement always modifies the inertia of that segment and this can be achieved only by using a power. Here, we refer to the contraction or extension of one or many muscles. During the physical education and sport the term "Power" refers to two aspects: power that is characteristic to movement and power as an inherent quality of the human body. The development of these motric qualities is especially complex, and needs to make use of specific exercises and stimuli. In obtaining superior performance of the power, we need to undertake a long process that is based on the following principles:

- Progressivity, continuity
- Efficacy, specificity, variety
- Specificity, individuality, progressivity.

The explosive power, as it is the one that interests us the most in this study, is one of the manifestation forms of two motric capacities that have a vast applicability during the physical education and sport classes and it needs a " good coordination between speed and power" [Tudor, 2005].

The dictionary of medicine and sports describes the "tension release as being the bio-motric quality that

[1]Department Of MotricUniversitary Activities And Sports, "Oil And Gas" University, Ploiesti, ROMANIA
Email – dmirela714@yahoo.com

allows a discontinuous development of movements and consists in the capacity to cope with a motric act and a big tension, followed by an abrupt expansion".

The main components of tension release are the explosive power and the start power. By, explosive *power*wemean the ability to achieve an immediate raise in the power, per time unit and it depends of the contraction speed of faze units, on the number and contraction power of the fibres that are engaged in the effort" [Stoica, 2000, page. 68].

We come to the conclusion that many specialists agree that the terms of explosive and start power are one and the same thing but reality infirm this theory, by stressing the fact that by start we understand speed in a power scenario while its main quality is, in fact, power. The explosive power is defined as being the capacity that some individuals have to raise up from the ground as high and easily as possible.

The controversial, spectacular and indispensiblemotric ability stands for a motric indicator for which the students of the 12th class were tested. The results obtained led us to be able to make an analysis, interpret and draw the conclusions that are specific to any scientific endeavour.

The Hypothesis and Scope of the Research

The methodology of power development makes use of a large range of methods and specific means that can be used according to the purpose, the maximal abilities of the body, according to sex, age, level of training, the material means and apparatus the teacher disposes of in his experimental endeavour. These studies have as purpose establishing the measures that need to be undertaken in order to ensure a long period of activity and to prevent the degenerative processes of the body, of involution of some functions, due to the lack of motric activities, which is a consequence of limiting movements and physical effort during the work process.

The hypothesis is the validation of the Grințescu method, not necessarily as a calculation formula of the explosive power, that proved to be both right and efficient in time, but also of the goal of being used by students, in order to self-evaluate the level of their explosive power development at a certain point, while they are encouraged to practice systematically and independently finical exercises having as goal the increase of the level of physical manifestations and, implicitly, the improvement of the quality of life.

If we are to constantly introduce the depth jump without take-off and throwing the throwing the rounders' ball we'll certainly obtain a progress in the performance achieved by students, progress due on the one hand to perfecting the technique and developing the explosive power, on the other hand, a great progress in developing the upper and lower limbs. This second aspect is at the basis of our research.

The development in the motric capacities and qualities during the physical and sport education classes has to be obtained in specific ways and using specific means. We consider that by facilitating and accessing new evaluation methods, the self-evaluation can become stimuli for the systematic and independent practice of physical exercise.

Research Methods

The research was conducted during school year 2011/2012 during the physical education classes at LazarEdeleanu College, and it was performed on 60 students of the 12th grade. The initial tests were conducted during the month of September and the final tests began at the beginning of June.

The following motric indicators were measured: the explosive power of upper limbs as they threw the rounder's ball and the explosive power of the lower limbs for which we used the depth jump without take-off and the explosive power of lower limbs during the exercises of high jump without take off and with two steps take-off. We also took into consideration the values of the antropotetrical indicators of each student, as follows: height, the height of the body with one hand up while sanding, and the weight.

The research methods chosen in this research are part of the particular and processing methods as well as analysis and gathered data interpretation.

The testing the initial and final take-off was made using the Grințescu method. The use of this method is an efficient way of testing the students and the results of this test can become criteria of selection for the representative sport teams of this high school and, what is more, it helps evaluating the work of the teacher.

In the specific literature we find the way of determination of the value of explosive power that can be achieved according to the formula: D = m *x* v; where: D = take-off (kgm/s); m = body weight of student (kg); v = take-off speed (m/s).

ResultsThe results of the research methods are illustrated in the tables and figures below:
Table 1.Motric Indicators – indicator values statistically calculated

Statistic Indicators	*Vertical jump*		*Vertical jump with take-off of 2 steps*	
	Initial Test	*Final test*	*Initial Test*	*Final test*
X	*43,20*	*45,40*	*47,25*	*50, 45*
S	*2,64*	*2,71*	*2,89*	*3.08*
Cv%	*6,11*	*5,96*	*6,11*	*6,10*
EEm	*43,20*±0,52	*45,40*±0,54	*47,25*±0,57	*50,45*±0,60

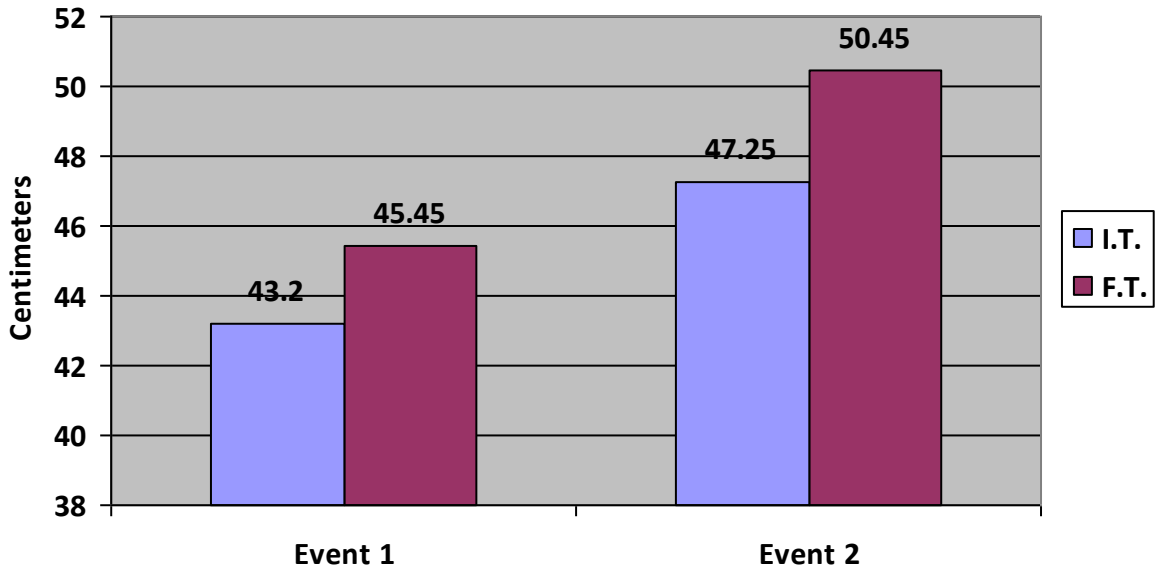


Figure 1. Graphicrepresentation of arithmetic mass of theresultsobtainedduringthe motric testing.
Event 1 , Vertical jumpwithouttake-off; Event 2, Vertical jumpwithtwostepsteke-off; IT, initialtesting; FT, final testing.

Table 2. Values of the statistic indicators calculated- Throwing the rounder's ball while standing

Statistic Indicators	*Throwing the Rounders ball while Standing in one Place*	
	Initial Test	*Final Test*
X	*42,20*	*46,40*
S	*2,34*	*3,42*
Cv%	*5,54*	*7,37*

Table 3. The values of the statistic indicators after gathering the anthropometric measurement results

Statistic Indicators	*Body weight*		*Height with arm lifted up*		*Body height*	
	Initial test	*Final test*	*Initial test*	*Final test*	*Initial test*	*Final test*
X	*70, 65*	*72,84*	*231,31*	*232,02*	*176,24*	*178,42*
S	*10.08*	*10.39*	*14.77*	*14.82*	*6.52*	*6.60*
Cv%	*14,26*	*14.26*	*6,38*	*6.38*	*3,69*	*3,69*

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

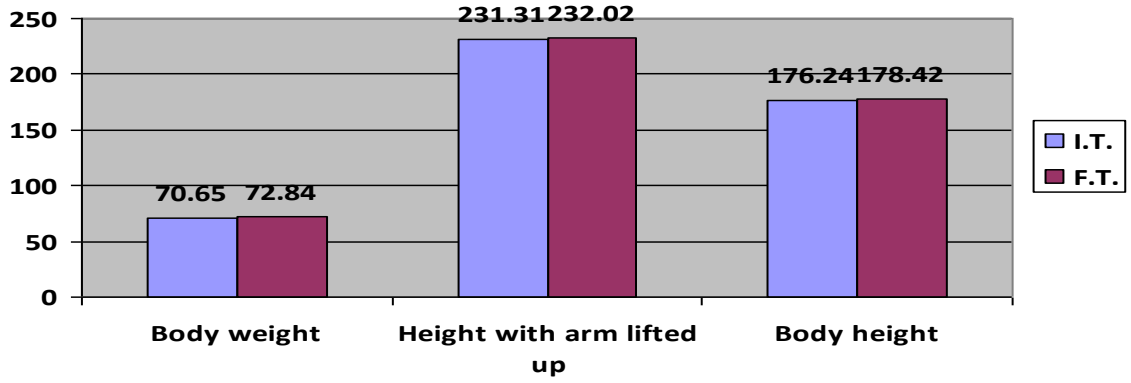


Figure 2.Graphicalrepresentation of medium arithmeticvalues of antropometric parameters
IT, initialtesting; FT, final testing.

Figure 3.Model event

Figure 4. Model event

Discussions

The test for vertical jump with take-off and two steps was taken in the gymnasium of the high school, in an especially prepared. In order to make these measurements, a fix calibrated lie was used. The students had two jumps each and the best result was registered.

The data recorded were organised in tables and then the data centralised and interpreted statistically, establishing: arithmetic mean (**X**), standard deviation (**S**), variable coefficient (**Cv%**) and estimating the medium error (**EEm**).

The values of the statistic calculated (**Table 1**), the motric indicators that interested us were the following:

After the test of *vertical jump* that tested the explosive power of the lower limb, we came to the conclusion that the arithmetic mean after the initial test was higher by 2,20 cm as compared to the arithmetic mean registered in the initial test.

The variable coefficient calculated after the two tests indicates a great similarity of the results registered in the initial test but also in the final one, and they are in the range of o-10%.

The calculation of the estimation of error in the arithmetic mean shows that this lays in the trust interval of *43,20*±0,52 (43,72 ÷ 42,68), after the initial test and between *45,40*±0,54 (45,94 ÷ 44,86) after the final one at $p<0.01$, trust degree 99%.

In the test of *the vertical 2 steps jump* (**Figure 1**) that tested the explosive power of the lower limbs, we can observe that the value of the arithmetic mean is higher after the final testing by 3,20 cm as compared to the initial one.

The variable coefficient indicates that we are dealing with a group of students that is homogenous in the results but the final testing had quite better results than the initial one.

The calculation of the error in the arithmetic mean shows that it is situated between the trust level of *47,25*±0,57 (46,68 ÷ 47,82), after the initial testing and between *50,45*±0,60 (51.05 ÷ 49,85) after the final testing of $p<0.01$, trust level of 99%.

The test forthrowing the rounder's ball was used, on the one hand, with the purpose of testing the explosive power of the upper limb and, on the other hand, to help us select the handball team of the high school. The test was performed on the sports field of the high school, in an especially arranged area. The measurement was made with a metric line.

It must be mentioned that the students, the time span between the two tests, perfected and managed to consolidate the throwing technique, which could be observed I the progress of the performance registered in the last test.

In the test of throwing the rounders ball, illustrated in **Table 2**, we tested the explosive power of the upper limb. We can notice that the value of the arithmetic mean is higher by 4, 20 m in the final test as compared to the initial one.

The variable coefficient indicates that we dealt with a group of students that has a high homogeneity in the registered results.

The anthropometric measurements allowed us to make a connection between the performances obtained from the moment of the initial test to the final one and the increase in anthropometric indicators, a natural increase, if we consider the aspect of the age span – boys of 17-18, as they are still in the period of growth, as opposed to girls.

We were particularly interested in the value of the body weight. The weighting was made with an electronic scale. The height of the body was also measured by using a height meter and for the height of the body with one hand up, a centimetre scale placed on the wall was used.

The body stature is an anthropometric parameter observed in **Table 3**, whose measurement allows us to make the following observation: the arithmetic mean of the students selected is close to the arithmetic mean of the population in our country, and the age span is 17-18 years of age; the arithmetic mean calculated after the final testing was higher by 2, 18 cm, which is a significant increase. The subjects also have a growth as to the parameter of body height with one arm up – a plus of 0,71cm.

The variable coefficient as to body weight in within normal parameters; namely the parameter height-stature – we have a big variable coefficient that is relatively constant in the time span of the two tests, aspect that applies also to the anthropometric parameter that applies to the height of the body with one arm up, next to the ear. The relatively constant value shows us that the registered results between the two tests and the two group tests register a great homogeneity (0 – 10%). The values resulting from the measurement of *body weight* (body mass) point to a group of subjects being within the limits of average value limits in our country for this age group. The raise in weight of 2, 19 kg, for the time span September- June is significant, but it does not worry us as it is correlated to the growth in height. The results registered present, after calculating the variable coefficient, a medium homogeneity of 10 – 20%. The results of the measurement of the motric indicator as to the height of the subject from ground to the tip of the middle finger of his right hand with the arm raised nest to the right ear, registers a progress of 0, 71cmat the final testing, fact that is certainly due to the improvement of the physical body development of the students between the two test.

Conclusions

1. After the gathering and interpreting the primary data we came to the conclusion that there is an evolution in the medium arithmetic values for all tests.
2. The increase in the average arithmetic mean is due to the fact that the participant subjects worked on a greater than usual level of difficulty physical exercises during the physical education exercises.
3. At the end of our research, namely during the final test, we noticed a considerable improvement in the execution technique, especially in the case of length jump without take-off and throwing the runners ball, thing that led to an increase in individual performance. Thus, these results are rather modest
4. The jumps performed in order to register the take-off in 2 steps was made with difficulty due to the lack of coordination, but, at the same time, this test as well as the vertical jump while touching the highest pint on the wall, gave way to emulation and the desire to surpass their limits; the teacher seldom noticed that the students verified themselves their results, fact that confirms the hypothesis that the Grintescu method can be also used so that students can self-evaluate their explosive power at a certain point, as long as they are encouraged to systematically and independently practice physical exercise in order to increase their level of physical condition manifestation and their quality of life.
5. We consider that the low motricity level originally registered is the result of lack of interest from the part of young people, as well as school, society and the lack of competition.
6. The results of the research were useful to the teachers who were in charge of the representative teams of handball and volleyball of the high school, using the registered data after the test chosen by us as primary selection criteria.
7. In the motric evolution of the students, the interpretation and evaluation of results took into consideration especially quantity and quality aspects.

8. We must also mention the fact that, although throughout the year we paid close attention to the subject of our research, the sports classes didn't focus only on force, but they were in accordance with the requests of the teacher's planes activities.

9. By studying different papers that have as subject aspects in this field, I came to the conclusion that the methods selected were in accordance with the objectives I intended to reach, and Finichiu, (1998) paper,,,The Efficiency Degree of measurement and Evaluation Methods of the Explosive Force '', confirmed through the analysis and comparative technique of the tests that the means selected were the appropriate ones.

Bibliography

Albu, C., Albu, A., 1999, Psihomotricitatea, Iaşi, Publishing House SpiruHaret.

Chiriţă, G., 1977, Pedagogie. Bucureşti: Publishing House Sport - Turism.

Colibaba, E. D., Niculescu A., 2002, Regândireasistemului de evaluare a studenţilor , Magazine Viitorul, no.4, Craiova.

Dragnea, A., 1984, Măsurarea şi evaluarea în educaţia fizică şi sport. Bucharest: Publishing House Sport - Turism, 1984.

Dragnea, A., Şiteodorescu, S., 2000, Teoria educaţiei fizice ş isportului. Bucharest: Publishing House CarteaŞcolii.

Epuran, M., 2005, Metodologia cercetării activităţilor corporale. Bucharest: Publishing House Fest.

Finichiu, M., 1998. Gradulde eficienta a metodelor de masurare si evaluare a fortei explosive, SesiuneJubiliara 1948-1998, Univ. Petrol-*Gaze Ploiesti, 28-29 mai 1998.

Lucuţ, G., 2000, Rădulescu S.M., Calitatea vieţii şi indicatorii sociali, Publishing House Lumina Lex, Bucharest, p. 58.

Mihăilă I., 2006, Handbal pregătirea fizică specific diferenţiată, Publishing House Valinex SA, Chişinău.

Niculescu, M., 2002, Metodologia cercetării ştiinţifice în educaţie fizică şi sport. Bucharest: Publishing House ANEFS,

Niculescu, M., Georgescu, L., Marinescu, A., 2006, Condiţia fizică şi sănătatea, Publishing House Universitaria, Craiova.

Tudor, V., 2005, Măsurarea şi evaluarea în cultură fizică şi sport. Buchares: Publishing House Alpha.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 448-454

AN ANALYSIS CONCERNING THE CHANGES ABOUT THE LEVEL OF ANXIETY EXPERIENCED BY THE PERSONEL OF THE 25TH WINTER UNIVERSIADE COORDINATION CENTER

EMRE BELLİ[1], ALI GÜRBÜZ[2], DURSUN KATKAT[1], ALPARSLAN M. KURUDİREK[1]

Abstract

The aim of this research is to determine the level of anxiety experienced by the personnel for the 25th Winter Universiade Coordination Center and to observe whether there is any reaction against some demographical factors.

Spielberg State-Trait Anxiety Inventory (STAI) was implemented as pre-test and post-test on 79 women and 144 men, 223 in total working for the coordination 4 months and 4 days to the competitions to acquire data about the level of anxiety.

Results. Frequency analysis for the SPSS program, independent samples t-tests and one way ANOVA were applied during the statistical evaluation of the acquired data.

Conclusions. According to the data acquired, the study concludes that the trait anxiety level experienced by the personnel of the coordination decreased as days passed toward the beginning of the competition and in contrast, state anxiety level of them increased as the beginning of the competition approached.

Key Words: anxiety, winter Universiade.

Introduction

Sports has been increasingly influencing people from all around the world day by day no matter whether people take part in sports actively or passively. Sports has been developing in parallel with economy day by day and also has begun to play an increasingly active role in world market. New records have been broken in sports with the help of developing science and technology and the economy, technology, education and development levels that the sports teams and athletes represent in sports areas have begun to compete against one another.

Atatürk University, School of Physical Education and Sports, TURKEY
[2]Mimar Sinan University, Department of Physical Education and Sports, TURKEY
E-mail: emre.belli@atauni.edu.tr

Sports has become a symbol that represents the development level of a country (Gümüş, 2002). The position of the sports as a representative of the development level of the countries has brought some responsibilities to the athletes psychologically and there has arisen an urgent necessity to handle with the athletes as a psycho-social entity from a scientific perspective (Başaran et al., 2009). Previous studies have investigated the relationship between anxiety level and performances of athletes and they have come to the conclusion that performance alone is not sufficient for the excellence of physical capacity and furthermore, psychological factors also play a great role (Akarçeşme, 2004). While psychological state of athletes affects their physical capacities and performances, psychological state of the employees working for the organization will also influence the quality of the organization. That is why the investigation of anxiety level of employees who work for Winter Universiade is of significant value.

The term 'anxiety' has been one of the most frequently used words throughout the human history. The term 'anxiety' has been firstly used in the first half of the century in the field of psychology and the studies related to this field were mostly conducted at the end of 1940s. Freud has been the first to use this term and investigated its reasons as well as defining the term as a concept (Köknel, 1988). According to Freud, anxiety functions as a factor which warns people against the threats coming from physical or social environment, helps them fit into society and live comfortably in the world. Furthermore, anxiety at normal level is quite necessary for people to survive (Geçtan, 1981).

Two types of anxiety were investigated in the survey, which were used to measure the anxiety level in our study. Trait anxiety results from personal characteristics of individuals that endure over time while state anxiety is the negative result expectation that individuals feel about any specific circumstances (Kapıkıran, 2002). State anxiety has been defined as an emotional situation that leads to an increase in anxiety, fear, blood pressure and arousal level (Zeng et al., 2008). Additionally, anxiety strongly influences individuals in their lives and frequently manifests itself across various situations as a reason of maladjustment (Jeffry, 2003).

State anxiety is the emotive situation that is characterized by fear, anxiety and tender that is felt at that moment. It involves the feeling of anxiety and tender that accompany physiological stimulus. According to Spielberg, state anxiety is like a kinesthetic energy. Or, it is even the immediate reaction that occurs at the level of various violence levels (Cox, 1990). State anxiety is the subjective fear that an individual feels due to the stressful situation which the individual bears (Öner, Le Compte, 1983). Christopher (2002) has defined the state anxiety as " a conscious perception of the feeling of anxiety along with mental fatigue, or activation of parasympathetic nervous system or stimulus (Bezek, 2008).

Trait anxiety, on the other hand, can be defined as an inclination of individuals to feel or interpret most of situations as stressful. As is it obviously understood from the term itself, this type of anxiety is stable and perpetual when compared to state anxiety which refers to temporary and uncomfortable experience. If an individual has an inclination to feel anxiety, he/she has a greater tendency to experience more anxiety this means that the situation differs from person to person according to type of personality. Trait anxiety may not be obviously observed as in state anxiety. In order to observe this type of anxiety, the frequency and violence of state anxiety can be analyzed for the benefit of trait anxiety's observation (Bezek, 2008). Accordingly, individuals who have a high level of trait anxiety have greater tendency to be more easily and frequently offended than those with low level of trait anxiety and feel the state anxiety more frequently and strongly (Özgür, 1984). According to Matthew (2006), individuals having high level of trait anxiety either define most situations as a potentially threat risk or react accordingly; or react against threat risks more strongly than as in the state anxiety; or shows both reactions.

Trait anxiety is the inclination of individuals toward their own anxiety experience. This can be either defined as the perception of the situations that the individuals are in as stressful or the tendency to interpret this as a stress. According to objective criteria, trait anxiety is the infelicity or dissatisfaction that stems from the perception of neutral situations as dangerous or threatening by individuals (Bezek, 2008). Individuals with high level of such kind of anxiety have greater tendency to be easily offended and slip into a mood of pessimism. These individuals experience trait anxiety more frequently and densely than others (Shoen, 1993).

Material and methods

The aim of this study is to determine the level of anxiety experienced by the personnel working for the 25th Winter Universiade Coordination Center and to investigate whether there is any reaction observed against some demographical factors.

This study includes 79 females and 144 males, 223 personnel in total working for the 25th Winter Universiade coordination center, chosen randomly for the study.

Spielberg State-Trait Anxiety Inventory (STAI) Scale, developed by Spielberg and his friends (1964), was used in the study the reliability and validity studies of which were conducted by Öner and Le Compte (1983) in order to determine the state and trait anxiety level of the personnel.

This type of scale which is a kind of self-assessment one includes 40 items consisting of short statements. State and trait anxiety scales are

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

independent of each other each consisting of 20 items. All items were given a value between 1 and 4, providing that scores of all reverse items within the scale were reversed. Total score obtained from the scale varies from 20 to 80. High score refers to high anxiety level while low score refers to low anxiety level (Dursun, Aytaç, 2009).

SPSS was used and significance level at 0.05 level was accepted for the analysis of acquired data. Frequency analysis was used in order to determine the demographic features of participants and independent samples t-tests were used in order to determine the their anxiety levels in terms of anxiety changes over time, gender, status and marital status. Furthermore, one-way ANOVA was used for the analysis of anxiety levels according to their education levels.

Findings

Table 1. Demographic Features of Participants

Sex	**N**	**%**
Female	79	35.4
Male	144	64.6
Marital Status	**N**	**%**
Married	44	19.7
Single	179	80.3
Status	**N**	**%**
Directors	43	19.3
Personnel	180	80.7
Educational Status	**N**	**%**
Bachelors	107	48
Postgraduates	58	26
Undergraduates	40	17.9
Elementary schools	18	8.1
Total	223	100

Table I which presents the gender distribution of participants shows that 79 females in total comprise 35,4 % of the distribution while 144 males comprise 64,4 %. When the marital status is concerned, 19, 7 % of the participants consists of married ones while 80,3 % includes single individuals. Concerning the status factor, 43 participants are directors comprising 19,3% of the total number while 180 participants are personnel comprising 80,7 %. Considering educational backgrounds of participants, 107 participants are bachelors comprising 48 % , 58 participants are postgraduates comprising 26 % of the total number, 40 are undergraduates consisting of 17, 9 % and lastly, 18 participants are graduates from elementary schools.

Table 2. Paired Sample T-Test Results of Anxiety Levels of Participants

Sub-Scales	**(Pre-Test) –(Post-Test)**							
	Before 4 months			**Before 4 days**			**Tests**	
	N	**Mean**	**Std.Dev.**	**N**	**Mean**	**Std.Dev.**	**t**	**p**
State Anxiety	223	40.88	9.191	223	45.83	10.132	-3,901	,000*
Trait Anxiety	223	43.83	6.962	223	38.56	9.901	-5,797	,000*

Table 2 which presents the changes at participants' anxiety levels that endure over time indicates that there is a statistically significant difference for both state (p=,000) and trait (p=,000) anxiety levels (p<0,05).

Accordingly, concerning state anxiety, anxiety level of participants 4 months to Universiade (X=40,88

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

±9,191) is lower than that of 4 days to Universiade (X= 45,83± 10.132).

In terms of trait anxiety of the personnel, their anxiety level 4 months to opening of Universiade (X=43,83±6,962) is higher than that of those 4 days to opening of Universiade (X=38,56±9,901).

Table 3- Independent Sample T-Test Results of Gender Differences

Sub-Scales	Sex	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Male (N=144)	before 4 months	39.23	11.132	-3,901	,132
	Female (N=79)		38.76	9.135		
	Male (N=144)	before 4 days	45.93	7.421	-1,146	,106
	Female (N=79)		44.12	4,123		
Trait Anxiety	Male (N=144)	before 4 months	44.54	8.801	-5,797	,194
	Female (N=79)		43.12	8.801		
	Male (N=144)	before 4 days	39.13	6.912	-2,345	,245
	Female (N=79)		38.11	6.912		

*(p<0,05)

Table 3 presents us the gender differences among participants according to state and trait anxiety levels and it shows that there is not a statistically significant difference between pre-test that was administered 4 months to the Universiade and post-test administered to participants 4 days to Universiade (p<0,05).

Table 4- Independent Sample T-Test Results of Participants in Terms of Marital Status

Sub-Scales	Marital Status	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Married (N=44)	before 4 months	40.76	4,849	-1,231	,222
	Single (N=179)		41.23	2,779		
	Married (N=44)	before 4 days	44.19	2,244	-1,114	,342
	Single (N=179)		45.63	3,687		
Trait Anxiety	Married (N=44)	before 4 months	42.02	6,198	-5,216	,413
	Single (N=179)		43.44	5,067		
	Married (N=44)	before 4 days	37.01	5,021	-2,476	,294
	Single (N=179)		38.03	2,613		

*(p<0, 05)

When we have a look at the marital status of participants, there is not a statistically significant difference in the results of pre-test 4 months to Universiade and post-test 4 days to Universiade in terms of trait and state anxiety (p<0,05).

Table 5- Independent Sample T-Test Results of Participants in Terms of Status

Sub-Scales	Status	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Directors (N=43)	before 4 months	41.19	2,112	-2,118	,637
	Personnel (N=180)		40.37	3,395		
	Directors (N=43)	before 4 days	40.99	4,145	-1,446	,292
	Personnel (N=180)		39.82	1,687		
Trait Anxiety	Directors (N=43)	before 4 months	40.02	2,978	-4,367	,373
	Personnel (N=180)		39.59	5,344		
	Directors (N=43)	before 4 days	39.14	5,222	-3,245	,119
	Personnel (N=180)		39.03	3,139		

*(p<0, 05)

According to t-test results in terms of participants' status, there is not a statistically significant difference between pre-test 4 months to Universiade and post-test 4 days to Universiade in terms of state and trait anxiety levels (p<0, 05).

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 6- Independent Sample T-Test Results of Participants in Terms of Educational Status

Sub-Scales	Educational Status	Time	$\overline{X}$	s.s	f	p
State Anxiety	Bachelors (N=107)	before 4 months	41.19	5,158	-2,118	,065
	Postgraduates (N=58)		39.99	2,389		
	Undergraduates (N=40)		41.34	3,892		
	Elementary School (N=107)		42.06	6,598		
	Bachelors (N=107)	before 4 days	44.67	4,198	-3,859	,112
	Postgraduates (N=58)		43.99	4,569		
	Undergraduates (N=40)		45.99	2,758		
	Elementary School (N=107)		46.01	3,004		
Trait Anxiety	Bachelors (N=107)	before 4 months	45.13	8,358	-1,452	,164
	Postgraduates (N=58)		45.32	2,709		
	Undergraduates (N=40)		44.99	2,345		
	Elementary School (N=107)		44.45	2,123		
	Bachelors (N=107)	before 4 days	42.22	8,901	-2,132	,231
	Postgraduates (N=58)		42.44	3,528		
	Undergraduates (N=40)		41.79	5,123		
	Elementary School (N=107)		41.89	1,283		

*(p<0, 05)

According to Table 6, there is not a statistically significant difference between the results of pre-test 4 months to Universiade and post-test 4 days to Universiade in terms of state and trait anxiety levels (p>0,05).

Results

The present study which investigates change of anxiety levels of personnel working for 25th Winter Universiade coordination center through time implies the following conclusions:

According to the findings, state anxiety level 4 months to Universiade (X= 40,88 ±9,191) is lower than that of 4 days to Universiade (X= 45,83 ±10,132). Considering that state anxiety is the emotive situation characterized by fear, worry and tender, the increase in state anxiety may stem from the fact that there may arise some problems before the opening of the Universaide and there was little time to the Universiade in order to solve them thereby causing uneasiness.

On the other hand, trait anxiety seems to be higher 4 months to Universiade (X= 43,83 ±6,962) than that of 4 days to Universiade (X= 38,56 ±9,901). Taking in to consideration that trait anxiety refers to regarding the situations within which the individuals live as stressful or the inclination to interpret like this, trait anxiety stems from the fact that participants feel to come over the stressful situation as time passes approaching towards the opening of the winter Universiade.

Discussion

The findings of the present study which also investigates the anxiety levels in terms of gender differences show that there is not a statistically significant difference. In the studies of Üngören (2007) on the high school and university students from Tourism Education field and Doğan and Çoban (2009) on the university students at the faculty of Education, the researchers did not find a statistically significant difference between gender and anxiety. Ocaktan and et al. also did not find any significant difference between them in their study with health personnel working at Health center. Furthermore, the studies in the literature which have not found any statistically significant difference between gender and anxiety are as follows: Arslan, 2007; Tümerdem, 2007; Genç, 2008. These findings support the finding of the present study. However, there are also other studies that conclude significant difference in terms of gender differences and they are as follows: Dursun, Aytaç, 2009; Ceyhan, 2004; Şahin, 2009, Ghaderi et al., 2009). Their findings are in contrast to the finding of the present study.

In terms of marital status of participants with regards to anxiety levels, no significant difference was revealed. Despite the non-significance in terms of marital status, single individuals seem to have higher state and trait anxiety when compared to married ones. The studies of Schneier et al., 1992; Amies et al., 1983; Akdemir, Cinemre, 1996 also support the finding of the present study. This finding may result from the fact that single participants have greater goals for the future and married ones do not have regular life styles when compared to single ones.

Another finding of the present study in terms of participants' status with regards to anxiety level, no significant difference was revealed. Even though there was not a significant difference in terms of status, administrators tended to feel more anxiety than other participants. This may stem from that these types of

personnel have more responsibilities and they are also responsible for those working under them therefore they feel more anxiety.

Conclusions

According to the findings of the present study, there was not a statistically significant difference in terms of educational background. However, while educational level decreased state anxiety level increased. The fact that those with low educational level have less self-esteem as they are given a heavy load of work may lead to difficulties for them even though they have fewer responsibilities when compared to those with high educational level. Moreover, the fact that those with low educational level work in lower positions and they are controlled by supervisors may even cause anxiety.

Erzurum 25th Winter Universiade which is among the greatest organizations realized in our country, in Turkey, has had the personnel who took charge of all kinds of responsibilities and played a significant role during the candidacy process for the Olympics and recognition of Turkey. Because of this reason, it is of significant value to investigate the anxiety levels of personnel working for 25th Winter Universiade Coordination as their performances directly affect the organization. The lower the anxiety level is, the higher the performance is. That is why apart from enhancing physical conditions such as wages,working conditions, development and etc., psychological situations of personnel should also be taken into consideration.

References

Akarçeşme, C., 2004, Voleybolda Müsabaka Öncesi Durumluk Kaygı İle Performans Ölçütleri Arasındaki İlişki, Yüksek Lisans Tezi, Gazi Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara.

Akdemir, A., Cinemre, B., 1996, Sosyal fobi: epidemioloji, eşlik eden hastalıklar, klinik gidiş, prognoz. Psikiyatri Psikoloji Psikofarmakoloji Dergisi, 4:11-17.

Amies, P.L. et al., 1983, Social phobia: a comprative clinical study. Br J Psychiatry, 142:174-179.

Arslan, Ç., 2007, "Üniversite Öğrencilerinin Sürekli Kaygı ve Kişisel Kararsızlık Düzeylerinin İncelenmesi", Yayınlanmamış Yüksek Lisans Tezi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya.

Başaran, H.M. et al., 2009, Sporcularda Durumluk ve Sürekli Kaygı Düzeylerinin Bazı Değişkenlere Göre İncelenmesi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi S.21,SS.534.

Bezek, N.T., 2008, TBL (Türkiye Erkekler Basketbol Birinci Ligi)'deki Basketbolcularda Performans Kaygı İlişkisi, Selçuk Üniversitesi Sağlık bilimleri Enstitüsü Yüksek Lisans Tezi, Konya.

Ceyhan, A.A., 2004, "Ortaöğretim Alan Öğretmenliği Tezsiz Yüksek Lisans Programına Devam Eden Öğretmen Adaylarının Umutsuzluk Düzeylerinin İncelenmesi" Sosyal Bilimler Dergisi, 2004/1, ss.91-102.

Christopher, M.J., 2002, Anxiety arousal and visual attention: amechanistic account of performance variability, Depertment of Exercise and Sport Sciences, Universty of Florida, USA.

Cox, H.R., 1990, Sport Psychology Concepts and Applications, Brown Publishers, ss.212,USA.

Doğan, T., Çoban, A.E., 2009, "Eğitim Fakültesi Öğrencilerinin Öğretmenlik Mesleğine Yönelik Tutumları ile Kaygı Düzeyleri Arasındaki İlişkinin İncelenmesi", Eğitim ve Bilim, Cilt 34, Sayı 153, ss.157-168.

Dursun, S., Aytaç, S., 2009, Üniversite Öğrencileri Arasında İşsizlik Kaygısı, Uludağ Üniversitesi İktisadi ve idari Bilimler Dergisi,Cilt:28, s.1, s.s.75.

Geçtan, E., 1999, İnsan Olmak. 20. Basım, Remzi Kitabevi. İstanbul.

Gümüş, M., 2002, Profesyonel Futbol Takımlarında Puan Sıralamasına Göre Durumluk Kaygı Düzeylerinin İncelenmesi, Yüksek Lisans Tezi, Sakarya Üniversitesi Sosyal Bilimler Enstitüsü, Sakarya.

Genç, H., 2008, "Gazi Üniversitesi Gazi Eğitim Fakültesi Güzel Sanatlar Eğitimi Bölümü Resim-İş Eğitimi Anabilim Dalı Öğrencilerinin Kaygı Düzeyleri Üzerine Bir Durum Çalışması", Yayınlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Ghaderi, A.R., Venkatesh Kumar, G., Sampath, K., 2009, "Depression, Anxiety and Stress among the Indian and Iranian Students", Journal of the Indian Academy of Applied Psychology, January 2009, Vol. 35, No.1, pp. 33-37.

Jeffry, R.S., 2003, Use and abuse of academic examinations in stress research, Psychosomatic Medicine, 65, pp.1055–1057.

Kapikiran, Ş., 2002, Üniversite öğrencilerinin sınav kaygısının bazı psiko-sosyal değişkenlerle ilişkisi üzerine bir inceleme, Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, Sayı:11, s:34-43.

Köknel, Ö., 1988, Zorlanan İnsan, 2. basım, Altın Kitaplar Yayınları, İstanbul.

Matthew, A.P., Harwood, C., 2006, The performance environment of the England youth soccer teams, School pf sport and exercises sciences, Loughborough Universty, UK.

Shoen Ferld, R.R., 1993, Dimensions anxety and their effects on an aspect of the performance

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

process comıssions of the menter arousal, Universty of Sundiago, USA.
Ocaktan, E.M., Keklik, A., ÇÖL, M., 2002, Abidinpaşa Sağlık Grup Başkanlığı'na Bağlı Sağlık Ocaklarında Çalışan Sağlık Personelinde Spıelberger Durumluk ve Sürekli Kaygı Düzeyi,Ankara Üniversitesi Tıp Fakültesi Dergisi,C.55,S.1,ss.21-28.Ankara
Öner, N., Le Compte, A., 1983, Durumluk-Sürekli Kaygı Envanteri El Kitabı, Boğaziçi Üniversitesi Matbaası, 1 Baskı, İstanbul.
Özgür, G., 1984, Ege Üniversitesi birinci sınıf öğrencilerin klinik uygulaması kaygı düzeylerin incelenmesi, Ege Üniversitesi Sağlık Bilimleri Enstitüsü yüksek lisans tezi, İzmir.
Schneier, F.R. et al., 1992, Social phobia: comorbidity and morbidty in an epidemiologic sample. Arch Gen Psychiatry, 49:282-288.
Şahin, C., 2009, "Eğitim Fakültesinde Öğrenim Gören Öğrencilerin Umutsuzluk Düzeyleri", Selçuk Üniversitesi, Ahmet Keleşoğlu Eğitim Fakültesi Dergisi, Sayı:27, ss.271-286.
Tümerdem, R., 2007, "Dicle Üniversitesi Eğitim Fakültesi ve Fen-Edebiyat Fakültesi Kimya Son Sınıf Öğrencilerinin Kaygılarını Etkileyen Etmenler" Elektronik Sosyal Bilimler Dergisi, ISSN:1304-0278 Bahar-2007 C.6 S.20 (32-45). www.e-sosder.com.
Üngüren, E., 2007, "Lise ve Üniversitelerde Turizm Eğitimi Alan Öğrencilerin Umutsuzluk ve Kaygı Düzeylerinin Çeşitli Değişkenler Açısından Değerlendirilmesi: Antalya'da Bir Uygulama", Yayınlanmamış Yüksek Lisans Tezi, Akdeniz Üniversitesi Sosyal Bilimleri Enstitüsü, Antalya.
Zeng H.Z., Leung, R.W., Liu, W., 2008, An examination of competitive anxiety and self-confidence among college varsity athletes, Journal of Physical Education & Recreation, Vol.14 No.2, pp: 6-12.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 454-460

THE EFFECT OF CONSERVATOR APPROACHES OF FAMİLİES FOR THE CHİLD ON PSYCHO-MOTOR DEVELOPMENT İN PRİMARY EDUCATİON

ERDAL DEMİRCİ[1], NEVZAT DEMİRCİ[2], ALİ OSMAN ENGİN[3]

Abstract
Purpose. In this study it was aimed if the conservator approaches of the families for their children effect the psycho-motor development of the children in primary education.
Methods. A questionnaire called "How Do We Grow up Our Children" was applied as a data collectind instruman. The questionnaire was applied to the different scio-economical positioned /leveled 40 parents having children in primary education and being reluctent to participate in this study in Kars city. The data handed were analysed by using suitable statistical techniques in accordance with the study. The credibility and relaibility analyses of the data collecting tool was studied on and the internal consistency coefficient of it was found to be 83.
Results. A delay in psycho-motor (gross and fine motor; the activities done by gross and fine muscles) activity development of the children having conservator families was found out.
Conclusion:.As a result, it was found out that the manner of the consevator families, thought to be one of the factors affects gaining the developmental abilities in this critical pariod, about their children effect the psycho-motor development level of the children positively in primary education.
Key words: Preschool, Conservator Parents, Psycho-motor Development.

Introduction

Healthy growth and development of a child depends on the positive, consistent and loving attitude of the family members from birth. For the child, family is the environment where he or she gets his or her first and important social experiences (Wechselberg ve Puyn,1993, Çıkrıkçı, 1999, Yörükoğlu, 2000). For this reason, unlike other beings, people need environment to develop and mature the abilities they have from birth; they seek constant support from the beginning of their development. Consequently, development of people follow the processes of biological maturation, cognitive development and social and emotional development dependent on socialization (Kağıtçıbaşı, 2007). Children, whom are the future assurance and the youngest member of society, grow in healthy family relations. It is affected; however, by the attitudes of parents, who are responsible for taking care of the child, their own personality and demographic attitudes or traits of children. If children are wanted to be capable individuals mentally and socially; flexible,

[1]Kafkas University College of Physical Education and Sport Türkiye/ Kars, TURKEY
[2]Kafkas University Faculty of Education Department of Special Education, Kars, TURKEY
[3]Kafkas University Faculty of Education Department of Educational Sciences, Kars, TURKEY
Email: erdaldemirci44@hotmail.com

tolerant and not pressuring parents are needed. Pressuring, too tolerant or not caring parents result in not disciplined behavior in children. Parents should first know the rules of development in children, become adults that can give suitable answers to their chidren's needs (Nelsen and Glenn, 2002).

Psychomotor development observes changes starting from prenatal stage and continuing for life in terms of behavior related to movement. Understanding this stage, knowing the factors influencing it, understanding the rules and seeing its interaction with other aspects of development is possible (Özmert, 2005). The stage involving the first six years of a child is very important as it is the time when their development is at their fastest, and when their character starts to take shape, important basic habits are easily earned. Basic habits earned to child in this stage will in time and repetition become earned behavior. These basic habits earned are influental in providing adaptation to natural and social environment. Once these habits are earned, they continue to exist for a lifetime (Demiriz ve Dinçer, 2001). Consequently, each child is born with different biological traits. Enviromental factors and parental attitude shape their characters. Children who are brought up with their individual attitudes turn up to be self confident individuals. Parents' attitudes should complete each other and not conflict, not causing too much pressure or too much freedom for children (Seçkin ve Kayan, 1993).Overprotective approach is mostly observed in mother-child relations. Overprotective mothers don't trust their child too much and in turn not let them succeed in things on his or her own as an individual. In overprotective approach, children expect support from their parents in activities ranging from their self maintance to social relationships. They become individuals whose self confidence is less developed, having difficulty in socializing with other people, not being able to solve their problems. In certain situations, they may be individuals acting abnormally in certain situations. Overprotective approach affects every aspect of child's personal development (psycho-social) negatively (Argun, 1995). The attitudes of parents who raise their children as an individual in society; is very important for the children to develop desired behavior. Suck attitudes result from the demographic aspects of the family and many other factors, and they can change. Attitudes parents show in family life are determinent in the child's future life in many aspects. For this reason, parents should review their attitudes while raising children and should choose the best one for their children's future (Akça, 2012). In this research, whether overprotective approach affects psychomotor development of a child in preschool 5-6 years of age, which is thought to be a critical stage in life.

Materıals and Approach

Forty parents (both mothers and fathers) of pre-school children were included into the research through a selection of random sampling from the five of the nursery schools that provide pre-school education with different socio-economic standards in the province of Kars. As a means of data collection, the questionnaire with the name of *how are you bringing up your child* was applied. After giving the information about the survey, the survey was carried out and the questionnaires were filled out by the participants within twenty minutes. For the analysis of the survey data, frequencies and percentages were taken into consideration. The questionnaire consists of 26 entries and it is evaluated through three different stages namely: the stage that your child starts crawling, the time period that your child is crawling and the time span that your child starts walking. Reliability and validity analyses of the survey were made in the research and Cronbach's Alpha internal consistency parameter was defined as 83. In the statistical evaluation of the obtained data, the package program of SPSS 17.0 was used.

Fındıngs and Commentary

The findings resulting from the research and given answers are interpreted in terms of percentage and frequency distrubituon. The occupations of parents are shown in Table 1.

Table 1: Distribution of Parents in Terms of Occupation in this Research

Mother's Occ.	Father's Occ.	Mother's frequency	percentage	Father's frequency	percentage
Housewife	**Self employed**	**18**	**%45**	**7**	**%17.5**
Officer	**Officer**	**8**	**%20**	**6**	**%15**
Teacher	**Police**	**10**	**%25**	**7**	**%17.5**
Academic Lecturer	**Soldier**	**2**	**%5**	**7**	**%17.5**
Judge	**Teacher**	**2**	**%5**	**5**	**%12.5**
	Academic Lecturer			**6**	**%15**
	Prosecutor			**2**	**%5**

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

45% of mothers whom answered the questionnaire are housewives, 20% of them officers, 25% are teachers, 5% are academic lecturers and 5% are judges. Majority of participating mothers are housewives As it can be seen, 17.5 %of fathers whom answered the questionnaire are self employed, 15% are officers, 17.5%are police, 17.5%are soldiers, 12.5%are teachers, 15% academic lecturers and 5% of them are prosecutors. Consequently, majority of fathers are highly educated. The education level of the parents in this research are shown in Table 2

Table 2: The Education Level of Parents in the Research

Education Level of Parents	Mother's Frequency	Percentage	Father's Frequency	Percentage
Can't read or write	**-**	**-**	**-**	**-**
Primary School	**8**	**%20**	**4**	**%10**
Secondary School	**4**	**%10**	**1**	**%2.5**
Highschool	**7**	**%17.5**	**8**	**%20**
University	**21**	**%52.5**	**27**	**%67.5**

On the other hand, there is no uneducated family in this research. Percentage of primary school graduates are 10% (for fathers) and 20% (for mothers). Secondary school graduate fathers are 2.5%, and mothers are 10%. High school graduate fathers are 20%, and mothers are 17.5%. University graduate fathers are 67.5%, and mothers are 52.5%. It is determined that the education level of mothers are lower than the education level of fathers. It can be seen that majority of the parents participating in research are highly educated. The model child gets in order to develop a healthy character is dependent on parents education level. A child that takes his or her parents as an example will learn the desired and undesired behavior from them and continue to grow in that direction. The findings of parents with regards to the period until crawling are shown in Table 3.

To the question whether father holds the child if the mother is in the kitchen is responded with majority of families as 47.5%generally. It is determined that most of the families hinder the motor development of their children by holding them on their lap. While whether the child is held on the lap regardless of the fact that he/she cries or not is responded as %40 rarely, we don't take him/her on our lap unless he/she is crying is responded as 30% generally, 27.5 %rarely and 20% as never. Usually a relative living with us holds the child is responded as 52.5%never.

Wrong attitude by parents, damaged family structure can be the main reason for unhealthy development and disagreements. Sometimes, by giving too much, the parents hinder the development of child on his or her own. Sometimes, by giving too little, parents can't provide the necessary support and it can result in wrong behaviors (Gençtan, 1993).

Table 3: Frequency and Percentage Table of the PerioUntil the child Starts Crawling

Points	Always		Generally		Sometimes		Rarely		Never		Total	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
1. If mother is working in kitchen, the father holds the child	3	7.5	9	22.5	19	47.5	7	17.5	2	5	40	100.0
2. Whether the child cries or not, we held him/her on our lap	2	5.0	7	17.5	8	20.0	16	40.0	7	17.5	40	100.0
3. We don't hold our child on our lap unless he/she is crying	1	2.5	12	30.0	8	20.0	11	27.5	8	20.0	40	100.0
4. Usually a relative living with us holds the child on his/her lap	-	-	3	7.5	8	20.0	8	20.0	21	52.5	40	100.0

For this reason, the experience of parents, ages, characteristics, relationship to one another, expectations from their children; the child's age, gender, characteristics, birth (Tola, 2003), parents' attitudes towards childraising affect children's development in positive or negative way (Haktanır, 1994). Not only parents attitude shape the behavior of children, they have an effect on their future behavior. The most commonly encountered parent approaches are categorized as overprotective, overtolerant, pressuring and overbearing, unbalanced and undecisive, uninterested and democratic. The

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

frequency and percentage of parents with regards to the period of crawling are shown in Table 4.

Table 4: The frequency and percentage with Regards to the Period of the Child's Crawling

Points	Always		Generally		Sometimes		Rarely		Never		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
1.Did you re-organize the furniture after your child started crawling?	5	12.5	10	25	2	5	5	12.5	18	45	40	100.0
2. We generally held the child on our lap so that he or she doesn't break anything	2	5	-	-	4	10	11	27.5	23	57.5	40	100.0
3. We generally held the child on our lap so he or she doesn't hurt himself or herself	2	5	4	10	12	30	8	20	14	35	40	100.0
4. Generally he or she crawled around, we took him or her to our lap upon crying	3	7.5	12	30	10	25	8	20	7	17.5	40	100.0
5.We didn't care much, thinking he or she will learn by crying, falling and getting up	1	2.5	8	20	8	20	11	27.5	12	30	40	100.0
6. The child should be free at home	14	35	17	42.5	6	15	3	7.5	-	-	40	100.0

Upon the question 'Did you re-organize the furniture after your child started crawling?' considering the parents that participated to the survey, 25% of them stated 'generally', and the majority of 45% said 'never'. At the same time, the questions relating to cuddling the child in order to prevent him / her from breaking anything were answered by the 27,5 %of the parents as 'rarely' and by 57,5%of the parents as 'never'. The questions on hugging the child in order to protect her against falling were replied by 30%of the parents as 'sometimes',20 % of them as 'rarely' and 35% of the parents replied as 'never'. Also, upon the item that stating 'the child generally crawled around and we cuddled him / her when he / she cried': 30% of the parents said 'generally' and 25% of them said 'sometimes'. A child who grows up under the over-protection of the family can have a personality that is shy, susceptible to the influence of others and vulnerable. As a result of over-protection of the parents and more control and more care of them comparing to what a child needs, the child grows up as a person dependent on other people without any self-confidence and with a lack of proper psychomotor development. For the item mentioning 'since a child would grow up by crying and stumbling we did not care about',27,5%of the families declared 'rarely' and30% of them declared 'never'; whereas upon the item 'a child should be free in family environment' 35% of the families affirmed with the answer of 'always' and 42,5%of them affirmed with 'generally'. Therefore, over-protective attitude of the families is a common characteristic observed generally in families with a single child or families wihout any other children. The families who have more control over their children and over-cares of them in fact hinder the motor development of the child and prevents the child from developing it, that is why self-defence skills of the child cannot develop. In the children who were brought up with this kind of attitude, over-dependence on other people, frustration, distrust and rebellious behavior can be observed (Akca, 2012). Findings of many researches about child development and education designate that the years between 0-6 ages known as a pre-school stage or early childhood are the most significant and critical period of human life. It is emphasized that physical, emotional, social, mental development and learning are rapid during these years. In addition to that, it is claimed that the attitudes and behaviors that are acquired during this stage have a permanent effect and it is quite difficult to make a change in them in the following years (Tatlı et al. 2012, Cagdas and Secer, 2006: 50). Taking into account the fact that the interaction is mainly with the family during these ages, it is clear that the most important component in the embodiment of a child's character is the members of the family. The frequency and percentage values about the parents who participated in the survey on the time span when the child starts walking is designated on Table No.5.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 5: Frequency and Percentage Values for the period of Children Starting to Walk

Points	Always		Generally		Some times		Rarely		Never		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
1. We control the child so that he or she doesn't fall	12	30	22	55	2	5	2	5	2	5	40	100.0
2. We help immediately when he or she falls	10	25	14	35	12	30	2	5	2	5	40	100.0
3. We help with regards to the degree of fall	8	20	26	65	4	10	-	-	2	5	40	100.0
4. We don't mind, thinking the child will learn by falling and getting up	-	-	6	15	8	20	15	37.5	11	27.5	40	100.0
5.When our child started to walk, we always took him/her on our lap while going upstairs or downstairs	9	22.5	7	17.5	15	37.5	5	12.5	4	10	40	100.0
6. We helped with going upstairs and downstairs	14	35	16	40	5	12.5	4	10	1	2.5	40	100.0
7. Do you send your child out for playing?	3	7.5	16	40	8	20	9	22.5	4	10	40	100.0
8. The child can play outside with parental supervision	12	30	19	47.5	8	20	1	2.5	-	-	40	100.0
9.The child plays outside with supervision of an older brother, sister or an older relative	17	17.5	8	20	13	32.5	4	10	8	20	40	100.0
10. Do you send your child alone to the store?	1	2.5	2	5	10	25	6	15	21	52.5	40	100.0
11. Does your child go to preschool on his or her own?	3	7.5	1	2.5	-	-	3	7.5	33	82.5	40	100.0
12. Does your child tidy his or her room and toys?	7	17.5	9	22.5	18	45	5	12.5	1	2.5	40	100.0
13. Do you limit the way your child plays at home?	2	5	10	25	9	22.5	13	32.5	6	15	40	100.0
14. Do you let your child scatter his or her own toys around the house?	10	25	10	25	11	27.5	5	12.5	4	10	40	100.0
15. I let them scatter their toys with the condition that they will tidy them up themselves	12	30	14	35	10	25	2	5	2	5	40	100.0
16.Do parents play with the child?	8	20	14	35	13	32.5	5	12.5	-	-	40	100.0

As it is seen on Table No. 5, the questions related to 'whether you hold your child under control in order to prevent the child fall' were answered as 'generally' by 55% of the parents. The question 'whether they help immediately after the child's falling' is answered by 35% of the families as 'generally' and 30% of them as 'sometimes'. In that respect, it is observed that nearly all the families have a protective attitude toward the fall of a child. The parents who adopted an over-protective attitude toward their children present a hinderance to the motor development by interfering what their children do. Upon the item stating 'the families would help according to the severity of the child's falling', 65% of the families said 'generally'; 37,5%of the families stating that 'children grow up by stumbling and there is no need to worry' said 'rarely' and %27,5of them said 'never'. The question 'whether they carried their child while walking up and down the stairs when your child started walking' was responded by 22,5%of the families as 'always', by 37,5% of them as 'sometimes' while %35 of the families said that they 'always' helped the child walk up and down and 40% of them 'generally' helped the child. While the question of 'Do you allow your child to play outside?' was replied by 40% of the families as 'generally', 20% of them as 'sometimes' and 22,5%of the families replied as

'rarely'; the question 'whether the children play outside under the control of their mother or fathers' was replied by 30% of the families as 'always', and by a majority of 47,5%the families as 'generally'. 'Does your children play outside under the control of an elder such as a sister or a brother?' question was answered by 20% of the families as 'generally', and 32,5%as 'sometimes'; whereas the question 'whether the children are sent to the grocery store by themselves' was responsed by 52,5%of the parents as 'never'. At the same time, while the question 'Is your child able to go to school and come back home by his/her own?' is replied by the majority of the families –namely82,5 %as 'never'; the question 'can your child tidy his / her own room?' is answered by 45% of them as 'sometimes'. This circumstance is closely related to rendering the environment in order to achieve adopting positive character traits and motor skills such as the learning environment that the family ensures to their children, a sense of responsibility, the ability to do something on their own.

Dıscussıon

On the other hand, the question of 'do you limit the way your children play at home?' is answered with generally by 25%, sometimes by 22.5%, rarely by 32.5%. The question whether you let your child scatter his or her own toys is answered as always by25%, generally by 25%, sometimes by 27.5%of the families; whereas 'do you let your child scatter his or her toys with the condition of them tidying up?' is responded as always by 30%, generally by 35%, sometimes by 25% of the families. The sense of responsibility in preschool period should be earned to child from early ages and gradually onwards. The parents should set example with their behavior. Overbearing, inconsistent, overtolerant, uncaring, overprotective family models do not earn responsibility to the child. Only democratic family model is ideal for learning responsibility (Tuzcuoğlu 2007). Therefore, overprotective parents always interfere with their children. In this model, along with love, behavior limiting freedom and potential of the child is presented. Parents overprotect and control their children. Most of the things children can do are done by parents, thus the possibility of children living and learning is limited. By interfering more than necessary in every aspect, the parents prevent children from being self sufficent or self confident. In this way, children who can't decide for themselves and are dependent are brought up (Sezer 2010).

In this research, whether the overprotective approach is influential in children's psychomotor development is researched in preschool period children of 5-6 age, which is accepted as a critical period in life. According to the results, it is deducted for the period until the children start to crawl, when they start to crawl and when they start to walk, the majority of parents display overprotective behavior. As a result of the overprotective approach of parents, the children's development may be hindered and the child may not earn self confidence. What can be done by children being done by parents or others for the purpose of protecting them can result in psychomotor development disturbance or feeling of failure.

Conclusıon

Even if it seems that everything is okay with the child, being overprotective actually effects them negatively and the child will encounter difficulties later in life. No parent can guarantee to be with the child for a lifetime. For this reason, one should always raise a child self sufficently. Being parents does not mean creating a child dependent on you. Consequently, the shape of relationship between parents and the child is very important in preschool period when the development is very fast and enviromental stimulants are constantly increasing and changing. Parents should realize the development needs of their children and they need certain guidelines for having good communication with their children. Parents learning about their children's developmental needs and efficient communication techniques is an important step for providing them a suitable environment instead of being overprotective. Parents that are positive role models for children should never forget that they carry the responsibility of raising an individual for the society.

References

Akça, R. P., 2012, Parents Being Overprotective in Raising Children, Akademik Bakış Magazine Number: 29 March – April 2012 International Hakemli Social Sciences E- Magazine, P. 1-3.

Argun, Y., 1995, Effects of the Attitudes of Parents in Child Raising on Secondary School Students'Supervision Focus, Published Masters Thesis, Dokuz Eylül University Social Sciences Institute, İzmir.

Çağdaş, A. Ve Seçer, Z., 2006, Parents' Education, (2. Edition), Ankara: Kök Publishing.

Çikrikçi, S.,1999, Researching on 5-6 year old children's School Maturity Continuing Pre-School in Official Bank Pre-schools in Central Ankara and Family Attitudes, Published Masters Thesis, Gazi University Social Sciences Institute, Ankara.

Demiriz, S. Ve Dinçer Ç.,2000, Researching self sufficency Skills of Pre-School Childrenin

Terms of their Mother's Work Situation, Hacettepe University Education Faculty Magazine.

Gençtan, E., 1993, Modern Life and Abnormal Behavior, İstanbul, Remzi Kitap Evi.

Haktanır G., 1994, Importance of School and Family in Children's Mental Health. Preschool Magazine, 26 (47); 9–14.

Nelsen, J., Lott L., Glenn S., 2002, Positive Discipline in Children's Education from A to Z, Trans. Murat Ersin, Hayat Publishing, İstanbul.

Özmert, E.N., 2005, Supporting Early Child Development II, Children Health and Illnesses Magazine; 48: 337-354.

Seçkin, N., Ve Kayan Ü., 1993, Family Structure.Eskişehir Anadolu University Open Education Faculty.

Sezer Ö., 2010, Self realization of Adolescents Related to Parent Attitutes and Certain Other Factors, Yüzüncü Yıl University, Education Faculty Magazine.. Cilt:VI1, Number:I, 1-19.

Tatlı, S., Selimoğlu H. Ve Bademci D., 2012, Researching Mothers' Family Life and ChildRaising Attitudes Whose Children Contiune Preschool Education, Bingöl University Social Sciences Institute Magazine Year: 2/ Cilt: 2/ Number: 3.

Tola, D., 2003, Researching Correlation Ethical Judgement and Parents' Attiutde Unpublished Masters Thesis. Hacettepe University.p123, Ankara.

Tuzcuoğlu N., 2007, Being a Family. Golden Rules of being Parents. 4. Baskı.,MorpaPublishing. İstanbul.

Wechselberg, K., Puyn U., 1993, Mother and Child, Çev. Erdoğan Kınalıb, Remzi Publishing, İstanbul.

Yavuzer, H., 1993, Mother-Father and Child. İstanbul. Revuzi Publishing.

Yörükoğlu, A., 2000, Family and Child in Changing Society, Özgür Publishing, İstanbul.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 460-465

CONDITIONAL MOTOR CAPACITY - RESISTANCE AT PUPILS OF 13-14 AGES DURING THE PHYSICAL EDUCATION LESSON

FINICHIU MARIN[1]

Abstract

At the secondaryschool cycle, general motor ability of pupilsis in a continuous progress providing conditional motor capacity (speed, strength and endurance) and intermediate capacity and coordination development. Growth and physical development of the body at this age is in constant development that needs to be known in order to select the most effective ways and methods that can help the harmonious physical development, the favorable influence of health and stimulation of the intellectual activity.

Purpose. The realized research had as purpose the selection of the most efficient and attractive methods and means in order to improve the manifestation level of the conditional capacity - resistance.

Materials and methods. Physical education lessons conducted in the two elementary schools in Prahova County, consisted of the application of methods and means included in the school curriculum. The collected data from measurement and evaluation of the conditional expression capacity - resistance have been processed, analyzed and interpreted using research methods and research techniques as statistical and mathematical methods and graphical method and proper investigation methods (observation, experiment).

Results. Recognizing the development way of the research in both schools we saw a spirit of competition which eventually resulted in improving the expression of conditional capacity - resistance.

Conclusions. The calculus of the statistical indicators of the motor performances at the level of conditional capacity - resistance, after the final testing, for the sample under investigation, presents us with a significant increase of the arithmetic means of the motor performance, that are near the norm value for the mark 9, according to the National Evaluation System for the pupils for 7th grade. The progress of the recorded results by the boys from the rural environment and the girls from the urban area is more obvious than the ones of the boys from the urban area and the girls from the rural one. Designing and planning the scholar physical education activities allow reaching the instructive - educational targets of the secondary school physical education system and of forming the habit to independent practice physical exercise. Making this ascertainingstudy confirms the research hypothesis, in the sense of educating the conditional capacity - resistance, in relation with the manifestation level of the individual motor capacities/qualities.

[1]University Motor and Sport Activities Department, Petroleum and Gas University of Ploiesti, ROMANIA
E-mail: finichiu1@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Respecting the instructive - educational process of the age and gender characteristics, of the geographical environment, allows the fulfillment of the educational purposes by completing and adapting the analytical curriculum according to the physical education domain. The preparation and organization of physical education lessons should take into account the number of children, the numeric report between girls and boys, the health state, level of physical development, the physical differences, the place where physical education is held in the daily class schedule, working conditions, the material equipment of the school.
Key words: motor capacity, resistance, pupil, lesson.

Introduction

The systematic investigation of the instructive - educational process imposed the belief that the instructional design represents the sine qua non condition to ensure the effectiveness of the process and the essential element of any educational technology [Cârstea, 1993]. The conditional motor capacity resistance is situated in the group of the capacities directly dependent on general motor ability, based on the metabolic efficiency of muscle and other apparatus and systems (cardiovascular, respiratory, nervous system). The manifestation of the general motor ability is subject to the actual amount of energy in the muscles, of the devices that control the energetic wave (enzymes), speed, force of contraction and the number of motor units engaged in action [Mitra, Mogoş, 1980]. Resistance represents the individual's possibility to make an effort with a certain intensity, in a longer time as possible without the installation of fatigue [Demeter, 1979].

Running over long distances have as purpose the development of the general motor capacity – physical condition, general resistance or cardio-respiratory. In order to obtain certain high effect for this component of the general motor capacity, of the physical condition, physical exercises are made with the intensity of high or moderate effort (effort is aerobe and is developed in the conditions of the relative equilibrium between the need of $O_2$and the input for O_2 - steady state), higher working time (15-20 minutes) that have as effect the progressive and slow increase of the cardiac frequency [Barbu, Stoica, 2000]. Due to the high energy consumption and of the apparition of fatigue, exercises through which resistance is developed, during the physical education lesson, are realized after the accomplishment of the other lesson homework, so at the end of the fundamental part [Finichiu, 2010].

Physical exercises present the following characteristics for the development of the resistance: the motor structure must be well know and acknowledged; the duration, the number of exercises (volume) must contribute to the apparition of fatigue (the volume will have values medium and high); the tempo for the accomplishment of the exercises (the effort's intensity) will be moderate; the breaks between the repetitions must not assure a total recovery of the effort capacity, fact that can be seen by checking the pulse and the respiratory frequency that do not come back at their normal values from resting; the factors of progression for the improvement of the effort capacity are the effort's duration and break'sduration (their shortening) between the series.

The conditional motor capacity - resistance is a motor capacity/quality slightly perfectible, as a consequence on the continuous and systematic practice of certain specific exercises that can be kept at a reached value for a long period of time. Resistance is the perfectible motor capacity that is kept for a long period of time. Establishing the research objectives helps us to determine if:

a program of methods and specific means used in the physical education can contribute to the development of cardio-respiratory resistance and of the local resistance.

establishing the research's conclusions highlights the relations between the study background and the sense of practical activity.

Research hypotheses

The perception of the level of expression of conditional capacity - resistance may contribute to the selection of methods and means used in physical education lesson.

The value and potential of the training process can be improved if the instructive-educational process is directed towards achieving the objectives, the content, strategy and assessment of the motor and functional parameters specific to the educationcycle.

Research procedures and methods

The research was conducted during the instructive-educational process at a primary school in the urban environment (39 students - 22 girls and 17 boys) and a primary school in the rural environment, Prahova County (21 students - 9 girls and 12 boys) and comprised 60 students from the 7th grade, aged between 13 and 14, in the school year 2011-2012.

The assessment of the effectiveness of methods and means used in the lesson was achieved after the second test - May 2012. Conditional motor resistance capacity development in physical education lesson was created using the run with intervals used for the development of resistance in mixed regime (alternating running

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

effort with rest intervals), the repeated running method characterized by a high working duration and the method duration running whose characteristic is running without breaks, uniform or varied tempo, high duration, all adapted to the training level of students [Merică, 1969].

Testing consisted in applying the tasks from the national evaluation system at this age level: running on a 800 m distance - girls and 1000 m boys. For the good development of the experiment there were used proper investigation methods which includes - the observation method, the measurements and recordings method, the experimental method and methods to process and interpret the collected data - statistical mathematical method and the graphic one.

Research results and their interpretation

Knowing very good the different phenomena studied in this paper, observing their general tendencies, but also the concentrated reflection, expressive of the phenomena involved, it was realized through the use of the statistical-mathematical method, this proving to be a real help.

By using this method we could make a more precise picture of the polyvalent phenomena that are related to the development of the conditional motor capacity - resistance.

The statistical processing was based on calculating the following indicators [Dragnea, 1984]:arithmetic mean (X is the central tendency of values), median (M, the position that divides in two equal parts the string of data), the superior limit (X_{max}, the superior value of the string), the inferior limit (X_{min}, the inferior value of the string), amplitude (W, the difference between the maximum and minimum values), the standard deviation (S, represents the dispersion indicator, of the scattering level of the values) and the variability coefficient (Cv%, the degree of homogeneity of the results from the research sample).

Results

Table 1. Calculated statistical indicators - resistance run on a 1000 m distance

Boys subjects, n=29

Statistical Indicators	October testing 2011							May testing 2012						
	X	**S**	**Cv%**	**M**	**X_{max}**	**X_{min}**	**W**	**X**	**S**	**Cv%**	**M**	**X_{max}**	**X_{min}**	**W**
Boys 1000 m	**4,41**	2,65	22,12	4,52	4,28	5,03	0,35	**4,36**	2,88	23,42	4,50	4,25	4,58	0,33
Urban Boys	**4,43**	2,91	22,43	4,51	4,31	5,05	0,34	**4,38**	2,92	23,53	4,48	4,31	5,05	0,34
Rural Boys	**4,38**	2,45	21,75	4,56	4,28	5,02	0,36	**4,35**	2,85	22,98	4,45	4,25	4,58	0,36

n, number of boys subjects; X, the central tendency of values; S, the standard deviation, represents the dispersion indicator, of the scattering level of the values; Cv%, the variability coefficient, the degree of homogeneity of the results from the research sample; M, median the position that divides in two equal parts the string of data; X_{max}, the superior value of the string; X_{min}, the inferior value of the string; W, amplitude, the difference between the maximum and minimum values.

Table 2. Calculated statistical indicators - resistance run on a 800 m distance

Girls subjects, n=31

Statistical Indicators	October testing 2011							May testing 2012						
	X	**S**	**Cv%**	**M**	**X_{max}**	**X_{min}**	**W**	**X**	**S**	**Cv%**	**M**	**X_{max}**	**X_{min}**	**W**
Girls 800m	**4,35**	4,11	19,34	4,45	4,19	5,12	0,53	**4,31**	4,89	20,44	4,40	4,20	5,09	0,49
Urban Girls	**4,34**	4,32	18,74	4,44	4,19	5,09	0,50	**4,30**	5,09	20,46	4,40	4,20	5,09	0,49
Rural Girls	**4,36**	4,07	19,75	4,49	4,22	5,12	5,12	**4,33**	4,76	20,26	4,46	4,27	5,07	0,40

n, number of girls subjects; X, the central tendency of values; S, the standard deviation, represents the dispersion indicator, of the scattering level of the values; Cv%, the variability coefficient, the degree of homogeneity of the results from the research sample; M, median the position that divides in two equal parts the string of data; X_{max}, the superior value of the string; X_{min}, the inferior value of the string; W, amplitude, the difference between the maximum and minimum values.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 3. The National Evaluation System for the 7th grade

Note	5	6	7	8	9	10
Boys	4'55"	4'50"	4'45"	4'40"	4'35"	4'30"
Girls	4'55"	4'50"	4'45"	4'40"	4'30"	4'20"

' = minute; " = secunde.

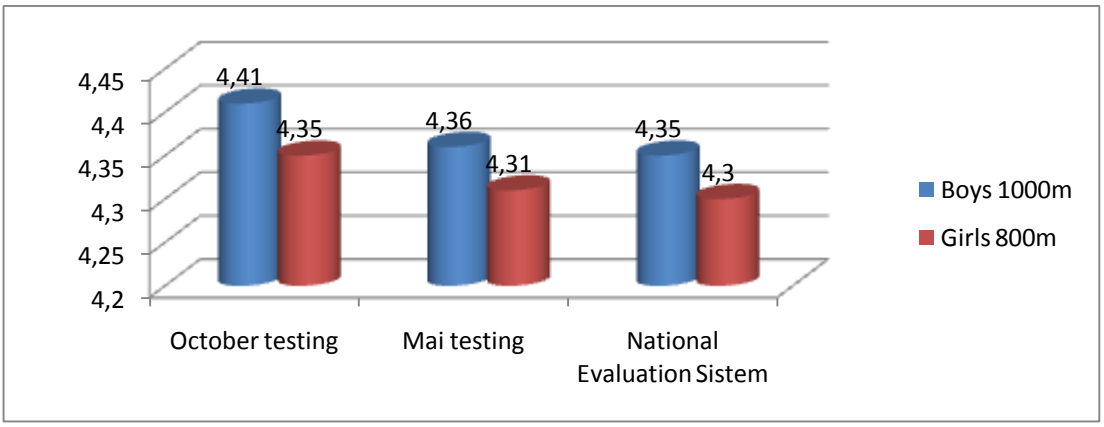


Figure 1. Graphical representation of arithmetic values compared to the National Evaluation System for note 9

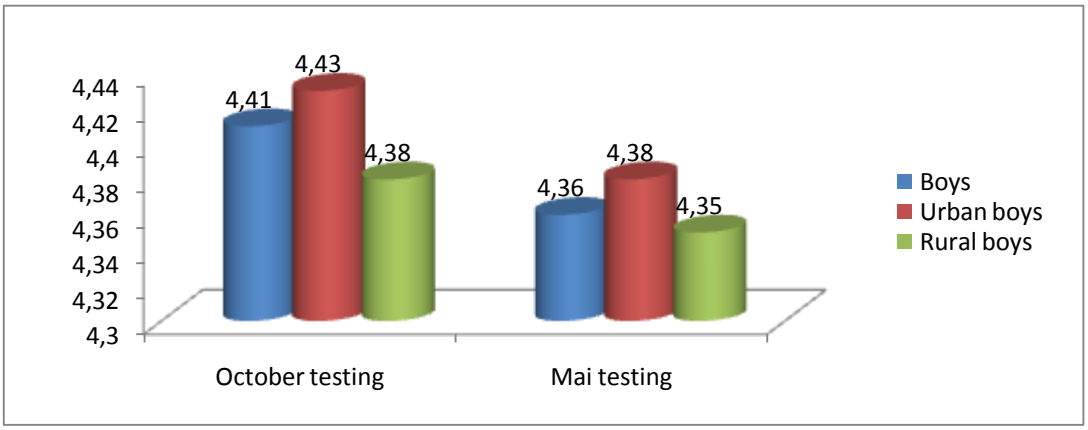


Figure 2. Graphical representation of arithmetic values for boys - resistance run on a 1000 m distance

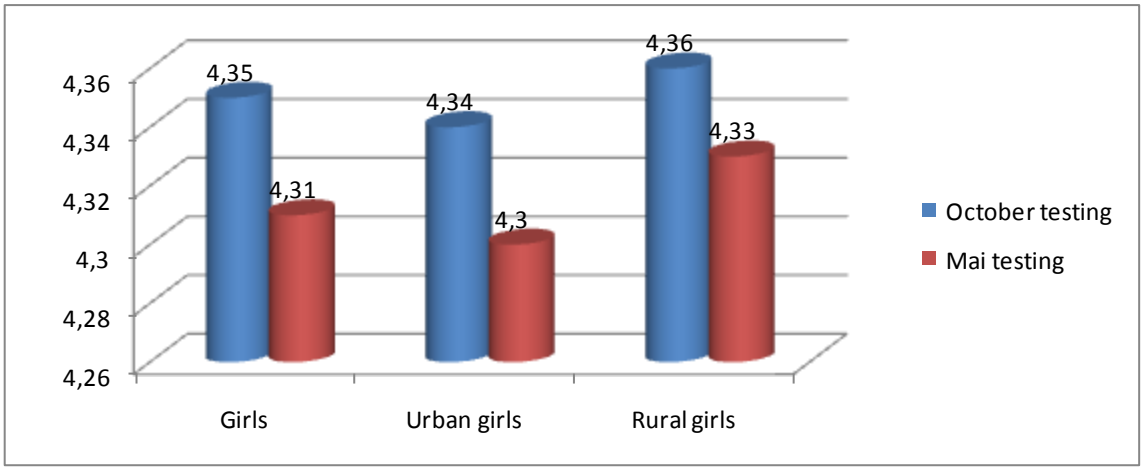


Figure 3. Graphical representation of arithmetic values for girls - resistance run on a 800 m distance

Discussions

Knowing very good the different phenomena studied in this paper, observing their general tendencies, but also the concentrated reflection, expressive of the phenomena involved, it was realized through the use of the statistical-mathematical method, this proving to be a real help. By using this method we could make a more precise picture of the polyvalent phenomena that are related to the development of the conditional motor capacity - resistance. The statistical processing was based on calculating the following indicators [Dragnea, 1984]: arithmetic mean (X is the central tendency of values), median (M, the position that divides in two equal parts the string of data), the superior limit (X_{max}, the superior value of the string), the inferior limit (X_{min}, the inferior value of the string), amplitude (W, the difference between the maximum and minimum values), the standard deviation (S, represents the dispersion indicator, of the scattering level of the values) and the variability coefficient (Cv%, the degree of homogeneity of the results from the research sample).

Boys

Resistance run on a 1000 m distance

By testing the manifestation level of the cardio-respiratory resistance through the duration run on 1000 m boys (Table 1, Figure 2) test, we can make the following interpretations:

The calculated arithmetic mean, after the first testing, is at the level of mark 8, according to the National Evaluation System (Table 3); after the second testing, the arithmetic mean is close to the mark 9. The highest value of the performance from the string of data is over the value of mark 10, both at the first and second testing; the lowest value from the string of data is weaker than the value of mark 5, both at the first and second testing. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a weak homogeneity.These results correspond with, Gheritoiu, (2005), Ivan, (2008), Monea, Popovici, and Monea (2006)results.

- Boys (Table 1, Figure 2) from the urban area recorded an arithmetic mean of 4,43 minutes at the first testing and 4,38 minutes at the second one; both are closer to the mark 8. The highest value of the performance from the string of data is close to the norm for mark 10, both at the first and second testing; the lowest value from the string of data is weaker than the value of mark 5, both at the first and second testing. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a weak homogeneity.
- Boys (Table 1, Figure 2) from the rural area recorded an arithmetic mean of 4,38 minutes at the first testing, placed closer to the mark 8 and 4,35 minutes at the second testing, equal with the performance value for the mark 9. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a weak homogeneity.

Girls

Resistance run on a 800 m distance

Calculating the statistical indicators (Table 2, Figure 3) according to the recorded results at the girls from the research allows us to make the following interpretations:

The calculated arithmetic mean after the first testing is between the performance values of marks 8 and 9, according to the National Evaluation System (Figure 1); after the second testing the arithmetic means is equal with the performance value for the mark 9. The highest value of the performance from the string of data is weaker than the value of mark 5, both at the first and second testing. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a medium homogeneity after the first testing and a weak one after the second testing.These results correspond with, Gheritoiu, (2005), Dumitru, (2006), Ivan, (2008), Monea, Popovici, and Monea (2006)results.

- The girls (Table 2, Figure 3) from the urban area recorded an arithmetic mean of 4,34 minutes at the first testing that is close to the mark 9 and of 4,30 minutes at the second testing, equal with the performance value for mark 10. The highest value of the performance from the string of data is over the value (for the first testing) or equal (for the second testing) with the performance value for mark 10; the lowest value from the string of data is weaker than the value of mark 5, both at the first and second testing. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a medium homogeneity after the first testing and a weak one after the second testing.
- The girls (Table 2, Figure 3) from the rural area recorded an arithmetic mean of 4,36 minutes at the first testing that is close to the mark 8 and of 4,33 minutes at the second testing, equal with the performance value for mark 9. The highest value of the performance from the string of data is close to the norm value for the mark 10 (after the first testing) and after the second one is close to the mark 9; the lowest value from the string of data is weaker than the value of mark 5, both at the first and second testing. Amplitude and standard deviation show a normal distribution of the results. The calculated variability coefficient shows us a sample with a medium homogeneity after the first testing and a weak one after the second testing.

Conclusions

Calculating the statistical indicators of the motor performance at the level of conditional capacity - resistance, after the final testing, for the sample from the research, presents us a significant increase of the arithmetic means of the motor performances that are close to the norm value for the mark 9, according to the National Evaluation System for the 7th grade pupils.

The progress of the recorded results by the boys from the rural area and the girls from the urban area is more obvious than the one of the boys from the urban area and the girls from the rural area.

Respecting the age and gender characteristics in the instructive-educational process, of the geographical environment features, allow to accomplish the educational purposes by completing and adapting the analytical curriculum specific to the physical education.

Planning the physical education activity must be made according to the geographic environment characteristics, with the necessary of material and with the analytical curriculum of the domain.

The preparation and organization of physical education lessons should take into account the number of children, the numeric report between girls and boys, the health state, level of physical development, the physical differences, the place where physical education is held in the daily class schedule, working conditions, the material equipment of the school.

The study confirms the research hypothesis in the purposes of the education of conditional capacity - resistance in relation to the level of expression of individual motor capacity/qualities.

Designing and planning the physical education activity allow reaching the instructive-educational target of the secondary school physical education system and of training the habit of independent practice of physical exercise.

The use of specific means in a relatively low number, simple and practiced in time, contribute to the improvement of the manifestation level of the individual motor capacity, confirming the research hypothesis.

References

Barbu, C., Stoica, M., 2000, Teaching athleticism exercises method during the physical education class, Printech Publishing House, Bucharest.

Cârstea, G., 1993, Planning and programming in the scholar physical education and sport, Universe Publishing House, Bucharest.

Demeter, A., 1979, Physiology and biochemistry of the physical education and sport, Sport – TourismPublishing House, Bucharest.

Dumitru, M., 2006, The place of endurance in second grade school, OvidiusUniversityAnnals, volume VI, Constanta.

Dragnea, A., 1984, Measurement and evaluation in physical education and sport, Sport - Tourism Publishing House, Bucharest.

Finichiu, M., Deacu, M., 2010, Management of physical education and sports lessons, University Publishing House, Bucharest.

Epuran, M., 1982, Physical education psychology, Sport - Tourism Publishing House, Bucharest.

Gheritoiu, D.M., 2005, Schoolphysical capacityfactorin the developmentof students,Studia EducatioArtis Gymnasticae, no. 1, Cluj-Napoca.

Ivan, P., 2008, Study regarding resistence development track and field specific metods inside of physical education lessons for V-VI classes, OvidiusUniversityAnnals, volume VIII, Constanta.

Merică, A., 1969, Athleticism - preparatory exercises and games, CNEFS Publishing House, Bucharest.

Mitra, G., Mogoș A., 1980, School physical education methodology, Sport-Tourism Publishing House, Bucharest.

Monea, D., Popovici, C., Monea C., 2006, Determination resistancejunior15-16 yearsbytests,Studia EducatioArtis Gymnasticae, no. 1, Cluj-Napoca.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 466-471

STUDY CONCERNING THE CONDITIONAL CAPACITY STRENGTH DEVELOPMENT AT THE LEVEL OF 13-14 YEARS OLD STUDENTS DURING THE PHYSICAL EDUCATION CLASS

FINICHIU MARIN[1]

Abstract
Purpose. Muscular strength is defined by domain experts as representing the maximum strength from one repetition that an individual can overcome by a single effort; the muscles are characterized by indices of power and control over the movements made long as possible without causing fatigue, along with mobility and flexibility. The development of muscle strength is in a direct proportional relationship with the musculature mass that can be improved by using exercises such as isometric, isokinetic and isotonic ones. The development of local muscle strength can be achieved by using small loads but with a high number of repetitions, the use of strength exercises requires practicing a rhythmic breathing and a good heating of the muscle groups with which we are working on. Achieving a good physical condition by developing muscle strength, entails: maintaining a normal body weight, an increased functional capacity and the decrease of the risk of bone, muscle and joint injuries. Experts in the field have shown that at the muscles level, burning is more intense, force being the individual's ability, that over the years, looses the least from its value. Physical exercises programs are selected taking into account the growing body transformations and are made in such a way as to contribute to the harmonious development of the body, favorably influencing general health and intellectual activity.
*Methods.*The data collected from assessing the level of conditional capacity - strength, have been processed, analyzed and interpreted using research methods and techniques such as statistical-mathematical and graphical methods and proper investigation methods (observation, experiment).
*Results.*The consistent use of methodical program established for the 57 students had a positive effect on the level of expression of conditional capability strength. After applying this program to evidence contained in the evaluation system - force, there have been increases in their manifestation values, although some have a value slightly above the minimal standard.
Conclusions. Motor performances obtained in the conditional capacity - strength level, allowed us to calculate statistical indicators for the two samples under investigation, from which we can notice a significant increase in arithmetic means compared with the minimal standard from the national evaluation system for gymnasium. Conditional capacity development - strength, at this age, can be achieved through methods and means used in physical education lesson. The physical education lesson is the only way to train physical activity and to improve general motor skills, health education for a healthy lifestyle. General motor ability, through its objectives to improve conditional capabilities, coordination and intermediate contributes to the increase of physical abilities in order to prevent accidents. Fulfilling the instructive - educational objectives of the secondary school physical education subsystem in order to acquire functional independence in life can be achieved through optimal design and planning of the physical education activity.
Key words: conditional capacity, strength, student, lesson

Introductions

Physical education, as part of general education, has as purpose the harmonious physical development, psychic consolidation, training the student's character traits but also to offer the frame of achieving an optimum physical condition necessary to carry out the individual daily activities. the physical education lessons offers the institutional and organization frame for the development of motor activities having as purpose the development of the manifestation level of students physical condition. Physical education class as school admits selecting the most efficient and desirable physical means, in accordance with the pedagogical, physiological and hygienic principles and norms specific to age, gender and educational objectives of the secondary school cycle [Dragnea, Teodorescu - Mate, 2002]. The physical means structure for students is similar to the one of teenagers because at this age the level of manifestation of the conditional, coordinative and intermediate capacities increases and we aim at fighting against deficient attitudes determined by vicious positions [Alexandrescu, Tatu, Ardelean, 1983].

Growing body changes should be well known in order to develop methodically programs that contribute to the development of the body, favorably influencing general condition and stimulating the intellectual activity. Prophylactic effects of physical exercises, should be popularized to attract as many children in practicing

[1]University Motor and Sport Activities Department, Petroleum and Gas University of Ploiesti, ROMANIA
E-mail: finichiu1@yahoo.com

sports or general movement to preserve and strengthen their health [Atkinson, Atkinson, Smith, Bem, 2002]. General motor capacity progresses and there are created the development premises and other conditional capacities, of coordinative capacities, intermediate ones and the motor skills acquired in the previous stages must be strengthened [Finichiu, 2010].
In the last decade we noticed a new approach regarding the motor concerns by the shift from the rigorous and difficult physical means to a variety of physical activities with the well defined purpose to strengthen health, developed under the strict monitoring of parents. These programs of sport activities are supported by the doctors recommendations in order to moderate practice physical exercises, being demonstrated that each individual can make a systematic motor activity. In conducting this research we started from fulfilling the following objectives:
Achieving an appropriate frame for the student to freely and creatively manifest himself and to prove initiative.
Choosing and using the most efficient methods and means necessary to increase the conditional capacity strength during the physical education lesson.

Research hypotheses
The increase of efficiency of physical education lesson can be done by knowing the level of expression of conditional capabilities, coordination capabilities and intermediate capacities of students.
The awareness of practicing physical exercises can be based on the specialized theoretical knowledge from physical education domain.

Research procedures and methods
The research was conducted during the instructive-educational process at an elementary school in Ploiesti and comprised 57 pupils (37 girls and 30 boys) from grades seventh, aged between 13 and 14 years, school year 2011 - 2012.

The research was conducted by the development of the 7 common boys/girls tests and 2 specific ones, contained in the evaluation system. At the grades contained in our experiment, the hourly schedule includes two hours per week, pupils will compulsory graded with 2 marks for the execution of each couple of for the conditional capacity strength, that addresses to different segments, according to the choice of pupils. Skills (Table 1) that can be evaluated are addressed to muscle groups of four segments included in the body: arms, abdomen, back and legs. The used evaluation instruments:

Pushups from lying face resting on hands and toes, stretched body, eyes forward, arms bent to the chest near the ground and return to start position, the number of executions is recorded.

Tractions from hanging, from hanging with arms and stretched body, preferred grip, without touching the ground with heels, bending ones arms until the chin is above the bar level and returning to the start position, the number of executions is recorded.

Traction on the gym bench with the face lying on the bench gym, with the pelvis at the end of the bench, arms outstretched in the extension of the body, palms catch the bench edges, simultaneous tractions in arms are performed, the body sliding on the surface of the bench; the ones that executed the return transactions on the length of 2 benches get a 5.

Raising dorsal trunk from dorsal lying with hands at the back head, knees bent at 90 degrees, feet resting on the floor; at the signal the lifting of the truck at horizontal is realized and reaching the knees with the elbows, followed by return to its original position, the number of executions is recorded.

Raising the legs from dorsal lying, from dorsal lying palms at the back head; at the signal legs stretched vertically are raised and returned to the initial position, without hitting the ground, the correct number of executions is recorded.

Raising the trunk from facial lying, for 30", from facial lying with stretched arms near the body, with hands holding stick's heads, feet fixed on the floor; lifting and extension of the trunk, head and arms must exceed the level of the bench; the correct number of executions is recorded.

Raising the pelvis from sitting for 30", seated with feet together, palms resting on the ground behind the pelvis; at the signal, the raising of the pelvis, the body taken into the extended position, head leaned backwards (girls), boys perform the same movement, but lead alternatively one leg up, with the return to the initial position; the correct number of executions is recorded.

Standing long jump, from standing behind the line, feet apart as the distance between your shoulders; preparing the jump by bending the inferior leg joints, carrying the upper limbs backward, followed by energetic extension and strong impulsion in legs, simultaneously with projecting the upper limbs forward, they landing is balanced on both feet, the length of the jump is measured from the starting line to the first trace left on the ground, the jump's length is expressed in centimeters.

Jumping over the gymnastics bench for 30" from standing laterally to the signal, jumps with detachment on both legs from side to side of the bench, the number of jumps is recorded.
For the good development of the experiment there were used proper investigation methods (method of observation, measurement and recording method, experimental method) and methods of processing and interpretation of collected data - statistical and mathematical method and graphical method.

Results

Table 1. The National Evaluation System for the Secondary School Education

Capacities/ Skills assessed		Evaluation Instruments	7th grade (minimum standard mark 5)	
			Boys	**Girls**
Strength	Arms musculature	Pushups (no. rep.)	6	4
		Tractions from hanging (no. rep.)	3	-
		Tractions on the gymnastic bench (no. rep. bench)	-	2
	Abdominal musculature	Lifting the trunk from dorsal lying (no. rep.)	17	16
		Lifting the feet from dorsal lying (no. rep.)	5	4
	Back musculature	Lifting the trunk from facial lying in 30"(no. rep.)	18	17
		Lifting the pelvis from lying in 30"(no. rep.)	12	10
	Legs musculature	Long jump from standing (cm)	160	140
		Jumping over the gymnastic bench in 30" (no. rep.)	10	8

Table 2. Calculated Statistical Indicators

Boys subjects n=30
Girls subjects n=37

Capacities/ Skills assessed			Statistical Indicators						
			X	**S**	**Cv%**	**Med**	**Max**	**Min**	**W**
Arms musculature	Pushups	B	**7,23**	2,77	9,31	6	10	3	7
		G	**3,66**	0,51	15,30	3	5	1	4
	Tractions from hanging	B	**3,12**	0,79	14,27	2	4	0	4
	Tractions on the gymnastic bench	G	**3,53**	1,73	9,64	2,5	5	2	3
Abdominal musculature	Lifting the trunk from dorsal lying	B	**20,31**	3,44	13,54	19	24	17	7
		G	**17,56**	5,32	12,47	15	20	16	4
	Lifting the feet from dorsal lying	B	**7,89**	6,22	10,74	6	10	5	5
		G	**5,56**	5,14	16,77	4	7	2	5
Back musculature	Lifting the trunk from facial lying	B	**23,43**	5,11	12,33	20	26	18	8
		G	**20,09**	6,21	16,87	18	23	17	6
	Lifting the pelvis from lying	B	**17,32**	7,31	11,51	15	20	14	6
		G	**14,33**	8,32	17,36	12	17	10	7
Legs musculature	Long jump from standing	B	**177,21**	9,32	17,11	170	195	161	34
		G	**156,52**	7,32	19,14	150	165	140	25
	Jumping over the gymnastic bench in 30"	B	**14,25**	5,68	14,32	12	16	10	6
		G	**9,06**	4,71	12,39	8	11	7	4

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

B, boys; G, girls; X, the central tendency of values; S, the standard deviation, represents the dispersion indicator, of the scattering level of the values; Cv%, the variability coefficient, the degree of homogeneity of the results from the research sample; Med, median the position that divides in two equal parts the string of data; Max, the superior value of the string; Min, the inferior value of the string; W, amplitude, the difference between the maximum and minimum values.

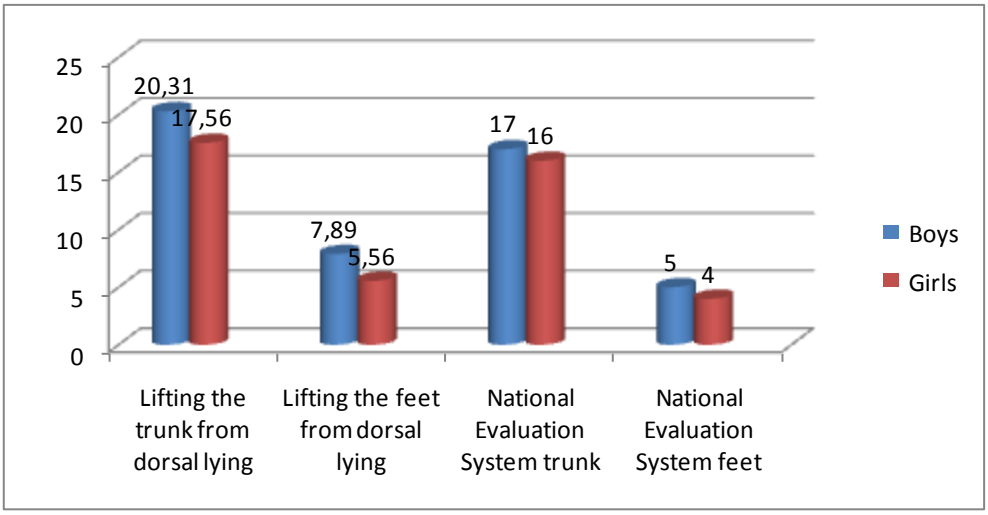


Figure 1. Graphical representation of arithmetic values for abdominal musculature

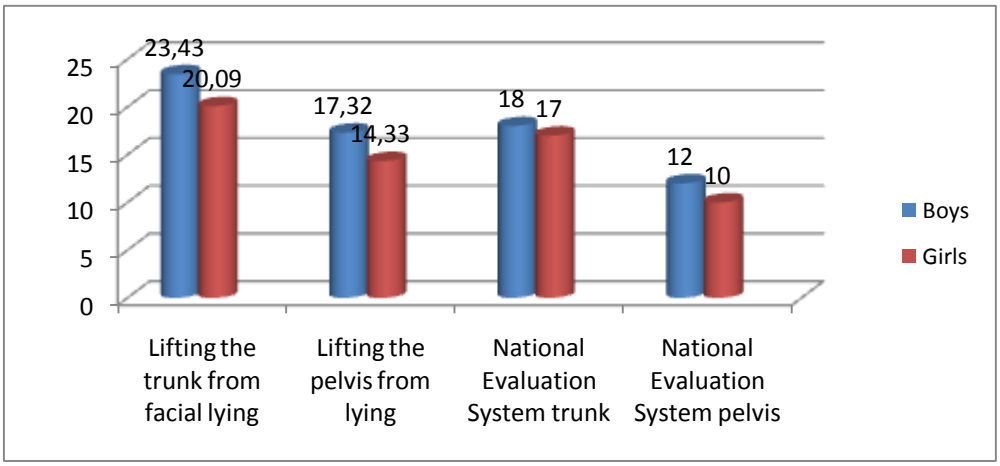


Figure 2. Graphical representation of arithmetic values for back musculature

Discussion

In the instructional design, measurement and evaluation of motor skills represented operational objectives for the establishment of general motor ability level of the students, using the lessons of physical education, of specific means. By calculating the statistical indicators (Table 2), based on the primary data collected and placed into tables [Niculescu, 2002], we achieve an accurate assessment of central tendency, by knowing the maximum and minimum values with the highest frequency, of the distribution degree of data collected by objective assessment of the of scattering data degree and development of the arithmetic mean (X). We have calculated the most commonly used indicators of dispersion: amplitude (W), standard deviation (S) and coefficient of variation (Cv%).

a. Arms musculature

Applying the three motor tests for determining the level of strength expression of arm musculature allows us to make the following interpretations:

- Pushups (Table 2) – the calculated arithmetic mean for the boys sample is of 7,23 no. of repetitions higher with 1,23 no. of repetitions than the minimum scale for this age from the National Evaluation System (Table 1). The sample of girls recorded an arithmetic mean of 3,66 no. of repetitions, lower than the minimum scale of the evaluation system, which is of 4 no. repetitions. The lowest value (Min = 3) from the string of collected

data and recorded in the boys sample is lower than the minimum scale, also at the sample of girls (Min = 1).
The maximum value achieved at the boys sample, Max = 10 is greater with 4 repetitions compared with the minimal scale and it ranges, as value, between grade 8 and grade 9. In the string of collected data after the girls execution, the highest value is of 5 repetitions and is graded with the mark 6. Amplitude, standard deviation and coefficient of variation, show a group of normal distribution of the results and a high homogeneity of the data collected for the sample of boys and medium for the girls one.

- The arithmetic mean calculated for the sample of boys is 3,12 no. reps higher with 0,12 repetitions compared with the minimal scale of the national evaluation system. The lowest value recorded after this test is 0 repetitions and the highest value in the data string is 4 repetitions. Amplitude, standard deviation and coefficient of variation, show a group of average homogeneity and normal distribution of results
- Tractions on the gymnastic bench (Table 2) - the calculated arithmetic mean for the girls sample is of 3,53 no benches higher with 1,53 benches in comparison with the minimum scale from the evaluation system. The lowest value recorded after the test is of 2 benches and the highest one from the string of data is of 5 benches. Amplitude, standard deviation and coefficient of variation, show a group of high homogeneity and a normal distribution of results.

a. Abdominal musculature

Applying the three motor tests for determining the level of expression of abdominal musculature strength allows us to make the following interpretations:

- Lifting the trunk from dorsal lying (Table 2, Figure 1) – the calculated arithmetic mean is higher both for the boys and girls samples in comparison with the National Evaluation System (Table 1) from the level of the secondary school cycle. From the string of collected data the minimum recorded value both for boys and girls is equal with the minimum norm of the evaluation system. Amplitude, standard deviation and coefficient of variation, show a group of average homogeneity and normal distribution of results.
- Lifting the feet from dorsal lying (Table 2) - the calculated arithmetic mean is higher both for the boys and girls samples at the level of the national evaluation system from the level of the secondary school cycle. The minimum value recorded for the boys sample is equal with the minimum norm and for the girls sample is lower. The calculated variability coefficient, amplitude and standard deviation show us that the results distribution is normal.

b. Back musculature

Applying the three motor tests for determining the level of expression of back musculature strength allows us to make the following interpretations:

- Lifting the trunk from facial lying (Table 2, Figure 2) – the calculated arithmetic mean is higher both for the boys and girls samples at the level of the National Evaluation System (Table 1). The lowest recorded results from the two strings of data are better than the minimum value of the norm at this test. Calculating the variation coefficient shows us that the two samples presents an average homogeneity of the results. Calculating the statistical indicators, amplitude and standard deviation shows us that the results distribution is normal.
- Lifting the pelvis from lying (Table 2, Figure 2) – by calculating the arithmetic means (X_{boys} = 17,32, X_{girls} = 14,33) at the tow samples, there were recorded values that can be graded with marks between 8 and 9 for the boys and for the girls with 8. the lowest values recorded both for the boys and girls samples are higher than the minimum norm. The calculated variation coefficient shows us that we have groups with an average homogeneity. The results distribution is normal after the calculation of the indicators, of the amplitude and standard deviation.

d. Legs musculature

Applying the three motor tests for determining the level of expression of legs musculature strength allows us to make the following interpretations:

- Long jump from standing (Table 2) - the calculated arithmetic mean is positioned over the mark 9 for the boys (X = 177,21) and also for the girls (X = 156,52). The minimum recorded value is equal with the minimum norm value. The calculated variation coefficient shows us that we have groups with an average homogeneity. Calculating the statistical indicators, amplitude and standard deviation shows us that the results distribution is normal.
- Jumping over the gymnastic bench (Table 2) - the arithmetic means calculated for the boys sample is of 14,25 no. of repetitions, higher with 4,25 no. of repetitions in comparison with the minimum norm for this age from the National Evaluation System (Table 1). The girls sample recorded an arithmetic mean of 9,06 repetitions, higher than the minimum norm from the evaluation system that is of 8 repetitions. The minimum recorded value is equal with the minimum norm value for the boys and lower for the girls sample. Amplitude, standard deviation and variation coefficient show us a group with an average homogeneity and a normal distribution of the results.

These results correspond with Beihoff, and Pop, (2009) and Deacu, (2008) results.

Conclusions

The obtained motor performances obtained at the level of conditional capacity - strength, allowed us to calculate the statistical indicators for the two samples from the research from which we can see a significant increase of the arithmetic means in

comparison with the minimum norm from the National Evaluation System form the secondary school cycle.

The development of the conditional capacities - strength, at this age level, can be realized through methods and means used in the physical education lesson.

The physical education lesson is the only way to prepare the physical activity and to improve the general motor capacity, education for health, for a healthy lifestyle.

The general motor capacity through its objectives to improve the conditional capacities, coordinative and intermediate, brings its contribution in the increase of the physical abilities in order to prevent accidents.

Achieving the instructive-educational objectives of the secondary physical education subsystem in order to achieve functional independence in life can be obtained through an optimal projection and planning of the physical education activity.

School is an efficient instrument in knowing the manifestation level of the general motor capacity, of knowing one self.

Educating students to continuously and systematic practice the physical exercises and to participate in different sport activities depending on everyone's aptitudes.

The variety of means used in the practice of physical education field, the multitude of connections with other related fields, requires choosing and using methods and exercises with the highest efficiency in educational practice, in order to achieve an optimum overall general motor capacity for this age.

References

Alexandrescu, D., Tatu, T., Ardelean, T., 1983, Athleticism, Didactic and Pedagogic Publishing House, Bucharest.

Atkinson, R., Atkinson, R., Smith, E., Bem, D., 2002, Introduction in Psychology, The Technical Publishing House, Bucharest.

Beihoff, C. and POP, M., 2009, Strength trening for children and adolescents is it benefical, OvidiusUniversityAnnals, Series Physical Education and Sport, volume IX, Science, Movement and Health, Issue 1, Constanta.

Bota, C., 2000, Ergo-physiology, Globus Publishing House, Bucharest.

Deacu, M. A., 2008, The development of combined movement abilities strength-speed during the physical education class, OvidiusUniversityAnnals, volume VI, part I, Constanta.

Dragnea, A., Teodorescu - Mate, S., 2002, Sport's Theory, FEST Publishing House, Bucharest.

Finichiu, M., 2009, Physical condition and athletic exercises, Petroleum – Gas University Publishing House, Ploiesti.

Finichiu, M., Deacu, M., 2010, Management of physical education and sports lessons, University Publishing House, Bucharest.

Niculescu, M., 2002, Scientific research methodology in the physical education and sport, ANEFS Publishing House, Bucharest.

Thomas, R., Eclache, J.P., Keller, J., 1995, Motor aptitudes. Tests and measurements for young athletes, C.C.P.S. Bucharest.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 471-478

THE EFFECTS OF MOTOR EDUCATION PROGRAM BY USING THE EVALUATIVE DOCUMENTS' PACKAGE "PORTFOLIO" ON SENSORY MOTOR PERCEPTION IN KINDERGARTEN CHILDREN

GAMAL AHMED[1]

Abstract

Purpose. The current research aimed to designing and identifying the effects of a motor education program to develop sensory motor perception for kindergarten children and evaluating it with portfolio.

Methods. The sample contains (n=120) was randomly chosen (50% out of the community) and divided into three groups (40 children each) for the three research groups (control – experimental with program – experimenting with the program and portfolio). The researcher used the motor perception scale (by the researcher) as a pre- and post- test. The recommended program was applied for (12 weeks) with two activities per week.

Results. Data indicated that the recommended program has a positive effect on improving sensory motor perception of pre-school children. The second experimental group children (portfolio) surpassed their peers in the control and first experimental groups.

Conclusions. The use of evaluative documents' package "portfolio" was the improvement of the sensory motor

[1]Faculty of Physical Education - Kafr El-Sheikh University
ashamza@zu.edu.eg

perception in kindergarten children.
Key words: pre-school child – motor education – sensory motor perception.

Introduction

Our modern age has witnessed quick developments in all fields of life. It is the age of information revolution, scientific advance and technological developments. This necessitates that modern societies should prepare their children comprehensively to face such challenges. In the light of recent developments in quality concepts of kindergarten programs "concordant developmental practices, concordant contextual approach and developmental power", there are four major aspects of practices: change and growth follow up, comprehensiveness and predictability. Therefore, the teacher should consider the child's age, individuality according to his/her growth pattern and character and learning pattern and family background. In addition, children learn better through self-directed activities (Wood, 1999). The teacher plays a major role in providing an environment rich with educational activities supporting the child's activities and talking to children during activities. Preparing motor activities is one of the richest fields of self-development for the learner's character and learning as it provides the child with a chance to practice activities and to learn more vocabulary through practice. The interaction with the surrounding environment stems from the combination of motor and cognitive processes. Good motion with effective results depends on correct perception of the performer and his/her perception of the surrounding world. Developing cognitive abilities of the individual depends on motion as one of the basic pillars of this development (Al-Sarmeed & Etman, 1990). When the child acquires a good level of motor perception skills, this means that his/her nervous system is growing will and this, in turn, reflects on other aspects as an indicator of these aspects. Therefore, one theory proposed that children with good cognitive development tend to show higher levels of achievement on reading, spilling and writing (Rateb & Al-Khouly, 1994). The increase in learning skills needs evaluative methods suitable for the learning style. Evaluation is one of the bases of the learning process and its results guide the teacher to select specific aims and goals to achieve (Al-Laquany, 1995; Ahmed, 2000). It is considered as a value of any aspect of human activity as good or poor, correct or incorrect (Bowe, 2000). Evaluation of kindergarten children is different from other stages' evaluation as this specific stage is very critical and the child's nature and characteristics should be considered very carefully. Therefore, evaluation should be continuous and based on the aims and philosophy of this stage concentrating on the general development of the child in an environment prepared specifically for this reason. There are several types of evaluation for kindergarten children. One of these types is the portfolio as an effective tool enabling good agreement between the child and teacher upon what makes good work (Faramawy, 1997).

Portfolio is a set of the child's works, gathered to identify the child's efforts, development and achievements. Its contents should reflect the classroom activities. Portfolio is a powerful tool that enables children, teachers, parents, administrators and educational policy makers to know the development and progress of each child through learning and evaluation processes (Meisels, 1995). Portfolio is a useful tool in recording and keeping children's activities in classroom according to the aims set by the teacher. It also documents the child's growth and development accurately. The portfolio contains the child's works. Thus, it shows his/her achievements in different activities. Therefore, it is not only an evaluative tool, but also a way to help the child to reflect on his/her work and to inform parents with these achievements (Keshner, 1995; Gronlud, 1998; Gaber, 1999; Grace, 1990). The portfolio can contain a various set of other informational processes (like written notes on the child's work and parents' evaluation). It can be used to evaluate the child's abilities and improvement (Dietel, et al. 1991). It helps in improving the sensory motor perception of kindergarten children through helping them to recognize information coming from different senses and react according to motor behavior (Crratty, 1973). To develop the motor education program and the sensory motor perception scale, the researcher reviewed the related literature for sensory motor perception (Meszaros, 1979; Harris, 1986; Sawan, & Al-Gohary, 1994; Abd Al-Mageed, 1995; Amer, 1996) and pre-school children (Meisels, 1995; Gronlud, 1998; Gelfer, et al. 1991; Ball & Mary, 1995; Gussie, 1999; Ahmed, 2004). The researcher found out the lack of related studies in Arabic for the topic of evaluating kindergarten children, although this topic is very important as this age stage is critical and effective in developing the child. The researcher reviewed the related literature to identify the components portfolios and how to evaluate these components. The current study addresses the problem the importance of sensory motor perception of the child in this stage as the child needs to know the surrounding environment (spatial or time), shapes and colors to identify the ways of dealing with this environment. This can be facilitated through developing sensory motor perception via motor activity and can be evaluated using the portfolio. The current research aimed to designing and identifying the effects of a motor education program to develop sensory

motor perception for kindergarten children and evaluating it with portfolio.

Methods

Research community included all children (4-6 years) in Al-Zahra primary school in Kafr al-Shaikh (n=240) for the school year (2009/2010). Sample (n=120) was randomly chosen (50% out of the community) and divided into three groups (40 children each) for the three research groups (control – experimental with program – experimental with the program and portfolio). Tables (1-2) show variance analysis of the two variables (age – sensory motor perception) among the three groups.

Table.1 Variance analysis among the three groups on age

Groups	Freedom	Sum of quarters	Mean of quarters	V
Inter-groups	2	1.46	0.73	
Intra-groups	117	242.33	2.07	0.35
Total	119	243.79		

Table.1 showed no statistically significant differences among the three groups on age.

Table. 2 Variance analysis among the three groups on the dimensions of the sensory motor perception scale

Dimension	Variance source	Freedom	Sum of quarters	Mean of quarters	V
	Inter-groups	2	0.26	0.13	
Posture and balance	Intra-groups	117	77.62	0.66	0.19
	Total	119	77.88		
	Inter-groups	2	0.80	0.40	
Tempo and neuromuscular control	Intra-groups	117	77.77	0.66	0.60
	Total	119	78.57		
	Inter-groups	2	0.75	0.38	
Recognizing body image	Intra-groups	117	89.92	0.77	0.49
	Total	119	90.68		
	Inter-groups	2	0.40	0.20	
Perceiving shapes	Intra-groups	117	64.56	0.55	0.36
	Total	119	64.96		
	Inter-groups	2	3.72	1.86	
Total	Intra-groups	117	1101.58	9.42	0.20
	Total	119	1105.30		

Table. 2 showed no statistically significant differences among the three groups on the dimensions of the sensory motor perception scale.

Tools:

The researcher used the following tools to collect data:
The sensory motor perception scale (by the researcher).
The recommended motor education program (by the researcher).
Child's portfolio (by the researcher).

First: the sensory motor perception scale:

To design the sensory motor perception scale, the researcher reviewed the related literature (3-25-26-27-28). The researcher identified four dimension of the scale. Each dimension included several items (total items = 30). The first version of the scale was presented to experts in childhood education, physical education methodology and curricula and sports psychology. All items with agreement of (50%) or more were included in the final version. Table (3) shows experts opinions on the sensory motor perception scale.

Table. 3 showed the percentage of experts' agreement on each item of the scale. All items above (50%) were included in the final version (n=20) as shown in table (3).

Table. 3 The final version of the sensory motor perception scale.

Dimensions and items		Percentage
Posture and balance		
1-	Forward walk	80%
2-	Backward walk	90%
3-	Sideward walk	80%
4-	Jumping	80%
5-	Right foot hoop	70%
6-	Left foot hoop	90%
7-	Right and left slide	90%

Tempo and neuromuscular control		
1-	Hand-eye coordination	90%
2-	Foot-eye coordination	80%
3-	Neuromuscular coordination	80%
Recognizing body image		
1-	Body parts identification	80%
2-	Motion mimic	90%
3-	Hurdle test	70%
4-	Ground angles test	80%
Perceiving shapes		
1-	Circle	80%
2-	Square	70%
3-	Rectangle	90%
4-	Triangle	80%
5-	Horizontal line	80%
6-	Vertical line	90%

Validity and reliability of the sensory motor perception scale:

1- Validity: The researcher used the jurors' validity as the scale was presented to experts to show their opinions. The final version included (4) dimensions and (20) items.

2- Reliability: The researcher computed the scale's reliability using test/re-test on a sample of (10) children from outside the main sample. Time interval between two tests was (10) days.

Second: The recommended motor education program:

The program aims at improving the sensory motor perception for pre-school children. It works on developing the following dimensions:

Posture and balance

Tempo and neuromuscular control

Recognizing body image

Perceiving shapes

The program was designed considering the following:

Specific characteristics of the age group under investigation.

Individual differences.

Fulfilling child's needs for motion and activity.

Improving sensory motor perception of the pre-school child.

Consistency with school capabilities and safety measures.

Challenging children's abilities to stimulate their motivation.

Interesting and enjoyable.

Program content:

After literature review (Al-sarmeed & Etman, 1990; Keshner, 1995; Hammad, 1990; Tony, 1991; Tolba, 1995; Abd Al-Kareem, 1995; Abd El-Razek, 1997; Saber & Abd El-Fattah, 2002), the researcher chose a group of games, exploratory activities, spatial activities and motor activities (n=24) suitable for this age group. The chosen activities were distributed on the four dimensions (6 activities each). The program content was comprehensive, continuous and integrative.

Third: The portfolio:

The child's portfolio took the shape of a small decorated box, with four sides decorated with normal shape while the fifth side carried a special shape for each child to facilitate the child's recognition of his/her own portfolio.

Each portfolio contained a video tape, photographs of motor activity, teacher's notes, aims list or documentation list (the scale's items).

Children were videotaped during program application (at the end of each week). Each aim's activities were gathered together to identify if the child achieved this aim or not.

The portfolio reflected real results of the child's growth and development. Children enjoyed keeping and reviewing their videotapes as this provides them with organization and self-expression skills.

In preparing the portfolio, the researcher followed the following:

Preparing arrangements for maintaining the portfolio: choosing and decorating the box (before program).

Planning major aims (before program).

Collecting children's performances (during program)

Evaluating children's performances (during program).

Results

Table.4 Variance significance between the pre- and post- tests on the dimensions of the sensory motor perception scale for the control group (n=40)

Dimension	Pre-test		Post-test		Means difference	Change	(t)
	Means	SD	Means	SD			

1-	Posture and balance	1.51	1.01	1.86	0.92	0.35	23.17%	1.62
2-	Tempo and neuromuscular control	1.68	0.94	1.97	0.87	0.29	17.26%	1.43
3-	Recognizing body image	1.74	1.12	1.83	0.83	0.09	51.17%	0.42
4-	Perceiving shapes	1.56	0.87	1.76	0.79	0.20	12.82%	1.07
5-	Total	6.49	2.78	7.42	2.58	0.93	14.33%	1.55

(t) Table value on (p≤0.05) = 2.02

Table. 4 indicates statistically significant differences on (p≤0.05) between pre- and post-tests on the sensory motor perception scale for the control group in favor of the post-test. the improvement percentage between the pre- and post- tests on the sensory motor perception scale for the control group. This percentage ranged from (17.26%) for Tempo and neuromuscular control and (12.82%) for perceiving shapes.

Table. 5 indicates statistically significant differences on (p≤0.05) between pre- and post-tests on the sensory motor perception scale for the first experimental group in favor of the post-test. The improvement percentage between the pre- and post- tests on the sensory motor perception scale for the first experimental group. This percentage ranged from (82.885%) for recognizing body image and (151.41%) for perceiving shapes.

Table. 5 Variance significance between the pre- and post- tests on the dimensions of the sensory motor perception scale for the first experimental group (n=40)

	Dimension	Pre-test		Post-test		Means difference	Change	(t)
		Means	SD	Means	SD			
1-	Posture and balance	1.54	0.65	3.21	1.06	1.67	108.44%	8.49
2-	Tempo and neuromuscular control	1.72	0.73	3.19	1.14	1.47	85.46%	6.87
3-	Recognizing body image	1.87	0.72	3.42	1.12	1.55	82.88%	7.36
4-	Perceiving shapes	1.42	0.69	3.57	1.62	2.15	151.41%	7.72
5-	Total	6.55	2.97	13.39	4.62	6.84	104.42%	7.87

Table. 6 Variance significance between the pre- and post- tests on the dimensions of the sensory motor perception scale for the second (portfolio) experimental group (n=40)

	Dimension	Pre-test		Post-test		Means difference	Change	(t)
		Means	SD	Means	SD			
1-	Posture and balance	1.62	0.74	3.65	1.21	2.03	108.44%	9.05
2-	Tempo and neuromuscular control	1.87	0.76	3.44	1.07	1.57	85.46%	7.56
3-	Recognizing body image	1.93	0.73	3.72	1.62	1.79	82.88%	6.37
4-	Perceiving shapes	1.47	0.65	3.84	1.34	2.37	151.41%	10.06
5-	Total	6.89	3.42	14.65	3.76	7.76	104.42%	9.65

(t) Table value on (p≤0.05) = 2.02

Table. 6 indicates statistically significant differences on (p≤0.05) between pre- and post-tests on the sensory motor perception scale for the second (portfolio) experimental group in favor of the post-test. The improvement percentage between the pre- and post-tests on the sensory motor perception scale for the second (portfolio) experimental group. This percentage ranged from (83.95%) for Tempo and neuromuscular control and (161.22%) for perceiving shapes.

Table. 7 Variance analysis among post-tests for the three groups (control – first experimental – second experimental)

Dimension	Variance source	Freedom	Sum of quarters	Mean of quarters	V
Posture and balance	Inter-groups	2	69.60	34.80	30.40
	Intra-groups	117	133.93	1.14	
	Total	119	203.53		
Tempo and neuromuscular control	Inter-groups	2	49.49	24.75	23.19
	Intra-groups	117	124.85	1.07	
	Total	119	174.35		
Recognizing body image	Inter-groups	2	82.54	41.27	27.10
	Intra-groups	117	178.14	1.52	
	Total	119	260.68		
Perceiving shapes	Inter-groups	2	102.34	51.17	30.43
	Intra-groups	117	196.72	1.68	
	Total	119	299.06		

(V) Table values on (p≤0.05) = 3.09

Table. 7 indicated statistically significant differences among the post-measurements on the dimensions of the sensory motor perception scale. The researcher will use L.S.D test to identify these differences.

Table. 8 Variance significance among post- tests on the dimensions of the sensory motor perception scale for the three groups (control – first experimental – second experimental) using L.S.D. test.

Dimension	Variance source	Means	Groups Portfolio	Groups 1st experimental	Groups Control	V
Posture and balance	Portfolio	3.65		0.44	1.97 →	
	1st experimental	3.21			1.39 →	0.64
	Control	1.86				
Tempo and neuromuscular control	Portfolio	3.44		0.25	1.79 →	
	1st experimental	3.19			1.72 →	0.63
	Control	1.47				
Recognizing body image	Portfolio	3.72		0.30	1.89 →	
	1st experimental	3.42			1.59 →	0.75
	Control	1.83				
Perceiving shapes	Portfolio	3.84		0.27	2.08 →	
	1st experimental	3.57			1,81 →	0.78
	Control	1.76				

Table. 8 indicates statistically significant differences among the post-measurements on the dimensions of the sensory motor perception scale in favor of the two experimental groups.

Table. 9 Improvement percentage among the post-tests on the total score of the dimensions of the sensory motor perception scale for the three groups (control – first experimental – second experimental)

Dimension	Variance source	%	Groups Portfolio	Groups 1st experimental	Groups Control
Posture and balance	Portfolio	125.31%		16.87 →	102.10 →
	1st experimental	108.44%			85.27 →
	Control	23.17%			
Tempo and neuromuscular control	Portfolio	83.95%		1.51 ↑	66.69 →
	1st experimental	85.46%			68.20 →
	Control	17.26%			
Recognizing body image	Portfolio	92.75%		9.87 ↑	87.58 →
	1st experimental	82.88%			77.71 →
	Control	5.17%			
Perceiving shapes	Portfolio	161.22%		9.81 →	148.40 →
	1st experimental	151.41%			138.59 →
	Control	12.82%			
Total score	Portfolio	112.63%		8.20 →	98.30 →
	1st experimental	104.43%			90.10 →
	Control	14.33			

Table. 9 indicates statistically significant differences among the post-tests on the total score of the dimensions of the sensory motor perception scale for the three groups (control – first experimental – second experimental)

Discussion

According to the results which indicates statistically significant differences among the post-tests on the total score of the dimensions of the sensory motor perception scale for the three groups (control – first experimental – second experimental) in favor of the second (portfolio) experimental group. This is due to the application of the recommended program with the portfolio as it helped the children to enjoy using videotapes and photographs and maintaining them.

The portfolio contains teacher's notes and videotapes for children's performance levels. Children's involvement in their evaluation helps them improve their motor skills quickly.

This is in agreement with previous studies (Gelfer, et al. 1991; Ball, & Mary, 1995; Ahmed, 2004) as the results of tempo and neuromuscular control were in favor of the first experimental group (85.46%).This indicates the positive Effect of A Motor Education Program Using Evaluative Documents' Package "Portfolio" on Developing Sensory Motor Perception in Kindergartens' Children (study sample).

Conclusions

The recommended program has a positive effect on improving sensory motor perception of pre-school children.

The second experimental group children (portfolio) surpassed their peers in the control and first experimental groups.

References

Abd Al-Kareem, A., 1995, Motor Programs and Teaching children. Munshat Al-Maaref, Alexandria, Egypt P55 (in Arabic).

Abd Al-Mageed, K., 1995, Effects of a recommended program using small games and motor stories on sensory motor awareness for children 4-5 years. Master thesis, faculty of physical education for women, Zagazig University, Egypt, PP. 1-13 (in Arabic).

Abd El-Razek, E., 1997, Effects of a motor education program on some physical abilities for pre-school children. Master thesis, Faculty of Physical Education, Minia University, Egypt. PP. 1-12 (in Arabic).

Ahmed, A., 2004, An integrated activity program using technological aids for pre-school children and its evaluation with portfolio. PhD thesis Childhood Institute for Higher Studies, Ain Shams University, Egypt PP. 1-5 (in Arabic).

Ahmed, A., 2000, Educational Psychology 3rd ED. Al_Obaikan Library, Rhead, KSA, P329 (in Arabic).

Ahmed, M., 1989, Effects of a motor education program on motor perception and motor fitness for pre-school children. Master thesis, Faculty of Physical Education, Minia University, Egypt. PP. 1-9 (in Arabic).

Al-Azhary, M., 1993, Effects of a motor education program on sensory motor perception and motor fitness for pre-school children. Conference of Future Perspective of Physical Education and Sports in the Arab World. Faculty of Physical Education for Men, Helwan University, Egypt. Vol.1, P 189 (in Arabic).

Al-Bahy, S., Abd El-Ghany, A., 1989, Effects of a recommended program using small equipments on improving sensory motor perceptual abilities and some natural skills of the pre-school child, Scientific Journal of Physical Education, No. 1,. Faculty of Physical Education for Men – Helwan University, Egypt. P325 (in Arabic).

Al-Laquany, A., 1995, Developing curricula. Alam Al-Ketab, Cairo, Egypt, P20 (in Arabic).

Al-Motawa, B., 1988, Effects of a motor education program on motor perception and some arithmetic concepts in Kuwait. PhD thesis, Faculty of Physical Education, Minia University, Egypt. PP. 1-11 (in Arabic).

Al-Sarmeed, A.A., Etman, F., E., 1990, Scientific bases of motor education and its applications for pre-school and primary school stages. Dar Al-Qualam Press, Kuwait, P 46 (in Arabic).

Amer, R., 1996, Effects of a recommended motor education program on sensory motor awareness and creative thinking for pre-school children. PhD thesis, Faculty of Physical Education for Men – Helwan University, Egypt PP. 1-9 (in Arabic).

Ball, S., Mary, E., 1995, Using Portfolio Assessment a Kindergarten Classroom, Change, vil.2, no.2, winter, NEA Professional Library and Corwin Press, Inc.p98.

Bowe, F., 2000, Birth to Five, Early Childhood Special Education, Hofstra University, Delmar Publishers, ITP an International Thomsom Publishing Company.p152.

Crratty, B., 1973, Movement Behavior and Matar Learning, Philadelphia, 3 rd ed, Lea & Fibiger,p33.

Dietel, R., Herman, J., Knuth, R., 1991, What Dose Research Say About Assessment, NCREL, Oak Brook, p4.

Faramawy, M., 1997, Effects of organizing the learning environment in kindergartens on child-teacher interaction. Faculty of Education Journal, Ain Shams University Vol4, No.4 p76 (in Arabic).

Gaber, G., 1999, Teaching and learning strategies. Dar Al-Fikr Al-Araby, Cairo, Egypt p 168 (in Arabic).

Gelfer, J., Perkins, P., G., 1991, Developing Student Portfolios for Young Children . A Grading Marking and Reporting Alternative That foster Communication with families, Eric Digest, Eric NO . ED335, p147.

Grace, C., 1990, The Portfolio and its use, Developmentally Appropriate Assessment of Young Children, ERIC Digest No. ED351150, p5.

Gronlud, G., 1998, Portfolio as an Assessment Tool. Is Collection of Work Enough? Young Children, Vol. 53, No.3, P.4 – 10, May, p.5-6.

Gussie, W., 1999, Assessment of the Implementation Portfolio Assessment in K – 8 School Districts in New Jersey, Ed.D., Widener University, 134pp., 1998, Dissertation abstracts International, Vol. No. 1, July.p65.

Hammad, S., 1990, Effects of a recommended motor education program with music on motor development of pre-school children. Sports Sciences and Arts Journal, Cairo, Egypt. Vol2, No.1, P57 (in Arabic).

Harris, A., 1986, Child Development West Publishing Company, New York, 1986, p204.

Keshner, J., 1995, The Kindergarten Teacher's very Student's Observation and Assessment Guide, Eric Database, Eric No . ED395658, p5.

Khaled, E., 1993, Effects of a gymnastic program on developing some sensory motor perceptions for pre-school children in Port Said. Master thesis, Faculty of Physical Education – Port Said, Suez Canal University, Egypt. PP.1-7 (in Arabic).

Meisels, S., 1995, Performance Assessment in Early Childhood Education . The work Sampling System,Eric Digest, Eric No. ED 382407, May, pp. 2-3.

Meszaros, L., 1979, Effects of Semsori Motor Skills Curieculum on the Seusorimator Shill, Boly Awareness and Reaclimess for Learning of Developmentally Lagging Kindergarten Studant, Dissertation Abstracts International, Vol(40), No. (8), P1663.

Rateb, O., & Al-Khouly, A., 1994, Motor education for children 3rd ED. Dar Al-Fikr Al-Araby, Cairo, Egypt, P119 (in Arabic).

Saber, M., & Abd El-Fattah, F., 2002, Effects of a recommended motor education program on improving health awareness for pre-school children. Faculty of Education Journal, Tanta University, Egypt. Vol.2, No.31, P 257 (in Arabic).

Sawan, L., & Al-Gohary, M., 1994, Effects of a motor education program on some cognitive and adaptive aspects of 4-5 year- old children. Scientific Journal of Physical Education, No. 21, Faculty of Physical Education for Men – Helwan University, Egypt P351. (in Arabic).

Shawky, H., 2004, Effectiveness of using an educational portfolio on developing motor perception for pre-school children. 5th scientific conference of pre-school child's education center "Reality and Future Perspective" P 268 (in Arabic).

Tolba, E., 1995, Effects of a motor education program on linguistic material, social maturation, character aspects and motor perception for pre-school children. Sports Sciences Journal, Minia University, Egypt. Vol7, P 157 (in Arabic).

Tony, J., 1991, Psycho-motor, Physical and Health Education in Kindergartens. Translated by Abd El-Fattah Hasan. Dar Al-Fikr Al-Araby, Cairo, Egypt. P34 (in Arabic).

Wood, H.M., 1999, Quality In Early Childhood Programs A Contextually Appropriable in Moon, Murphy, P. Curriculum in Context. UK, the open University, p18.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 479-485

STUDY ON THE EVOLUTION OF MOTRICITY OF THE FEMALE STUDENTS WHO PRACTICE AEROBICS AT THE BUCHAREST UNIVERSITY

GANCIU MIHAELA[1]

Abstract
The purpose of the research is to highlight the aerobics efficiency in relation to the evolution of the physical abilities in physical education classes taught to students from Bucharest University.
This endeavour was aimed at identifying the effects sought by the training programmes and the operational structures mainly intended for physical quality development, their effects being connected to the quantity and quantity of the changes at physical level.
The experimental statistical results are presented in graphical form.
The actual experiment consisted in the determination of the objectives and application of the training programmes for each group included in the research with the aim of developing the physical qualities by the specific means for each discipline.
Based on the processing and the intrinsic and comparative interpretation of the results obtained for the control tests, significant progress is identified upon the final testing is identified as compared to the initial one for both the experimental and control groups.
We may conclude thet the operational structures have proved their effectiveness in relation to the physical capacity development in this age group.

Key words: motricity; female students; aerobics.

Introduction

Increased demands of everyday life require from all areas of activity constant concern for improving their way of progress.

To properly conceive teaching design and especially to act appropriately in the teaching -learning process, the teacher must take steps to determine students' motor skills which they operate.

Knowing the motility potential of female students constitutes a permanent concern and ever topical of the specialists in our field.

The systematic analysis of motility potential of the students and its dynamics over time represent important landmarks, having major implications in developing operating strategies specific to physical education courses at non-profile schools.

By investigating the motility potential of female students, provides a deepening of specialized knowledge related to the drivability of the population.

In higher education, aerobics represents an effective form of optimization of the lessons performed with students, a means with multiple valences on the body.

The wide popularity it enjoys, especially among females, lies in the availability of the means used, the deployment framework and in particular beneficial effects on body harmony and the motive component, which is achieved by the correlation between movement, rhythm and the accompanying melody.

Coming from the French "motricité", motility is based on the Latin word "motus",

According to the authors of the paper "Physical education and sports terminology" („Terminologia educaţiei fizice şi sportului"), the motility quality is an individual ability to perform movements expressed in indices of speed, strength, endurance, agility, mobility.

The motility quality is an acquired and perfectible characteristic with a resolution determined by the above-mentioned indices' specific.

Methods

Tasks

This research aims, having as basis initial and final tests, to determine the motility development level for the Bucharest University students, who practice aerobics in physical education course.

Based on these tests, this research aims the evolution of the motility indices of these students.

Research purposes

- Investigation and analysis of motility development level of first year female students of the University of Bucharest, practicing aerobics in the academic year 2011/2012.
- Highlighting the efficiency of aerobic gymnastics in comparison with the evolution of motility parameters investigated.

[1]Department of Physical Education and Sports, Bucharest University, ROMANIA
E-mail address: mihaelaganciu26@yahoo.ro

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Research objectives

- Theoretical and methodological approach to the issue of motility capacity development;
- Scientific documentation;
- Developing the research program, organizational and methodological issues, determining subjects, research stages;
- Establishing research methods, initial and final testing, processing and valorization of the results obtained;
- Analysis of data obtained from research, development of methodologies and theoretical conclusions;
- Report any issues resulting from data analysis and the need to find practical solutions to remedy those issues;

Research methods

- Bibliographical study;
- Ameliorative type experiment;
- Measuring and testing method;
- Mathematical statistical method;
- Graphical representation method;

Development of the research

The experimental activity was conducted in the gym of the University of Bucharest, where the students were tested at the following:

1. Testing the speed through:
   Speed running a distance of 50 m flat, with standing start.
2. Testing the explosive force of leg musclesthrough:
   Long jump without enthusiasm.
3. Arm muscle strength test through:
   Pushups in the arms from facial lying.
4. Abdominal muscle strength testing through:
   Vertical lift of the trunk from dorsal lying.
5. Testing back muscle strength by:

Extensions of the trunk from facial lying.

6. Testing aerobic resistance by:
   Running for 12 minutes (Copper Test).

1. Abdomen strength/30 sec

*Statistical indicators used***:**arithmetic mean,median, mode, standard deviation,variance, range, coefficient of variation, the test student "t" dependent.

*Subjects***:** subjects of our study, in number of 60 are freshman of the University of Bucharest aged 19-20 years who participated in aerobics class 2 hours per week.

The composition of the groups was done by voluntary adhesion; female students were presented the idea of differentiated activity.

To determine the effectiveness of the work carried differentiated with the experimental group we used a control group who preferred frontal activity in the basic course.

What differentiated the 2 groups was the system of organization of lessons: frontal activity in the control group and individualized in the experimental group. Differentiated instruction, involved taking into account several variables:

- Micro homogeneous groups composed on the basis of physical training (good, average and poor);
- Overweight micro groups;
- Micro groups with light vicious attitude;
- Micro groups made according to affinities (interest for certain types of lesson);

Research hypotheses

In conducting the research we have established the following assumptions:

- The motility capacity can be positively influenced using the specific means of aerobics.
- Optimization of motility capacity in aerobics lesson in higher education is determined by the use of modern methods of training opportunities (in our research using individualized training).

Results

Statistical interpretation of the motility indicators

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	19,667	25,6	2,34	2,2	24,3	30,17
B	20,13	22,133	2,9	2,68	13,19	9,93

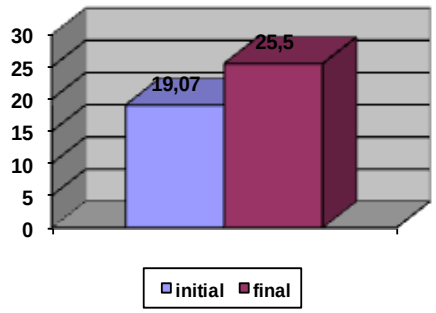
- Initial average values relatively equal;
- Great uniformity value for both groups (see standard deviation);
- Very high rate of progress in Group A (30.17%) and lower in Group B (9.93%);
- For Group A: t = 24,3 which implies that the difference between the averages is significant

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

and the null hypothesis is rejected at a confidence level of 99% (even 100%);

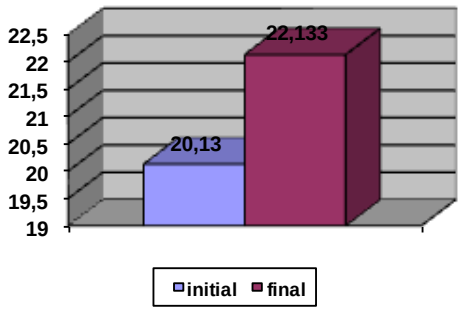
- For Group B: t = 13.19value that is higher than 2,756 recorded in column p = 0.01, the null hypothesis is rejected, but with a less significant difference than group A.

1. *Abdomen strength*



increasing 30,17 %

1. *Abdomen strength*



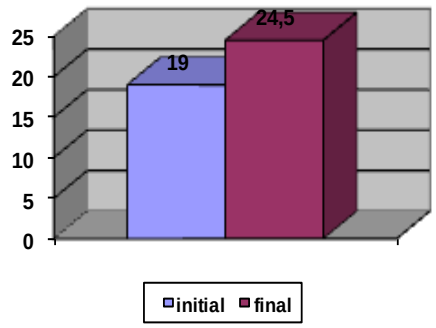
increasing 9,93%

2. Back strength/30 sec

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	19,8	24,5	2,68	2,46	17,56	23,74
B	20,33	22,4	3,26	2,7	11,15	10,17

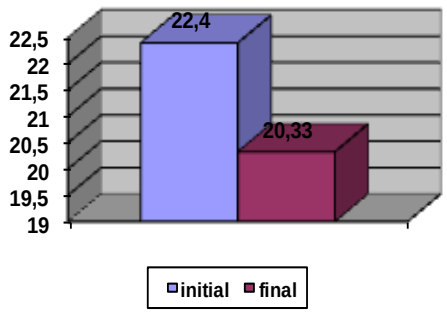
- Back muscle strength is approximately equal in the initial stage;
- The homogeneity of the groups is also high;
- The rate of progress is much higher in group A (23.74%) compared to group B (10.17%);
- For Group A: t = 17.56> 2.756, the difference between the averages is very high, the null hypothesis is rejected;
- For Group B t = 11.15> 2.756, the null hypothesis is rejected (with a difference less than group A).

2.*Back strength*



increasing 23,74 %

2.*Back strength*



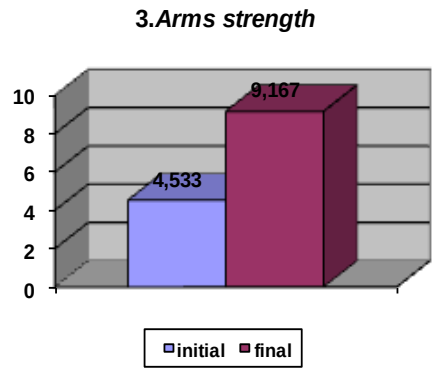
increasing 10,17%

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

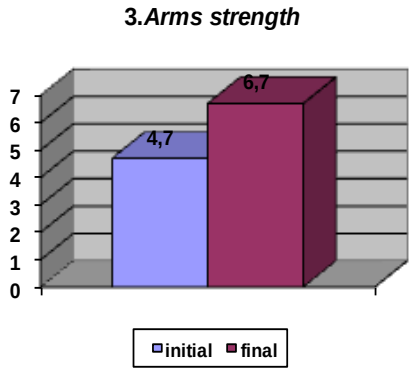
3. Arms strength – pushups

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	4,533	9,167	2,03	1,57	18,1	102,23
B	4,70	6,7	2,41	2,3	11,14	42,55

- Relatively equal arm strength in the initial stage of the experiment;
- The homogeneity of the values is high (homogeneous groups);
- Growth size is spectacular in group A (102.23%) compared to group B (42.55%);
- For group A: t = 18.1 which is much higher than the p = 0.01, the difference between these averages is of great significance, the null hypothesis is rejected;
- For Group B: t = 11.4, idem but with a smaller difference between the averages;



increasing 23,74 %



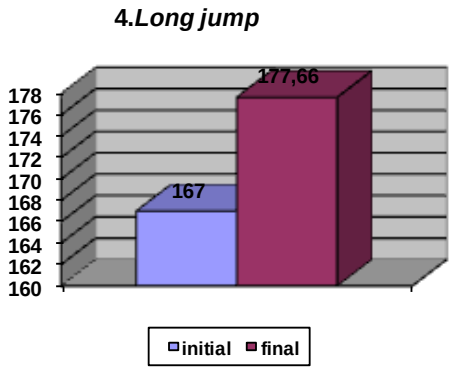
increasing 42,55%

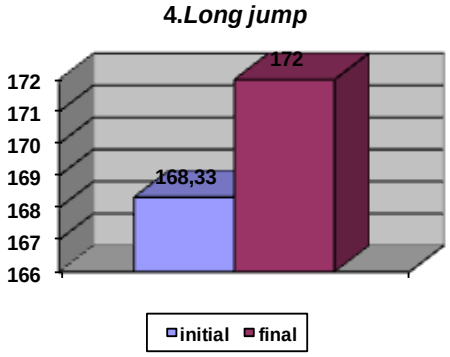
4. Long jump

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	167	176,66	11,45	11,93	13,49	5,87
B	168,33	172,0	9,43	9,0	7,71	2,18

- Average values very similar in both groups at the initial stage, after which subjects of group A achieve higher performance (= 176.66) than those of group B (= 172.0);
- Standard deviation values show a better homogeneity in the control group B than in group A (experimental);
- For Group A: t = 13.49, p> 0.01, which means a significant difference between the averages, the null hypothesis is disproved;
- For Group B: t = 7.71 - idem, the null hypothesis is rejected;

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories





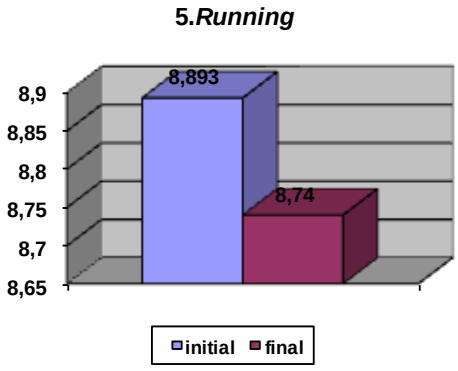
increasing 5,78%

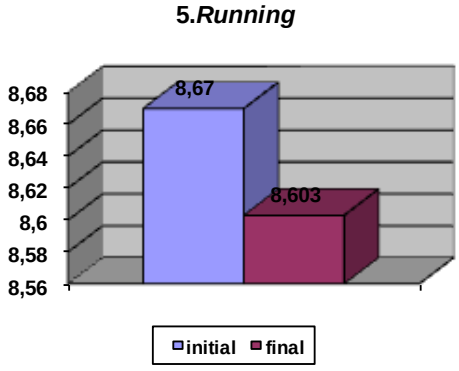
increasing 2,18%

5. *Running (50 m)*

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	8,89	8,74	0,59	0,55	-8,33	-1,72
B	8,67	8,6	0,44	0,4	-3,33	-0,77

- Average initial values equal for both groups, (A = 8.89 and B = 8.67);
- High uniformity around the average values in both groups;
- Greater improvement size in group A (-1.72%) than in group B (- 0.77%);
- For group A: t = 8.33 which is greater than 2,756 recorded in the column of p = 0.01, the null hypothesis is rejected;
- For Group B: t = 3.33, idem, but with a smaller difference from group A;





increasing 1,72 %

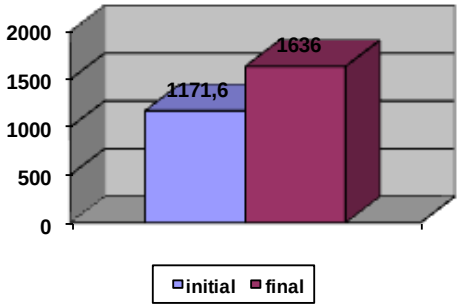
increasing 0,77 %

6. *Running 12 minutes* - endurance

Group	$\overline{X}_1$	$\overline{X}_2$	S_1	S_2	**P**	MC%
A	1171,67	1636m	349,87	161,61	9,41	39,63
B	1158,60	1463,3	405,65	299,7	5,76	26,30

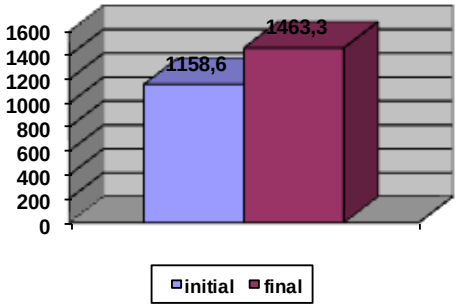
- Running for a period of 12min is a recognized test for the assessment of functional aerobic capacity;
- Very close initial average values , or A = 1171.67 and B = 1158.60 (that is a difference between the two groups of only 13,07 m);
- The size of growth of the average values is higher in group A (MC = 39.63%) compared to group B (MC = 26.30);
- The null hypothesis is rejected for both groups, respectively group A: t = 9.41> 0.01, and for group B: t = 5.76> 0.01. However the improvements produced in the experimental group are definitely higher than in the control group;

6.*Endurance*



increasing 39,63 %

6. *Endurance*



increasing 26,3 %

The results are presented in a logical sequence, through tables and diagrams. The results expressed through text should not be found in the tables and/or diagrams and the other way around.

Discussions

The systematic analysis of potential motility of female students can be an important landmark in the development of specific strategies to operate physical education courses in the faculties of deadlock.

Conclusions

1. The motility indicators system surprised through measurements, largely covers the screen of parts that go into physical composition structure, considered (at global mode) with the predominant purpose of the systematic practice of aerobic gymnastics. Thus, are included segmental force indicators (back, abdomen, arms) which provide information on the relative strength (respiratory strength kg / body) speed and power under speed, functional aerobic capacity, etc.
2. Both groups improve their initial parameters value as a result of applied training programs. However, the amounts of growth made by the experimental group are significantly higher than in control group.
3. The experienced teaching project which predicted the transition from frontal training to group and individual training was more effective than that which has been prepared by the control group subjects.
4. An important role in achieving superior results by the experimental group had the application of the differentiation and awareness of the activity.In this respect, each subject was aware of the shortcomings of order motility that she has, the goals and purposes they have to perform, according to which were established operational structures (systems of exercises and methods) that were practiced systematically in their free time.
5. Activity in smaller groups (mini groups) and even in couples made based on the values criterion, on aspirations or on affective relationships, led both to improve group social relations and to increase Actual motility indicators.
6. The most significant evidence for educating the functional aerobic capacity (for subjects of both groups)has been running for 12 minutes. Here the difference between the growth sizes for the two groups is obvious (31.63% versus 26.30%).We tempt to say this difference was achieved both through a better body adaptation to the demands of medium intensity that requires the test, but also the psychological order such as the fortitude, the desire for self-improvement, active involvement in work and so on.
7. Generally systematic practice of aerobic gymnastics submits the students to a work performed under specific pleasant ambience

(music, relationships with partners, organizational framework, etc.) which favor the habit of making physical efforts or to work.This skill becomes a habit that is involved in leisure activities (as a countervailing concern).

8. Our research has revealed useful information on the level of motility of female students motility who practice the aerobics class. After the experiment it was found that especially strength and endurance development can be done by means of aerobic gymnastics.
9. Both the experimental group and the control had higher averages at the final testing than the baseline for each indicator in question, but in different proportions. The progress of the experimental group compared to the control one, proves the efficiency of methodical processes and aerobics programs used for the experimental group.
10. After the experiment it could be determined a system of ways and means to act effectively in order to increase motility parameters of female students, which is actually the purpose of the work.

References

Alexe, N., 1974, Terminologia educaţiei fizice şi sportului, Editura Stadion Bucharest.

Bizim, A., 1994, Metodica educaţiei fizice în învăţământul superior, Editura Universităţii Bucureşti, Bucharest.

Dragnea, A., 2002, Teoria activităţilor motrice, Editura Didactică şi Pedagogică, Bucharest.

Dragnea, A., 1994, Măsurarea şi evaluarea în educaţie fizică şi sport , Ed Sport Turism, Bucharest.

Epuran, M., 1994, Metodologia cercetării activităţilor corporale, Vol. I-II, ANEFS.

Macovei, S., 2002, Gimnastica aerobica de intretinere – ghidul specialistului, Editura Afir, Bucharest.

Stoica, A., 2012, Gimnastică aerobică, Editura Universităţii din Bucureşti, Bucharest.

Tudor, V., 2005, Măsurare şi evaluare în cultura fizică şi sport, Editura Alpha, Bucharest.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 485-489

THE EFFECTS OF A 12-WEEK-SWIMMING TRAINING ON SOME ANTHROPOMETRIC PARAMETERS AND HAND GRIP STRENGTH OF MALE ELEMENTARY SCHOOL STUDENTS BETWEEN THE AGES OF 8-12

GÖKHAN İSMAIL[1], CENGİZ ŞARVAN ŞEBNEM[1], AKTAŞ YAKUP[1]

Abstract

Aim: Regular exercise is to increase children's physical and functional capacities. Significant degree of physical working capacity in children with growth changes. Developmental age children tend to grow faster than the body parts of the body. This period of major changes occur in the children's motor skills. The aim of this study, that boys swimming training as height, weight, and in particular to investigate whether the effect of the arms and hand grip strength of the development in 8-12 age of boys.

Materials and methods: Group of subjects trained in swimming for 12 weeks (40), do not exercise any control group (40) generated a total of 80 8-12 age of male students. Each of the two groups were evaluated by pre-test and post-test measurements.

participants' body weights, body mass index (BMI), Circumference measurements, hand grip strength were measured.

Findings: After the measurements and comparison of the experimental and control groups' averages, a significant decrease ($p<0.01$) was observed between the experimental group's Flex. Biceps preliminary and final test values: the former 23,96±5,13 and the latter 21,31±3,76. Likewise, a significant decrease ($p<0,01$) was observed between the Ext. Biceps preliminary test values 21,69±3,46 and final test values 20,28±3,61. No significant change was observed in the preliminary and final measurements of the experimental group's Weight, BMI, Forearm Circumference and Handgrip ($p>0,05$). Also, no significant difference was observed between the preliminary and final testing of the control group ($p>0,05$). Comparing the measurement averages of the Experimental and Control groups, a significant difference ($p<0,05$) was found out in the Flex. Biceps preliminary/final tests and the averages of the left arm Handgrip final test (Table.1)

Results: The pre-test and post-test measurements, the boys swimming training on weight, front arm circumference, handgrip right, there were significant differences between the values of the left Handgrip. The results obtained in the

[1]Physical Education and Sport School, Harran University, TURKEY
Email: csebnem@gmail.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

experimental group compared to the control group of boys, especially the flexion of biceps and extansion of biceps are more than rapid development.
Key words: swimming, exercise, handgrip.

Introduction

Besides being a key manifestation of general health and physical fitness, having a good body composition, size and structure has utmost significance in reaching an optimal phyiscal performance (Açıkada, 1990; Boileau and Horswill, 2000; Heyward, 1998). Regular exercise programs change the body composition. Cardiorespiratory training sessions decrease the body weight. There have been considerable amount of studies conducted on how significantly aerobic stamina training affects the body composition (Kannin and Phil 2005; Galliven et all. 1997). It is a well-known fact that any kind of sportive activity increases oxygen consumption, staves off clogged arteries and raises the heart rate. Physical activity plays an important role in living a healthy and balanced life. However, since swimming is performed in a horizontal position, heart and circulatory system function much better while swimming. Therefore, swimmers have more efficient circulatory systems than other athletes. Exercised in water, swimming is one of the rare sports that leads to excellent physical development (Olaru, 1994; Çelebi, 2008; Bozdoğan, 2006). In swimming, where the gravity is almost zero, all muscles of the swimmer work in harmony. Since swimming is performed against the resistance of water, it increases the strength of body without any harm. At the same time, as one of the rare sports used in physical therapy, it improves muscles in a balanced and symmetrical way (Bozdoğan, 2006; Anonymous www.alternatifsporlar.net/yüzme).

The aim of this study is to investigate the effects of a 12-week-swimming training on some anthropometric parameters and handgrip strength of male elementary school students between the ages of 8-12.

Tools and Method

Choosing the participants:80 voluntary male students were chosen randomly from elementary school grades. 40 of them, with the average age of 10,87±1,42 and the average height of 138,98±14,25, constituted the experimental group, and the other 40, with the average age of 10,68±1,46 and height of 141,10±12,68 cm, acted as the control group

Measuring the body weight:

The body weights of the participants were taken with an electronic scale with 0.1 kg sensitivity. The participants were bare feet, wearing only shorts and a t-shirt (Otman A.S. et. al. 1995).

Body mass index:

It was calculated by dividing the body weight in kilograms (kg) by the square of the participants' height in meters (kg/m^2).

Circumference Measurements

Anthropometric tape measure with 1mm sensitivity was used to measure the participants' biceps in flexion and extension together with the forearm circumference (İkiz İ. et. al. 1995).

Measuring the Hand Grip Strength:

Measuring was done with Takei Hand Grip Dynamometer. The reading was done after a five-minute warm-up as the volunteers were standing up with their arms unbent in a 45^o angle and not touching their bodies. The procedure was repeated three times for the right and left hands, and the highest value is used as the hand grip strength value (Tamer, K. 2000).

Statistical Analysis

The raw data derived from the measurement was processed by SPSS-16 package program. In order to examine the differences between the two independent groups, i.e. Experimental and Control groups, Student's T test was conducted on independent groups. The differences between the groups' preliminary and final test results were evaluated by Dependent t test. Significance level was chosen as 0.05 and 0.01 to interpret the difference between the variables.

Findings

After the measurements and comparison of the experimental and control groups' averages, a significant decrease ($p<0.01$) was observed between the experimental group's Flex. Biceps preliminary and final test values: the former 23,96±5,13 and the latter 21,31±3,76. Likewise, a significant decrease ($p<0,01$) was observed between the Ext. Biceps preliminary test values 21,69±3,46 and final test values 20,28±3,61. No significant change was observed in the preliminary and final measurements of the experimental group's Weight, BMI, Forearm Circumference and Handgrip ($p>0,05$). Also, no significant difference was observed between the preliminary and final testing of the control group ($p>0,05$). Comparing the measurement averages of the Experimental and Control groups, a significant difference ($p<0,05$) was found out in the Flex. Biceps preliminary/final tests and the averages of the left arm Handgrip final test (Table.1)

Table:1 Comparison of Experimental and Control Group Measurement Parameters

Parameters	Measurements	Experimental Group (n=40)	Control Group (n=40)	**p
Age	-	10,87±1,42	10,68±1,46	
Height (cm)	-	138,98±14,25	141,10±12,68	
Weight (kg)	Pre Test	37,97±14,56	39,10±13,13	0,548
	Post Test	36,80±14,74	39,06±12,53	0,218
	*p	0,412	0,976	
BMI (body mass index)	Pre Test	18,97±3,96	19,14±3,72	0,754
	Post Test	18,70±4,11	18,98±3,67	0,599
	*p	0,610	0,709	
Flex. Biceps	Pre Test	23,96±5,13	22,79±3,19	**0,034**
	Post Test	21,31±3,76	22,30±3,50	**0,045**
	*p	**0,000**	0,189	
Ext. Biceps	Pre Test	21,69±3,46	21,12±2,96	0,191
	Post Test	20,28±3,61	20,71±3,47	0,379
	*p	**0,001**	0,228	
Front arm circumference	Pre Test	21,17±4,77	22,30±7,47	0,212
	Post Test	20,47±2,95	20,39±8,78	0,939
	*p	0,164	0,053	
Handgrip (right)	Pre Test	28,83±11,87	31,18±14,06	0,197
	Post Test	30,87±12,16	32,23±15,88	0,497
	*p	0,122	0,483	
Handgrip (left)	Pre Test	24,89±9,41	27,48±12,28	0,096
	Post Test	24,81±10,37	28,88±13,50	**0,017**
	*p	0,942	0,280	

***P:** measuring the differences before and after exercise
****P:** Differences in the experimental and control groups

Discussion

Our research studied the effects of swimming exercises on some anthropometric parameters and hand grip strength of 8-12 year old males. According to the results, the primary and final test comparisons of the experimental group's biceps flexion and extension were found to be statistically significant (Table 1). After comparing the average measurements of the experimental and control group, the measures of biceps in flexion and left hand grip strength were found to be significant. On the other hand, no significant difference was identified among the measurements of body weight, BMI and forearm circumference.

The findings of the following research studies support the results that we have reached in our own study: The study of Balci S. et al titled "An Evaluation of Physical Fitness and Performance of the Students between 9-11 ages", where they found no statistically significant difference in body weight and BMI parameters (Balci et al 2000); the study of Kutlu et al where they found no significant difference in body weight measurements after they studied the effect of plyometric training on the anaerobic strength of young soccer players (Kutlu et al. 2001); the results of the study of Polat et al which aims to examine fitness and anthropometric qualities in children and which found the values of the body weight of athletes and sedanters, biceps flexion, biceps extension and BMI not statistically significant.

Also, certain studies in the literature on the changes of body weight do not run parallel to our study (Koc et al 1997; Gearon, 1987)

It can be argued that the reason why there was no change between the pre and post-exercise values of body weight in our study is that while there was a decrease in body fat, there was an increase in total body liquid and muscle mass.

According to our study, after a comparison of the hand grip strength of the experimental and control groups, the left hand grip strength is statistically significant.

In this respect, the results of the following studies are in parallel to those of ours: the study of Ibis et al which compares physical and physiological parameters of children participating and not participating in soccer summer schools and which found a significant difference between the right hand and left hand grip power; the study of Akkus et al which examines the motoric qualities of the 12-14 year-old male tennis players on power training and which identifies significant differences between the right had and left hand grips of the control and experimental groups; a similar study by Aydos et al which found a statistically significant difference between the parameters of right

hand grip and left hand grip; the study of Kurkcu et al which reports a statistically significant difference between the parameters of right hand grip and left hand grip; and Erol's quick power study on 28 young athletes between the ages of 16-18 which found the experimental group's right and left hand grip power statistically significant (Erol, 1992).
The studies conducted about how regular exercise improves grip power (Katie et al 2003) support the values that we derived from our own study.

Conclusion

The pre-test and post-test measurements, the boys swimming training on weight, front arm circumference, handgrip right, there were significant differences between the values of the left Handgrip. The results obtained in the experimental group compared to the control group of boys, especially the flexion of biceps and extension of biceps are more than rapid development.
In conclusion, we can say that the 12-week swimming training affected the anthropometric parameters and hand grip strength of male elementary school students. We believe that this stems from the unique qualities of the swimming activity.

References

Açikada, C., 1990, Sporcularda Vücut Kompozisyonu Parametrelerinin İncelenmesi. Marmara Üniversitesi, Doktora Tezi, İstanbul.

Aktaş F, Akkuş H, Harbili E, Harbili S. , 2011, Kuvvet Antrenmanlarının 12-14 Yaş Grubu Erkek Tenisçilerin Bazı Motorik Özelliklerine Etkisi, Nigde University Journal of Physical Education And Sport Sciences Vol 5, No 1, 2011

Anonymus…(www.alternatifsporlar.net/yuzme), Erişim:23-09-2009

Aydos L, Taş M, Akyüz M, Uzuna., 2009, Genç elit güreşçilerin kuvvetle bazı antropometrik parametrelerinin ilişkisinin incelenmesi, Atatürk Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 11 (4); 1-10.

Balci S, Pelel A, Karakuş S, Pepe H, Revan S, Bağci E. (2000), 9 – 11 Yaş grubu

Beydağı, H., Çoksevim, B., Temoçin, S., & Akar, S. (1992). Akut submaksimal egzersizin spor yapan ve yapmayan kişilerde koagülasyona etkisi. Spor Hek Derg, 27, 113-119.

Boileau R.A., Horswill, C.A., 2000, Body Composition in Sports: Measurement and Applications for Weight Loss and Gain. "Exercise and Sport Science" (Ed. E.W., Garrett and D.T., Kirkendall)'da, Lippincott Williams ve Wilkins, s. 319-338.

Bozdoğan, A., 2006., Yüzme, Morpa Kültür Yayınları, s:6-7. İstanbul.

Çelebi, Ş., 2008, Yüzme Antrenmanı Yaptırılan 9-13 yaş Grubu İlköğretim Öğrencilerinde Vücut Yapısal ve Fonksiyonel Özelliklerinin İncelenmesi, Erciyes Üniversitesi Sağlık Bilimleri Enstitüsü, Beden Eğitimi ve Spor A.B.D, Y.Lisans Tezi, Kayseri.

Erol, E., 1992, Çabuk Kuvvet Çalışmalarının 16–18 Yaş Grubu Genç Basketbolcuların Performansına Etkisinin Deneysel Olarak İncelenmesi, Gazi Üniversitesi Sağlık Bilimler Enstitüsü, Beden Eğitimi ve Spor Anabilim Dalı Yüksek Lisans Tezi, Ankara.

Galliven E.A., Sigh, A., Michelson, D., 1997., Hormonal and metabolic responses to exercise across time of day and menstrual cycle phase. J Appl Physiol;85:1822-1831.

Gearon J.P. , 1987, The Effects of Weight Training on the Body Composition and Strength of Preadolescent Boys, Boston University, Vol. 49 (12).

Gönenç, S.M., ET AL., 1996, "Dört haftalık Yüzme Eğitim Kursunun Çocuklarda Vücut Kompozisyonuna ve Solunum Parametrelerine Etkisi." Spor Hekimliği Dergisi 31.1 : 27-35.

Gözaydin, G.B. Bayazit, M. Cantürk., 2006, 13-14 Yaş okul çağı ergenlik döneminde uygulanan dans yüzme ve tenis etkinliklerinin çocuğun sosyal gelişimine etkisi. 9." Uluslar arası Spor Bilimleri Kongresi : 52-55.

Heyward V.H., 1998, Advanced Fitness Assessment & Exercise Prescription. Third Edition, Human Kinetics, USA.

Ibiş S, Gökdemir K, Iri R. , 2004, 12-14 Yaş Grubu futbol Yaz Okuluna Katılan ve Katılmayan Çocukların Bazı fiziksel ve Fizyolojik Parametrelerinin İncelenmesi, GaziÜniversitesi, Beden Eğitimi ve Spor Yüksek Okulu, Ankara.

Ikiz İ, Yilmaz 0, Akca C, Çankaya C., 1995, 633. Kırkpınar Yağlı Güreşlerine Katılan Güreşçilerin Ekstremitelerine Ait Bazı Antropometrik Ölçümler. Morfoloji Dergisi. 3(2): 16-9. ilköğretim öğrencilerinin performansla ilgili fiziksel uygunluklarının değerlendirilmesi.

Kannin B., Phil D., 2005, The effect of short- vs. long-bout exercise on mood, VO_2 max, and percent body fat. Preventive Medicine;40:92-98.

Katie M. M., Brad S.M., Joanne K., Linda D.V., Terence J. W., 2003, Contribution of Timetabled Physical Education to Total Physical Activity In Primary School Children: Cross Sectional Study. BMJ Volume, 327, 13 September

Koç H., Gökdemir K., 1997, Eurofit Test Bataryası ile 14-16 Eurofit Test Bataryası ile 14-16 Yaş Grubu Hentbolcülerin Bazı Fiziksel ve

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Fizyolojik Parametrelerinin Değerlendirilmesi. Bed. Eğit. Ve Spor Bil. Dergisi, cilt II, Sayı 2: 16-24.

Kutlu, M., GÜR, E., KAMANLI, A., 2001, Plometrik Antrenmanın Genç Futbolcuların Anaerobik Güçlerine Etkisi. III. Uluslararası Akdeniz Spor Bilimleri Kongresi, Muğla. ; 207.

Kürkçü R, Çalişkan E, Şirinkan A, ERCİŞ S., 2007, 12 – 13 Yaş Greko-Romen Güreşçilerinin Vücut Yağ Yüzdesi, Kuvvet, Esneklik, Aerobik ve Anaerobik Güç Özelliklerinin Bir Sezonluk Değişimleri, SPORMETRE, A.Ü. BESYO Spor Bilimleri Dergisi 2.

Olaru, A.M., 1994, Sportif Yüzme; Teknik, Taktik, Antrenörlük Bilgisi, s:10-11, Adana.

Otman AS, Demirel H, Sade A., 1995, Tedavi Hareketlerinde Temel Değerlendirme Prensipleri. 16. Ankara: Hacettepe Üniversitesi Fizik Tedavi ve Rehabilitasyon Yüksekokulu Yayımları: 14-20.

Ozcaldiran, B.; Durmaz, B., 1993, Egzersiz ve yuzme antremanlarinin motor gelisime etkileri./The effects of exersices and swimming training on motor fitness.

Polat, Y, Çinar V, Şahin M, Pepe O., 2003, 14 yaş çocukların fiziksel uygunluk düzeyleri ile antropometrik özelliklerinin incelenmesi, İ.Ü Spor Bilim Dergisi, 11;3 ÖS:127-130

Tamer, K., 2000, Sporda Fiziksel-Fizyolojik Performansın Ölçülmesi ve Değerlendirilmesi, 2. Baskı, Bagırgan Yayınevi Kültür Matbaası, ss. 36- 38. Ankara.

Zülkadiroğlu, Z., 1995, 5-6 yaş grubu kız ve erkek çocuklarda 12 haftalık cimnastik ve yüzme çalışmalarının esneklik ve kondisyonel özellikleri üzerine etkisi. Yüksek Lisans Tezi, Çukurova Üniversitesi, Sağlık bilimleri Enstitüsü, Adana.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 489-493

EFFECTS OF THE STRENGHT CAPACITY IN BASKETBALL AND CONSEQUENCES ON THE SPECIFIC TECHNICAL ELEMENTS

IZZO RICCARDO E.[1,2], GOMEZ PALOMA FILIPPO [3], RAIOLA GAETANO[3]

Abstract

Imagine we have to find a reason why in recent years different sports, including basketball, have been radically changed on a technical, tactical and physical level, and it has made many supporters unfollow this sport. In our opinion, we will surely take in consideration the abandonment of the sports-specific technique for the athletic prowess, since the physical one is more or less the same or slightly reduced. This, of course, is thanks to the management of regulation that the judges have made much more tolerant than the physical contact, something that even at the dawn of this sport wasn't admitted at all. Then, in the 1970s-1980s, we have witnessed a more athletic management of the rules, but always respecting the specific technique of the sport, to finally reach the real struggles for kiloes and muscles at the expense of refinement and technical precision that, in our opinion, has changed the aesthetic essence of the sport, more specifically that of basketball. However, beyond these elements of historical analysis, the truth is that today the basketball player, though in proportion with his role, must be a stronger and more robust athlete and he must be able of standing up to his opponent in matches where the treshold of personal foul has been significantly raised. It goes without saying that to do this and to make the search for the athletes efficient, the selection is based on the role and, above all, on the physical aspect, by lefting the technical evaluation as the last important factor among those valid for a choice. All this has brought coaches, and in particular the physical-athletic trainers, to work more on the strenght, which represents the decisive element and that we will talk about in this paper. In particular, the work is more concentrated on the maximal strenght, the strenght endurance, the explosive strenght and the concept of relative maximal strenght referred to the important neuro-muscular mixture that the athlete has to use in these particular specific actions. For example, in the execution of a jump to hoops the muscles should not be providing a maximal and continuous strenght both in elevation or hibernation, but they must follow specific schema of neuro-muscular delivery so to avoid that the use of maximal strenght to elevate the body could affect the precision of the action itself, something that would lead to a negative performance. This is the reason why we talk of strength relative to the action.

Keyword: Maximal strengh, rapid strenght, strengh endurance, speed strenght, explosive strenght and precision.

Introduction

The question maybe is which aspects of the strenght will be more decisive and which will be more complementary in a game like basketball. It must be said that it's not so easy to define the general concept of strengh since we have to consider physiological and

[1] Health and Sport Science Faculty, Urbino, ITALY
[2] Olimpia Milano basketball EA7 Youth Formation Manager, ITALY
[3]Salerno University, ITALY
Email: riccardo.izzo@uniurb.it

psychological elements of the strenght itself, each one with different aspects and influenced by various factors (Weineck 1999). Therefore, in this work, only aspects particularly related to the use of strenght and that are familiar to the sports-characteristics of basketball will be discussed. The most recognized forms of strength in major sports are certainly the maximal and rapid strenght and the strenght endurance with, specifically in basketball, the explosive strenght, and other subcategories that represent even more distinctive elements for those athletes who are more talented and with some external characteristics that make them necessary, such as the size of the field, the range of the efficiency time of technical elements both for the defense and the offense. It goes without saying that selecting the most appropriate types of useful strenght for the basketball player is important to carry on the most correct and efficient physical-athletic and technical work plan. (Cfr., Grosser, Ehlenz 1984, Luthumann, Antrtter, 1987, 11).

Premise

During the training sessions, players are often required to deliver a level of strengh that is ideally designed for a high level sportsman, without taking due account of those items of the important basic work parameters such as the age, the sex, the objectives, the real possibilities and the level of the athletes in question. Sometimes the demands of the work programme are far from being appropriate and possible for individuals, often because of unsufficient abilities. This specially happens in non-high level/non-professional and youth sector where things must be reached with considerable professionalism and great sensitivity. These difficulties are due, in the mentioned areas, even for the scant means and time required by a certain kind of proposals. In this context, it's just possible to rationally and proportionately try to come closer to the ideal working conditions with great professionalism and ethics.

If in the past basketball was considered a game where the athletic and physical prowess were of main importance, in recent years there has been an amazing evolution for which to a type of player, physically impressive but relatively and athletically normal, it is privileged a type of athlete who is phisically impressive and uses physical contact as his main tool during the offense and the defense, and leaving behind the purely technical issue that in the past years had made the difference in the quality and selection of players. The specific technical training has then taken second place also because the current application of the game rules allows, or even privileges, the hard athletic game.

Imagine for a moment the giants of the NBA, the leading exponents of the physical stressing: with no doubt, they represent an outstanding example of the inestimable value of the physical aspect in modern basketball. Unlike the athletes of the Italian League, the NBA athletes have intensified too much the physical-athletic element and also the technical preparation that has become, for a long time, just of extreme specialization in some technical and tactical elements or so. For example, knowing how to get rebounds or a good defense, how to be a good block for the team or be prepared and know how to do the pick and roll play, the fulcrum of the modern technique in the world of basketball. The Pick and Role, for example, has become so important and essential because of the physical stressing and the bias in the rules towards the defences, in addition to technical impasse that seems the only technical-tactic arm-resource to play basketball today.

At a National League level, during a match, only players with a high level athletic training have those specific requirements that make them able to reach the end of the match, we'd say it's almost too excessively, at the border-line. However, It should be noted that perhaps this obvious and necessary training, strongly concentrated on strength and no longer on the ability of being speed like in the past, has become the cause or the pre-existing cause of the exponential increase in varied types of traumas. Therefore, almost in every sports club strenght gets trained somehow, since it is a decisive factor for achieving better quality performances. Professional clubs usually have specialized trainers for this specific field of strenght, sometimes leaving an adequate work on other equally important qualities, such as general endurance and strength endurance.

All parameters of strenght needed for basketball, then, must be boosted in the best possible way, though not recklessly: the basketball player is not a bodybuilder. As already stated, the mastery of technique and tactics is nothing more than the ability to be able to put in practice during the match, at the right moment, the acquired deep knowledge of specific techniques that play a prominent role, but always considering that the physical condition and the strenght represent additional means or supplementary factors that are absolutely compelling.

At this point, we would like to make a reflection on the highly sensitive issue of the youth sector, or better, on how it would be useful to consider the younger in his best moment of physical-technical involvement, so from 12 to 19-20 years of age, and we would say that for psycho-biological and anatomic-physiological reasons we should divide this period in two brackets: a first of general training and structuring, and a second in which the player is asked to reach , if necessary, a maximal level of strenght (maximal strenght). That's necessary as it's the final compendium of a training aimed at the maximal specialization that cannot pass through the border-line level of the physical-athletic training and, obviously, also the tactical-strategic-technical one. However, in this work, we also experientially and epistemologically deal with the physical-athletic work, by leaving the technical-tactical one to another different abstract.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

The importance of strenght in basketball

From what it has been said before, it results extremely important the need for the basketball player to develop strength, indispensable for every kind of movement, but correctly in parallel to the development programme of other skills that are necessary to the completeness of every athlete. There are several important reasons that highlight the indisputable importance of this ability: first of all, the increasing of the specific ability of performance depending on the result and the possibilities allowed by regulation.

Especially here typical qualities of rapid speed turn out important, such as jumping strenght (elevation), launching strenght (passings, shootings, etc.) and the ability of being speed, or that of reaction and acceleration. A team composed by players with good a ability of jumping will dominate their opponents in airballs, rebounds, and jump shots, as well as in layups, blockings and, moreover, the percentage of number of ball possession would be higher. The latter value often indicates the key to the final victory. A good shooting strenght allows the player to perform for a long time and, at the same time, it makes it hard for the oponents to intercept him. In the relatively limited areas of the field, in a one-on-one match, the ability of reaction (or better, of fast twitch) becomes important to prevail on the opponent. Many instructors – coaches believe they can solve the problem of a bad execution of a technical action, for example, in the one-on-one match (1O1), with the mere administration of extra exercises and without concentrating the work on conditional quality that then makes the real difference; to improve the efficiency of the above described action it is still given great importance to the technical-coordination basis, thus the problem is not evaluated in a more widespread and complete way. Increasing strength in the best possible way means also getting a most efficiency of the technical-conditionals abilities, reaching a general athletic preparation that is crucial to win the tackles and prevail on the opponents, but it's not just that: how could it be possible to increase the ability of supporting the loads of the exercises without ad adequate base that allows to adopt even more efficient training methods? Let's take as example the typical training method of the explosive strenght: the plyometrics. In points of fact, the high psycho-physical load that involves the use of this method assumes a good development of the strenght and a locomotor system, articulations, ligaments and tendons, obviously together with muscles, which is properly prepared and however physio-anatomically ready to work; moreover, for this reason, this method is not very suitable in youth age until about the 14-15 years just because there's not a definitely formed structure and strong articulations, muscles, ligaments and tendons yet. We think it should be noted in this regard, especially at a youth level in general and not only on an under-15 level and single pyrometry, that many traumatic incidents that populate the youth activities, particularly the more structured one, perhaps is even the cause that does not allow the final structuring of young athletes as well as progressive educational proposals relating to the training load and the amount of it in addition to the total amount of the work; very often it's not taken in consideration that the work to be carried out in one year can be done even in just three months just to avoid the skeletal-muscular structures responsible for movement an unsuitable work which could lead to poor structuring of the latters that maybe in long terms may be the causes of traumas. Let's remember that the whole body, particularly in the first age bracket and, even if to a slightly lesser extent, in the second age bracket, needs to stratify and adapt its components in congenial and physiological times so to strengthen itself in an appropriate way .

The aim of the training of the strenght is also an important factor for the strengthening of those small musclar zones which usually are not active, and therefore are not solicited or improved enough with the simple adoption of habitual training loads or during the match; this work is extremely useful to strengthen the entire muscular structure however, although to a lesser part, form an integral part of sport specific movements and actions. They also prove to be even more useful as a support for the prevention structure for some traumas where the performed action has required, for different reasons, an extra use of strenght, and that's thanks to the use of this complementary muscles that the "system" stands.

In this case we talk of supplementary training (Izzo R.E. 1998) and compensation training when the aim of the work on the strenght development is to strengthen those muscles that tend to weaken, such as the abdominal muscles or the gluteus maximus, or to fortify the antagonisic muscles or groups of muscles that would otherwise be overlooked. We would be particularly helped in the study of these issues, obviously individual, by the use of advanced technologies such as the surface electromyography and other ones, in order to determine with precision the various individual needs and prepare a fair and adequate working plan.

Therefore, the prevention of traumas (and not their increasing!) is an additional important aim to be pursued by improving strength. Recent statistical studies have detected the growing incidence of risks and injuries within a game like basketball in which the high intensity of physical contacts, the considerable loads and overloads in jumps and especially once back down on the field, sudden stresses of articulations and fast changes of direction are very usual today and lead the athlete to long periods of absence from the field with serious different consequences for everybody. Strong muscles are certainly able to protect the locomotor system and the skeleton by acting as a load attenuator to which the muscular-skeletal system, and in particular the capsules and ligaments, is continually subjected. A good parameter of youth strenght in team

sports, which amplifies the possibilities of traumas due to different causes but substantially the important contact with the opponent, will be crucial for the performance of key elements of the same sports as the power in the kicks, jumping, running, the explosiveness in the proposition of the actions themselves that will essentially take shape in the performance. An athlete with good strenght quality will certainly be advantaged in prevention and also sometimes in traumatic resolutions, a strong structure helps to avoid specific traumas and reduce their entity. Being strong also helps preventing those diseases that today have become "professional diseases", i.e those traumas for stress overloading due to an excessive training or too many played matches; let's remember that professionals of any sport have a weekly workload of about thirty/ thirty-five hours of border-line work , but let's also remember that the high-level youth sectors is given about fourteen, nineteen, twenty hours of work, and don't forget about the amateur senior and youth sector with an average of eight/ten hours, including competitions. As we have mentioned and as we will see later, the items that we consider of main importance are a good muscular structure, which develops over the years and not with hasty and just overloading work, but in a varied and progressive way. A muscular structure that draws advantages from the body axis stabilization, the balance of/between the muscles them selves and also from the care of core satability. The goal to achieve such qualities is the proposition of exercises that are coherent and functional to the various disciplines, aimed at stabilising the three weakest links of the body structure of the athletes: knee, back and shoulder.

The most frequent cause of injuries, in our opinion, is the bad connections which often are created between muscles that work in a competitive way, more specifically the abdominal and dorsal muscles and possible muscular imbalances with are created, as suggested by the word itself, by alterations of the musculature. In the vast majority of cases, these negative changes are caused, on the one hand, from a probable shortening and disproportionate use of strenght of the agonistic muscles and, on the other hand, it is essentially an imbalance that may be the result of a weakening of the muscles that have not been sufficiently synergistically trained to major muscles.

Remember also that these muscle imbalances may be also due to the fact that, by their nature, certain groups of muscles tend to weaken (as in the case of the already mentioned abdominal muscles and the gluteus maximus), while others tend to shorten (such as the hamstring and the femoral-internal muscles), which is common in sprint and jump athletes, and so in basketball players. Talking about workloads, far removed from the common thinking of people working (or suspectley working) in this field, the overwork, or better an unbalanced or abnormal quantities of working load proposed for young students and advanced athletes (including the high-specialized ones) generates substantial risk factors, especially if sustained over time by creating a substantial weakening of various overstressed structures that superficially seem normal but, when stimulated by an activity of overwork like those above mentioned technical elements, may easily break down like those athletes that have not played for serious injuries and that start playing too early. So it may not always be true that training "a lot" is always better.

Conclusion

As mentioned above, at this point the strength training comes into the game as compensative physical work that can cancel any muscular alteration to transmute the athlete in a real racing machine on the playing field.

That's because this is the real task of a technical team, making every athlete the better possible well-performing with group and specific trainings and in relation to his quality without exceeding this idea, including a "bad" use of medicines.

Finally it should be noticed once again that a skilled work on the strenght capacity, once established the intrinsic quality of the athlete-individual, certainly leads to a growing use of the specific sporting dexterity quality of the athlete. The last remarks has to be made for the building of this great ability that has to be built during the youth age by considering, with great care and respect, the age in which it is proposed. The proposed work must also be long and progressive with appropriate workloads that should not ever overcome the physiological and anatomical intrinsic parameters of the different ages just to tightly build the resistance of the involved structures, muscles, ligaments and tendons. These, in turn, will be useful for the solidity of the articulations by essentially making a rational, real and optimal prevention work as well as for the future of the individual.

Bibliography

Anokhine, P. K., 1974, Teoria generale dei sistemi funzionali in della cibernetica biologica e medica", Mosca.

Bosco, C., 1997, La forza muscolare - aspetti fisiologici ed applicazioni pratiche, S.S.S., Roma.

Bosco, C., 1985, La preparazione fisica nella pallavolo e sviluppo della forza negli sport a carattere esplosivo-balistico, S.S.S., Roma.

Bosco C., Viru A., 1996, Biologia dell'allenamento, S.S.S., Roma.

Calligaris, A., Mondoni M., 1993, Analisi funzionale e biomeccanica della pallacanestro, S.S.S., Roma.

Casella, C., 1980, Principi di fisiologia, La Goliardica Pavese, Pavia.

Cattaneo, L., 1986, Compendio di anatomia umana, Monduzzi Editore, Bologna.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Cometti, G.,1988, Les méthodès modernes de muscolation, tome 1: Données theoriques, UFR STAPS Dijon.
Forni, I., CAPPELLINI 0., 1987, Compendio di meccanica articolare, Argalla Editore, Urbino.
Fox, E. L., 1982, Fisiologia dello sport, Editoriale Grasso, Bologna.
Harre, D., 1977, Teoria dell'allenamento, S.S.S., Roma.
Izzo, R.E., 2013, La preparazione sportiva del giovane atleta, Bologna.
Jakowlew N., Die bedeutung der homoostasestorung fur die Effektivitat des Trainingsprozesses, Medizin und Sport.
Scelsi G., 2013, La froza come prevenzione, Scienza e Sport, Ed Sport Italia srl., n.18-2013,pg. 72-73.
Weineck J., 2000, La pallacanestro ottimale, Calzetti e Mariucci, Perugia.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 493-497

TRAINING A POLYFUNCTIONAL TEACHER IN THE DIALOGUE OF CULTURE AND SPORT

MUNIROVA LEILA R.[1], RAYNIS ANDREI I.[1], GVOZDEVA ANITA N.[1]

Abstract
Regionalization of training teachers of physical culture is considered as the process and the result achieved with multi-functionality specific educational activities in the dialogue of culture and sport. Training a polyfunctional teacher in the dialogue of culture and sport provides a didactic model for polyfunctional physical education and socialization of modern teachers.
Problem Statement: Modern education is characterized by the development, integration in cultural and sport environment of physical teacher training for modern school.
Aim of the study. Establishment regional training system of polyfunctional physical education teacher in the dialogue of culture and sport.
Research Methods. Pedagogical experience, observation, questioning, testing, interview, expert assessment methods of mathematical statistics, diagnosis of cognitive abilities of individuals with the use of valid tests .
Results. Creating and promoting crosscultural and sport enviroment in physical teacher training for schools through intercultural dialogue, inter-university cooperation in its specific areas .
Sport and tourism - the socialization of the individual in sport, cultural and educational environment, Olympic education, inclusive education, museum and ethnographic tourism, festivals of sports and culture in Higher Education. (Ministry of Youth Policy ,Sport and Tourism).
Culture - a sociocultural portrait of Physical Training Teachers in cultural and educational environment, social adaption of migrant students, ethnic culture and intercultural communication of youth subculture.
Education - development of scientific research, international programs of UNESCO, grants, projects, conferences and forums in the development of international and national mobility educational environment ("Professional competence of future teacher in the dialogue of culture and sport in modern university", "Comparative Education in the dialogue of cultures and peoples of the world "," Polyfunctional physical education teacher in a modern multicultural society ").
Key words. Comparative Education, modern multicultural society, regionalization of professional teacher development, a polyfunctional teacher, crosscultural and sport environment.

Introduction

The pedagogical university provides regionalization of professional teacher development for modern schools determined by state, administrative, legal, socioeconomic, sociocultural, and socio-pedagogical factors. Training a polyfunctional teacher in the dialogue of culture and sport provides a didactic model for polyfunctional physical education and socialization of modern teachers.

The theoretical and methodological basis of study are anthropological, cultural, systematic, comparative, competentive approaches to professional education. Comparative pedagogy reveals the positive and negative aspects of international teaching experience, methods and forms of mutual enrichment of national cultures in teaching innovative educational activities.

[1]Bashkir State Pedagogical University, named after M. Akmullah, Sport Department, RUSIA
Email: Leilambspu@yandex.ru

Theoretical and methodological basis for comparative studies are the specific historical, cultural, ethno-psychological, civilizational approaches to comparative education and educational theory and practice in various countries and regions (Badarch, Bondarevskaya, Wulfson, Dzhurinsky, Lapchinskaya, Malkova, Nikandrov; "Yearbook of Education" (Columbia University), "International Yearbook Training and Education, International Journal of Teachers" (Germany), "Comparative Education", "The world of education" ("Le Monde Education"), "Review of Comparative Education").

The implementation of the comparative approach promotes students' understanding the laws of formation and development of global educational thought, research, strategies and trends of the reform of teacher education in the modern world as well as general professional competence and forming an integral characteristic of the future teacher personality.

Multifunctionality is a necessary part of physical teachers professional training for considering that the activity of a modern teacher is multifunctional by necessity, that it demands a widening of the boundaries of their training in order to perform different functions to complete different professional tasks.

Multifunctionality is a quality of provided educational services, which are developed potential of interdisciplinary connections either within one academic subject, or within some, wider functional opportunities in organizations on the spectrum of additional educational programs. Multifunctionality in the professional physical teachers` training provides a means of raising the level of pedagogical universities. The development of skills and competencies will increase the ability to move from one type of practice or job to another. The professional activities will be at a level of development of research and practice which are demanded by the modern educational system in Russia and the world.

The realization of a multifunctional approach in the system of professional training for the future physical teacher necessitates the inclusion in the educational program of different profiles and the development of individual paths for student choice, in order to form professional competencies for the implementation of educational programs in a number of different academic subjects. The expansion of the areas of multifunctional activity (the implementation of elective courses, organization of research projects for students, psychological and pedagogical support of individual educational outcomes for students), new roles for teachers (tutor, technology coordinator, supervisor) supposes the preparation of a multifunctional teacher in the dialogue of culture and sport.

Training a polyfunctional teacher in the dialogue of culture and sport provides a didactic model in the following typology of competences:

Informational competence:

·The main regularities of formation and development of education in the modern world;

·Object and subject of Comparative Education as a science;

·Methodology and Comparative Education;

·Pedagogical views, concepts, theories of Western scholars - comparativists;

The fundamental works in the field of comparative pedagogy, pedagogical constructs and overseas teaching tools;

·Innovative model of learning in foreign countries, the criteria for international accreditation of the quality of educational programs;International standards of efficiency of educational systems improving the quality of higher education;

·Rating of international cultural and educational centers in Russia, Bashkortostan and abroad;

Social competence:

·Describing the main directions of world education in a global, regional and national levels;

·Determine the value of international experience to reform the education system in Russia and Bashkortostan;

·To predict and design the educational process based on modern pedagogical concepts of foreign countries;

·To conduct comparative analysis and to identify patterns of development of modern education in the world;

·To characterize the features of a modern system of teacher education in leading Western countries;

·To evaluate and predict the trajectory of the invariant-integrative world education;

Review the requirements of international standards, European standards and guidelines for quality assurance in higher education (ESG, Standards and Guidelines for Quality Assurance in the European Higher Education Area), as well as national and international criteria for the quality of educational programs;

Personal competence:

·Ways to implement research positions in the professional improvement of the quality assurance system of higher education;

·A system of methods and modalities for a holistic educational process in the context of the transforming functions of Comparative Education;

Graduate competencies as learning outcomes (Learning Outcomebased Approach) to develop, implement and evaluate educational programs;

Basics of the credit system ECTS (European Credit Transfer System) to assess the competence and didactic programs (modules) to ensure their achievement.

The research is based on a group of methods

Social and rehabilitative methods of modern pedagogy of higher education, methods of art therapy and culture, recreational and rehabilitative pedagogy and inclusive education, media and communication (theory - the study and analysis of scientific literature on the study, systematization, classification, analysis, synthesis, comparison , theoretical modeling; empirical - studies in the framework of modern pedagogical university as a centre for the integration of science and education, international cooperation in the modern world and the informational society in the context of the grant policy and international cultural exchange programs.

We could support the main activities for modern physical education teachers in the dialogue of culture and sport:

·Students and postgraduate students initiate the opening of UNESCO Clubs in the rural schools of of Bashkortostan (Tuimazinsky district, School in the village of Yaprykovo; Mechetlinsky district, school № 2 in the village of BolsheUstikinskoe; Duvan district, school in the village of Mihaylovka) and in the Republic of Bashkortostan (schools in towns such as Kumertau, Meleuz, Belebey, Tuymazy, Chishmy, Mesyagutovo, Bishbulyak), carry out scientific and methodological management of the 'UNESCO Associated Schools' projects for participants and educational institutions, implementing programs of international cooperation in the education of the capital (schools № 3, №39, №16, №93, lyceum №5, the experimental area chairs). UNESCO Days are held by volunteer students in educational institutions of the Republic of Bashkortostan in 2008-2012 years.

·The centre organizes teacher training courses "UNESCO movement in modern school" for the heads of educational institutions, who actively participate in international cooperation programs. The main issues of modern education in the context of the international UNESCO-development - "Trends in the development of UNESCO's education in modern world", "Multicultural education, world culture education", "Human Rights in Education", "UNESCO's world education in different countries", the activities of scientific and educational resource center of UNESCO in M. Akmulla Bashkir State Pedagogical University.

·Problem groups in the framework of international cooperation and integration in the context of grant policy between Russian Humanitarian Scientific Fund and Russian Fund of Fundamental Research, international cultural exchange programs of UNESCO, IREX, Fulbright, DAAD, Work and Travel, international exhibitions "Education abroad", the activities of the Department of Science and International Cooperation of M. Akmullah Bashkir State Pedagogical University, Bashkir-American Intercollege are converted to the UNESCO Club as a public organization that unites students on a voluntary basis to promote human principles and ideals of UNESCO at the university.

·In the context of integration of modern education in higher education of the Republic of Bashkortostan, the development of tolerance requires the study of the individual student's social portrait of the Turkish-speaking students in modern schools of Bashkortostan. The projects involve comparative analysis of adaptation of the Russian and foreign higher education in the Republic of Bashkortostan in the dialogue of cultures and civilizations of East and West, the definition of the essence, the content of comparative education in the structure of modern research. "Integration of UNESCO's Education in the national high school".

·The centre cooperates with leading universities in St. Petersburg, Moscow, Kaliningrad, Kazan, Yekaterinburg, implementing innovative projects of UNESCO in the networking of universities and UNESCO Chairs in the sphere of education to provide innovative high school renovation and improvement of educational policy.

·Particular attention is paid to the formation of civic consciousness, world culture and interethnic harmony, which is illuminated by the media (participation in TV programs "All Ufa", radio programs "Yuldash"). The process of socialization of young people - getting the nomination winners of "The World through the eyes of youth" in the grant activities Presentation at the conference "Education. Science. Career." "Innovational potential of youth science", ("Social Portrait of Turkic-speaking youth in the global education dialogue of cultures") of Bashkortostan (Academy of Sciences of Bashkortostan Republic, the House of Peoples Friendship in THE REPUBLIC OF BASHKORTOSTAN)

·Special attention is paid to the socio-pedagogical project, "Solidarity, memory, identity". It serves as the realization of civic engagement, integration in a multicultural society, social mobility, youth ethno-socialization in a multicultural educational environment (school principals, leaders of rural communities, managers of museums), as well as transferring scientific knowledge between cultural and educational institutions that is the objective of museum and library pedagogy.

Development objectives:

- assistance in achieving a high-quality education in secondary schools and universities of the Republic of Bashkortostan (Ministry of Education and Science of the Russian Federation, Ministry of

Education of the Republic of Bashkortostan) in the framework of cultural dialogue, inter-university cooperation "The UNESCO Chair" (UNESCO UNITWIN), associated UNESCO schools, the "Education for All" programs, participation in the Bologna process, education under European Union standards, and the European Credit Transfer Systema (ECTS);

-coordinating UNESCO international programs in contemporary pedagogical universities in Bashkortostan, assisting with the development of education as a basic human right;

-integration of the Chair in the international education and scientific space in the context of globalization, comparative analysis of the Russian and international experiences of professional preparation for teachers in rural schools;

-research into the problems of "assisting the development of a setting up rural libraries" in order to fulfill the goal of "Information for All" as a transfer of scientific knowledge between cultural institutions and educational institutions- museum and library education.

Specific objectives:

-formation of professional competency for the physical teacher in the regional environment;

-integration of mass-media education, information systems and technology in the media industry.

-creation of electronic textbooks, educational portals and websites for the dispersal and exchange of best practices in the area of social pedagogy, publication of a monograph of methodological aids and a series of articles on the issues;

-participation in webinars on comparative education, scientific, methodological leadership of the participants of the project "Associated UNESCO Schools" and educational institutions, taking part in in programs on international cooperation in the regional education system;

-organization of courses "Education in Rural Schools in the UNESCO Program Context" for the leadership of general education institutions of the rural population.

Direction of Activity

Graduate programs, distance learning programs, research activity, invitations to teachers, private lecturers, strengthening of informational and library services.

E**xpected Results**

Creation the modern system of training for multifunctional teachers in the dialogue in culture and sport.

Introduction and implementation of new methods for using innovative technology in rural schools.

Holding regional conferences, organization of lectures, and master classes, publication of monographs.

Organizing the teachers and students exchange of with the goals of assisting academic mobility in cultural dialogue of global education.

Setting up contacts between international and Russian research centers and higher research institutions concerned with these specific issues within UNESCO and TURKSOY programs.

Major activities

- Youth Forum "The Development of Inclusive Educational Environment in the Contemporary Pedagogical University";
- The International Festival of Languages and Peoples "Historical Memory and Cultural Dialogue under the Conditions of Globalization";
- Round Tables of associated schools and UNESCO Chairs "Ethno-cultural Education: Historical Traditions and Cultural Uniqueness;
- Tourist Trips "Ethno-socialization of Youth in a Multicultural Educational Environment";
- Webinars, Online Conferences, Intel-programs (Training for the Future), academic support for SMART schools in the framework of the project "Predicting the Trajectory of Transformation of the Contemporary Pedagogical University";
- The Congress "Slavic Languages and Cultures: Sources, Traditions, and Cooperation" and festivals of Slavic writing and culture.

Conferences and Master Classes on the issues of social and academic mobility for teachers with competent access to education - International M. Akmullah Readings "Socio-cultural Portrait of Contemporary Rural School Teachers in the Republic of Bashkortostan"

International School conferences for young scholars "Sports, Medicine, Genetics, Physiology, Biochemistry, Pedagogy, Psychology and Sociology"

The organization of research activity (training a multifunctional teacher for the contemporary school assumes the inclusion in the educational program of different areas and types and the implementation of individual plans from which the student can choose).

Development the information and library networks for regional education, the creation of

websites. Psychological and pedagogical support of individual educational trajectories, implementation of elective courses.

Courses for physical education teachers, leaders of general education institutions, who participate in the international cooperation programs, courses for raising the qualifications for teachers in sport schools "Education in the Contemporary School in the Context of UNESCO and TYRKSOY Programs"

Conclusions

The concept for the development of a functional model of the modern teacher focuses on methodology, theory and technology of cross-cultural management in education, ethnic and religious tolerance and intercultural dialogue and strengthening of ethnic and cultural unity of the peoples of Bashkortostan. There were published the following monographs: "Methodology of ethno-pedagogy" (Prof. Gayazov A.S.), "Comparative Education", "Building of professional competence of future teachers in the educational environment of the university", "UNESCO - Education in Modern Pedagogical University" "International academic mobility and UNESCO programs» (Assoc. prof. Munirova L.R.), and also several articles on UNESCO problems in the sphere of development of modern physical education.

There were held "round tables", conferences, forums and festivals. The organization of "round table" with the Committee of the Russian Federation for UNESCO, the Secretariat of the Commission of the Russian Federation for UNESCO, the Coordinating Committee of UNESCO Chairs in the Russian Commission for UNESCO, the Committee of the Republic of Bashkortostan for UNESCO, "Pedagogical University - Dialogue of Cultures and Education", "Social Mobility - student's Dialogue of Cultures in Global Education", "Ethno-socialization of the rural teachers", "Professional competence of future teacher in the educational environment of the university", " Comparative Education in the dialogue of cultures and peoples of the world", "Social portrait of modern Turkic physical education teachers", "Intercultural Tolerance of Turkic-speaking students in sport in the educational environment of university", "Inclusive learning environment at sport schools", "The development of the inclusive educational environment in the modern pedagogical high school".

In accordance with the federal state educational standards of professional education of the new generation, the future physical educational teacher will be prepared for the following professional activities: pedagogical; cultural educational; scientific research. In the implementation of each part of the educational program we take into account the existing characteristics of the modern system of regionally oriented professional training: multifunctionality, modularity, variability, flexibility in the dialogue of culture and sport.

Bibliography

Gayazov, A. S., 2010, The competences in the professional development of the modern teacher. "Internet teachers' meeting, dedicated to the professionalism of the teacher", Section "Building professional competence of the teacherб, Ufa, EDU RB, pp. 56 - 59.

Gayazov, A.S., 2011, The construction of "Education through life" and the innovative development of the modern educational system, "Education: Tradition and Innovation", № 1, pp. 30 — 37.

Munirova, L.R., 2011, "Academic Student Mobility within the Dialogue of Cultures and Sport Education in Bashkortostan", THE INTERNATIONAL HIGHER EDUCATION CONGRESS (UYK-2011)., Istanbul, Turkey, pp. 43 — 48.

Munirova, L.R., Rainis, A.,I., Academic mobility of students in the dialogue of culture and sport, Academic Mobility: Challenges and Prospects., Proceedings of the international, pp. 20 — 26.

Munirova, L.R., Rainis, A.,I., Academic mobility of students in the dialogue of culture and sport, Academic Mobility: Challenges and Prospects, Proceedings of the international scientific conference, St. Petersburg: Izd SPbGUSE, 2011, pp. 34 - 40.

Munirova, L.,R., Rainis, A.,I., Ethnic tolerance of Turkic students in sports and educational environment of the university, II International Forum "Strategy for the interaction of educational institutions and employers", Parliamentary Assembly of the States - members of the Commonwealth of Independent States, Saint-Petersburg State University of Service and the economy, Sheffield Hallam University (UK), 2011, pp .67 — 72.

Munirova, L.R., Rainis, A.,I., 2001, Social Portrait of physical culture teachers in modern rural school, Modern problems of physical training education, Baltic Federal University named after Immanuel Kant, Kaliningrad . 2011, pp. 56 — 64.

Overcoming Inequality: Why Governance Matters, EFA Global Monitoring Report, OXFORD University PRESS:UNESCO PUBLISHING; FRANCE, 2009.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 498-505

THE EFFECTS OF BOSU BALL TRAINING ON TEACHING AND IMPROVING THE PERFORMANCE OF CERTAIN HANDBALL BASIC SKILLS

NEVIN BADR[1]

Abstract
Purpose. The importance of optimal balance and stability for athletes is essential for performance and injury prevention. Instability devices are common in fitness facilities as a means of training. There is an abundance of training methodologies and exercises implementing various instabilities-training devices. The popular media and practitioners endorse and sell these products, promoting unstable training as a means of improving sport performance, force production, and core strength. This study aims to identify the effect of the suggested training program using a Bosu ball on each of the following:
The specific physical elements of the handball skills on topics as (legs and arms muscular power, motor speed, agility, balance, flexibility, accuracy and coordination).
Performing the basic skills on topics (dribbling, passing accuracy, passing speed, shooting accuracy, jumping distance at shooting, and speed of shooting with running).
Methods. (31) Female students with the percentage of 30% subjected to a purposeful selection as the sample of the research and divided into two groups officially registered in the theme of handball (1). And after eliminating the failed female students according to their results – only one female student, the actual sample became (30) female students with the percentage of 28% of the research community. The sample was divided into two equal groups as (15) female student each, as follows: The first group: experimental group subjected to the suggested training program using the Bosu ball. The second group: Control group underwent to the traditional method followed in applying the theme of the department.
Results. Statistically significant differences between the average of the pre and post measurements of the experimental group in the physical and skill variables in favour of the post measurement. The researcher returns that to using the Bosu ball as an updated tool in the specific physical preparation part, because the exercises of this group were directed to develop the handball specific physical fitness elements. Moreover, the female students accepted practices with the Bosu ball and positively used it, in addition to its effect on some physical fitness elements which in turn positively affected the handball basic skills.
Conclusions. According to the data and information reached out by the researcher, in the limits of the research sample, the nature of the aim, in the light of statistical data processing and through discussing the results, the following conclusions were reached:
The suggested educational program using the Bosu ball positively affects the physical and skill level in the handball (1) theme.
The traditional teaching method positively affects the physical and skill level in the handball (1) theme.
The suggested educational program using the Bosu ball surpasses the traditional teaching method in the physical level and learning the basic handball skills on the handball (1) theme.
It is obvious that balance which is the primary objective of the tool used in the research, where most researches and references did not indicate its importance in handball, scored good and effective improvement rates in the experimental program.
Key words: Bosu Ball, Stability, Handball.

Introduction

With the information revolution in the twenty-first century, science became the primary language to reach the desired goals in all areas worldwide, and especially the sports field. The world has become a small village where we can look forward to everything new of methods and means of modern educational techniques, moreover, the scientific development is developing in a tremendous speed associated with the speed of transferring information and experiences which enriched the educational process to achieve its goals in the best ways to reach the highest possible level of performance.

Education in the sports field has been affected by this scientific and technological revolution, lately attention increased to achieve better levels and achieve superior

[1]Faculty of physical education, Helwan University, EGYPT
Email: ashamza@zu.edu.eg

results, and planning depends on the scientific methods both in the shape and organizational features, in line with the rapid development of the methods and means of education and training used in physical education with the aim of developing and promoting the physical performance to reach the skills performance in order to achieve the best possible results in performing the sports activity.

The physical preparation in its various stages and types (general and private) is considered the basis where coaches build their plans according to the requirements of the sports activity. It is a general adaptation of an individual to be able to practice the game and all it requires to develop the basic physical qualities as requirements of activity that will improve the player's skills performance. (Mohamed, 1994).The specific physical preparation as it leads to the development of the dynamic qualities of the performance style, as it develops certain needed qualities to overcome the sporting activity difficulties. Moreover, the physical preparation is closely related to the development of the basic skills for the practiced activity to help mastering and developing. (Kamal, 2007).Sport coaching aims to promote the specific physical qualities for various activities which lead to improve and develop different physical abilities (power, speed, agility, endurance, balance, flexibility, accuracy and coordination) which significantly affect acquiring the physical and skills fitness which in turn lead to performing and mastering the basic skills in a good manner through practicing activity in a regular and evolving manner. (Kemal , et al. 1998).Therefore, interesting in the modern teaching methods and tools in the sport field has increased and reaching it has become of the main and fundamental roles for those interested in researching this area, and responsible for the educational process aiming to develop and promote the sports level and achieve the best levels and the highest results.Bosu Ball is considered by the modern means that assists in acquiring the basic physical fitness elements, which in turn have a better impact on performing the basic skills in different activities. It is a strong rubber hemisphere fixed to a solid circular base of industrial non-slipping fibres, and the ball is limited with prominent lines on its full rotation not slip from above or from the side and can be used and work on it from all directions.The Bosu Ball as an assisting mean contributes to the acquisition of the specific physical qualities and general fitness. Moreover, the assisting methods provide sensory experiences in performance thus enrich the educational situation and establish information in the mind of the learner. (Bodour and Soher, 2007)

Handball is one of the team games that positively and obviously affected by the evolution and development of the teaching and training methods to reach the best standards with the player. (Mohamed, 1995)

Handball is one of the main subjects in the curriculum of the faculties of physical education and sports, where skills are taught and mastered through several semesters, where the female students must reach the highest physical and skill levels that enable her to perform well after graduating and applying that in the work field.

For the female student to reach the best performance stage and mastering at handball, she must promote physical and skill levels through appropriate programs in terms of the approved curriculum, with the best means, teaching methods and modern exercises achieve the best effectiveness of the learning process.

Basic skills are the backbone of the game especially in the learning process, the physically and skilful unprepared female student loses control over the ball while moving under the law of the game in order to achieve the best results. (Mounira, 2000.).After reviewing the scientific references, researches and information network, it became obvious to the researcher that handball of the games that have special physical requirements such as (power, speed, agility, endurance, balance, flexibility, accuracy and coordination), as all plays a significant role in determining the student skills performance which requires exerting high-capacity for mastering dribbling, passing, and shooting. (Kamal, and Mohamed 2002; Laila, et al. 1999; Mohamed, 1995; Mounira,. 2000).

The researcher believes that the Bosu ball of the modern assisting tools in the field of physical fitness that affects the development of (power, motor speed, agility, endurance, balance, flexibility, accuracy and coordination), which in turn leads to a significant obvious effect on the physical performance and promoting physical and functional efficiency for the female student and therefore affect the performance, development and mastering the skills performance of the game. Learning and mastering the skills affects the efficiency of vital devices of the female student and therefore raise the technical and aesthetic level of the required performance (8: 24), because of developing the skill performance level depends on the development of the physical abilities and elements. (Laila, et al. 1999). Dribbling, passing, and shooting from running and from long jump are of the basic skills assigned to the female students among the handball (1) theme at the faculty of education, department of physical education, at Kuwait, while there is a theme for handball (K.Galal, 2000).Given the importance of these skills where the skills performance in handball depends upon, and through teaching the theme of handball (Bodour and Soher, 2007) (theme number 135) (attachment -1), the researcher noted the low physical performance and the physical fitness levels, that affected their skilful and tactical performance levels as well as lack of the provided time in the credit hours system in order to complete the education

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

process in a good manner which affects the output of the educational process and the performance of skills by the female students in a good style and mastering performance during the lesson.Hence the researcher considered utilizing the modern assisting means and tools through an innovative teaching program using the Bosu ball as an innovative tool for performing physical exercises in the specific physical preparation part of the lecture to develop and master the physical performance in handball generally, which especially would in turn affect some offensive skills.The researcher has noted through teaching, training and researching in handball experiences the rare use of this tool in the area of team sports despite the low cost, easy performing and well utilizing of the pitch spaces, as well as what the physical fitness practical performance has proved with the success of this assisting tool in promoting the physical fitness and using it as a motivation and excitement element to the female students in order to improve their physical level in its various components. Thus, using assisting and modern tools to improve the physical performance in turn affects the skill performance level, which achieves a good level for handball teachers and coaches to ensure the effectiveness of the educational and training processes.This study aims to identify the effect of the suggested training program using a Bosu ball on each of the following:

-The specific physical elements of the handball skills on topics as (legs and arms muscular power, motor speed, agility, balance, flexibility, accuracy and coordination).

-Performing the basic skills on topics (dribbling, passing accuracy, passing speed, shooting accuracy, jumping distance at shooting, and speed of shooting with running).

Method

Community of the research:

The research community was determined by the random purposive method of the female students of the faculty of basic education for girls, department of physical education at the general institute of applied education in Kuwait in the educational year 2010/2011, as their curriculum contains the theme of handball (1) for female students.

The research community of 112 female students is divided according to the credit hours to groups each of 15 female students and no more than two groups in the same theme according to the organizing regulations and laws of the general institute of applied education in Kuwait.

Sample

(31) female students with the percentage of 30% subjected to a purposeful selection as the sample of the research and divided into two groups officially registered in the theme of handball (1). And after eliminating the failed female students according to their results – only one female student, the actual sample became (30) female students with the percentage of 28% of the research community. The sample was divided into two equal groups as (15) female student each, as follows:

The first group: experimental group subjected to the suggested training program using the Bosu ball.

The second group: Control group subjected to the traditional method followed in applying the theme of the department**.**

Equipments and tools:

Bosu ball for performing and applying the program.
Restameter for measuring height.
Medical scale for measuring weight.
Measuring tape for length and distances.
Stop watch for measuring time.
30 official handballs, for performing the skills exercises and the tests.
Handball goal screen for applying the program tests.
Medical ball of 1KG in weight for performing tests.

Table: (1) Time distribution of the educational unit

No.	Unit's parts	Time
1	Administrative affairs (attendance and absence– information about the unit that will be taught).	10 minutes
2	General warm up	10 minutes
3	Specific physical fitness	30 minutes
4	Main part	60 minutes
5	Final part	10 minutes

That is conducted for both the experimental and control groups in the same order and under the same conditions and timing in all parts of the unit except for the part of the specific physical fitness where exercises with the Bosu ball were conducted as an assisting tool to develop the specific physical fitness elements and promote the basic skills, concerning the remaining parts (General physical preparation – the main part- the final part), there is no differences in teaching between the experimental and control groups, as table (2) illustrates a model of the educational unit workout when using the Bosu ball.

Post-measurements: The Post-measurements were conducted after completion of applying the program for

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

both groups on 17, 18.05.2011 for the physical and skill tests on topics and under the same circumstances of the pre-measurements.

Tests (physical tests – skills tests).
Specific physical fitness tests: the researcher presented the questionnaire to solicit expert opinion (professors of not less than 20 years ' experience in teaching or training handball) with the aim of determining the appropriate physical fitness tests for the research sample. The researcher accepted the tests that have gotten at least 75% of the expert's approval, as follows:
Motor speed test (30 meters running tests).
Agility test (running in a square).
Legs muscular power test (long jump).
Legs muscular power test (vertical jump from stability).
Flexibility test (bending the trunk over from standing).
Accuracy test (nested squares).
Coordination test (throwing and receiving a tennis ball inside the square).
Balance (walking on the Swedish seat with closed eyes) (G. Sahar, and B. Nevein, 2003).
Skills tests: After reviewing references of the skills performance tests of the skills on topics (handball (1) theme); the researcher presented the questionnaire to solicit expert's opinion (in the handball field) for determining the appropriate tests measuring skills on topics. The researcher accepted the tests that have gotten at least 75% of the expert's approval, as follows:
Dribbling speed.
Passing speed.
Passing accuracy.
Shooting accuracy with long jump.
Jumping distance during shooting with jumping.
Shooting speed with running. (Sahar and Nevein, 2003).

Statistical Analysis
All statistical analyses were calculated by the SPSS statistical package. The results are reported as means and standard deviations (SD). Differences between two groups were reported as mean difference ±95% confidence intervals (mean diff ± 95% CI). Student's t-test for independent samples was used to determine the differences in fitness parameters between the two groups. The $P<0.05$ was considered as statistically significant.

Results:

Table (2) Significant differences indications and improvement rate between pre and post-measurement of the experimental group in the physical variables. N=15

Variables	Measuring unit	Pre measurement		Post measurement		F	"T" value	Improvement rate %
		AM	SD	AM	SD			
Speed	Second	7.73	0.88	5.60	0.91	2.13	16.00	27.6
Agility	Second	15.47	1.25	11.13	0.83	4.33	13.60	28.1
Muscular power (Vertical jump)	Cm.	19.73	1.98	24.17	1.33	4.53	10.69	23.01
Legs muscular power (broad jump)	M. /Cm.	116.33	9.15	128.67	7.67	12.33	7.05	10. 61
Flexibility	Cm.	6.60	0.99	7.73	1.03	1.13	5.26	17.12
Arms muscular power	Number	5.57	0.36	5.86	0.40	0.30	5.90	5.21
Balance	Second	8.67	1.18	6.07	0.80	2.60	12.16	30.00
Accuracy	Number	9.00	1.41	21.93	2.19	12.93	28.60	143.67
Coordination	Number	5.80	1.21	11.80	1.08	6.00	14.49	103.45

The previous table illustrates the existence of statistically significant differences between the pre and post measurements of the experimental group in all physical variables in favor of the post measurement. Also illustrates that the improvement rate in physical variables had ranged from (5.21-143.67) for arms muscular power and accuracy variables respectively.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table (3) Significant differences indication and improvement rate between pre and post measurement of the control group in the skill variables. N=15

Variables	Measuring unit	Pre measurement		Post Measurement		F	"T" value	Improvement rate %
		AM	SD	AM	SD			
Dribbling	Second	23.20	1.15	19.13	0.83	4.07	9.97	21.28
Passing accuracy	Degree	9.80	1.57	22.07	1.67	12.27	18.44	125.20
Passing speed	Number	9.93	1.10	23.13	1.68	13.20	25.93	132.90
Shooting accuracy	Number	1.33	0.90	5.67	0.62	4.33	13.60	326.23
Jumping distance in shooting	Cm.	112.33	6.23	197.67	10.33	85.33	25.94	75.97
Shooting at running speed	Second	30.53	3.00	24.87	2.29	5.67	6.17	18.54

The previous table illustrates the existence of statistically significant differences between the pre and post measurements of the control group in all skill variables in favour of the post measurement. Also illustrates that the improvement rate in the skill variables had ranged from (18.54-326.32) for Shooting at running speed and Shooting accuracy variables respectively.

Table (4) Significant differences and improvement rate between pre and post measurement of the control group in the physical variables. N=15

Variables	Measuring unit	Pre measurement		Post measurement		F	"T" value	Improvement rate %
		AM	SD	AM	SD			
Speed	Second	7.53	0.99	6.87	0.99	0.67	3.57	8.76
Agility	Second	15.00	1.25	13.20	1.01	1.80	10.31	12.00
Muscular power (Vertical jump)	Cm.	20.73	1.44	21.60	1.45	0.87	5.25	4.20
Legs muscular power (broad jump)	M. /Cm.	115.00	4.63	117.33	4.58	2.33	2.82	2.03
Flexibility	Cm.	6.33	1.18	6.93	1.22	0.60	2.55	9.48
Arms muscular power	Number	5.45	0.45	5.59	0.39	0.14	2.19	2.57
Balance	Second	8.73	0.88	8.20	0.77	0.53	4.00	6.07
Accuracy	Number	9.73	2.12	14.47	1.46	4.73	7.72	48.72
Coordination	Number	5.13	1.19	9.80	1.57	4.67	18.52	91.03

The previous table illustrates the existence of statistically significant differences between the pre and post measurements of the control group in all physical variables in favour of the post measurement. Also illustrates that the improvement rate in the physical variables had ranged from (2.03-91.03) four legs muscular power and co-ordination variables respectively.

Table (5) Significant differences indication and improvement rate between pre and post measurement of the control group in the skill variables. N=15

Variables	Measuring unit	Pre measurement		Post measurement		F	"T" value	Improvement rate %
		AM	SD	AM	SD			
Dribbling	Second	23.40	1.06	21.07	1.03	2.33	5.26	11.1
Passing accuracy	Degree	10.13	1.41	18.73	1.83	8.60	18.87	84.90
Passing speed	Number	9.33	1.11	20.60	1.99	11.27	20.58	120.79
Shooting accuracy	Number	1.00	0.85	3.93	0.80	2.93	16.14	293.00
Jumping distance in shooting	Cm.	109.33	6.78	172.33	11.32	63.00	17.94	57.62
Shooting at running speed	Second	30.60	3.29	27.20	2.51	3.40	3.60	11.11

The previous table illustrates the existence of statistically significant differences between the pre and post measurements of the control group in all skill variables in favour of the post measurement. Also illustrates that the improvement rate in the skill variables had ranged from (11.1-293.00) for dribbling and Shooting accuracy variables respectively.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table (6) Significant differences indications between both post measurements of the sample of the research (experimental and control groups) in the physical and skill variables. N=15

Variables	Measuring unit	Control group		Experimental group		"T" value
		AM	SD	AM	SD	
Speed	Second	6.87	0.99	5.60	0.91	3.65
Agility	Second	13.20	1.01	11.13	0.83	6.10
Muscular power (Vertical jump)	Cm.	21.60	1.45	24.27	1.33	5.23
Legs muscular power (broad jump)	M. /Cm.	117.33	4.58	128.67	7.67	4.91
Flexibility	Cm.	6.93	1.22	7.73	1.03	1.94
Arms muscular power	Number	5.59	0.39	5.86	0.40	1.90
Balance	Second	8.20	0.77	6.07	0.80	7.43
Accuracy	Number	14.47	1.46	21.93	2.19	11.01
Coordination	Number	9.80	1.57	11.80	1.08	4.07
Dribbling	Second	21.07	1.03	19.13	0.83	5.64
Passing accuracy	Degree	18.73	1.83	22.07	1.67	5.21
Passing speed	Number	20.60	1.99	23.13	1.68	3.76
Shooting accuracy	Number	3.93	0.80	5.67	0.62	6.65
Jumping distance in shooting	Cm.	172.33	11.32	197.67	10.33	6.40
Shooting at running speed	Second	27.20	2.51	24.87	2.29	2.66

The previous table illustrates the existence of statistically significant differences at the significance level of 0.05 between both post measurements of the experimental and control groups in all physical variables except for flexibility and arms muscular power variables in favour of the post measurement of the experimental group. Also illustrates the existence of statistically significant differences at the significance level of 0.05 between both post measurements of the experimental and control groups in all skill variables in favour of the post measurement of the experimental group.

Discussion

In light of the aims and hypothesis of the research and verifying its validity and the results reached out through the statistical processes of the data, the researcher discussed the results as follows:

Tables (2) and (3) illustrated that there are statistically significant differences at the significance level of 0.05 between the average of the pre and post measurements of the experimental group in the physical and skill variables in favour of the post measurement. The researcher returns that to using the Bosu ball as an updated tool in the specific physical preparation part, because the exercises of this group were directed to develop the handball specific physical fitness elements. Moreover, the female students accepted practices with the Bosu ball and positively used it, in addition to its effect on some physical fitness elements which in turn positively affected the handball basic skills. That is consistent with both (Romero-Franco, et al. 2011; Young. et al. 2001) where their results indicated that the exercises using the Bosu ball in the training program have good impact on increasing power and speed elements with their types and training on the Bosu ball has the effect of resisting the body mass and influencing the working muscles, which in turn has a positive impact on the sports skills.Moreover, that may be due to using an assisting tool to develop physical fitness elements which led to improve the learning process in a better manner and provoking the female students' enthusiasm to work and also the challenge of being able to perform on the ball and away from repetition, routine in performance. Age requirement and its fast rhythm require the use of every modern thing in order to attract the attention of the female students, provoking their enthusiasm to work, and promoting their physical and skill performance level, which are consistent with (Zainab, 1991) . As indicated that the assisting educational tools have a positive effective influence on the learning process and editing it in the best feature as it provokes enthusiasm and the activity of the female students leading to diversity and excitement in the exercises.The researcher also returns the progress in the physical level, which in turn affected the skill level for their close relation to each other, wherein the pitch we cannot separate between them as both affects the other, and this is consistent with the indication of (Kamal, 2007). The researcher noted that in spite of some researchers and experts ignores and avoids the importance of balance in handball as a game and as an essential element for being developed among the physical fitness elements,

as indicated by the experts questionnaire and some of the references, and agreed upon by both Laila Labib et al. (10), (Kamal, 2007) (Galal, 2000), but the researcher had measured the balance element as the main element developed and promoted by the ball, where the balance element interferes with developing all the other elements as well as the handball basic skills.

The research results illustrated that developing balance affected the neuromuscular coordination which in turn affected the jumping distance in the jump shoot as well as accuracy in both passing and shooting, as indicated by (Kamal, and Mohamed, 2002.) that the balanced landing has landed yet after a handball skill requirement through high or long jump, where the player's balanced landing correlates to the handball motor skills, whether the player in the position of the ball or not according to the skill, that is consistent with the study of (Young. et al. 2001) that using Bosu ball assisted in gaining balance as an important element for achieving changes in runners' results along with minimizing and reducing the risks of injury and developing the centre of stability and balance which in turn affects the physical and skill performance levels.Table number (4) and (5) illustrates the existence of statistical significant differences at the level of 0.05 between the average of the pre and post measurements of the control group in favour of the post measurement in the physical and skill level.

The researcher returns that to the followed traditional method, which achieved concrete and acceptable results, where it's supposed and naturally that the traditional method should achieve progress and learning about the physical and skills performance as long as its subject of the scientific fundamentals. Moreover, the researcher studied both groups without bias and followed the same teaching method in the preliminary part specific for learning the basic skills on topics, as well as the final part specific except for the specific physical preparation, which depended on free exercises using body mass on solid ground and the resistance of muscles that helped to strengthen the main muscles, as well as repeating the exercise workouts and the athletic performance contributed to promoting and developing the physical and skills elements, that is consistent with the studies of each of Mounir and Nermeen, 2008), and (Sahar, and Nevein, 2003).

The researcher returns that progress due to the type of the sample (physical education college female students of Kuwait), despite the good anatomical and physiological determinants of this sample, but in accordance with the customs and traditions they do not exercise in public life and therefore the initial practice as beginners within the college will affect their physical and skill performance levels in an acceptable manner.Table number (6) and (7) illustrates the existence of statistical significant differences at the level of 0.05 between the averages of the post measurements of both the control and experimental groups in favor of the experimental group in the research physical and skills variables, as well as the improvement rates between the two groups except for flexibility and arm muscular power of the physical variables, as the results shows no statistical significant differences between both post measurements, although the improvement of both but differences gave no evidence.

The researcher returns the surpass of the experimental group than the control group due to using the Bosu ball in the specific physical preparation part highlighting the importance of using the suggested exercises for their positive impact on the physical performance, which is consistent with the importance of the modern equipments and tools as new inputs assists to reach better learning outputs giving excitement and motivation to work and exerting effort and avoiding routine and boredom in performance, which helps to develop the sport skills teaching methods in the physical education colleges in general and handball theme in particular, as indicated by (Bodour and Soher,2007) and (Nahed, Neli, 1997). The researcher agrees with the study of (Mounir and Nermeen, 2008) which proved that using a medicine ball as an assisting tool led to better results in significant improve in physical and skills performance in handball especially in the upper part of the body for handball female juniors.

The researcher believes that the increased skill level is an indicator to identify the physical fitness level by measuring progress in performance; skill performance is related to the physical level and depends on what the female students own of the physical qualities that enable them to perform skills well. This was also referred to by (Moufti , 2001). (Die, Karim 1998) mentioned that the legs muscular power element plays an important role in determining the skills performance of the player that require high performance to overcome body weight and gravity, this reinforces the main aim of the Bosu ball used in the research.The researcher believes that there are no statistical significant differences between the post measurements for the experimental and control groups in the physical variables (flexibility and arms muscular power) and that may be due to using exercises of body weight and resist gravity with the control group that contributed well in promoting the physical level to equate with the Bosu ball specific exercises of the experimental group in flexibility and arms muscular power. Both elements may need to a longer period of time, where training with the Bosu ball within the program mostly depended on coordination, speed, and legs muscular power exercises through the balance element. This is consistent with (Mounir, Nermeen, 2008) that

performing resistance exercises on a stable surface lead to strengthen the main muscles in a better manner. Although there are no statistical significant differences, the improvement rate for both variables shows surpass of the experimental group than the control group.

Conclusions

According to the data and information reached out by the researcher, in the limits of the research sample, the nature of the aim, in the light of statistical data processing and through discussing the results, the following conclusions were reached:

The suggested educational program using the Bosu ball positively affects the physical and skill level in the handball (1) theme.

The traditional teaching method positively affects the physical and skill level in the handball (1) theme.

The suggested educational program using the Bosu ball surpasses the traditional teaching method in the physical level and learning the basic handball skills on the handball (1) theme.

Recommendations

In light of the research aims, and the results, thereof the researcher recommends:

Using the suggested program with the Bosu ball in handball themes to raise the physical level, which has the greatest effect in raising the skill level.

Using the Bosu ball in physical fitness programs in corresponding themes such as volleyball and basketball as well as the theme of general physical fitness in the faculty of basic education.

Using the Bosu ball in a similar thesis in order to develop the elements of muscular power, balance, and agility and its effect on the high jump distance in the shooting with a high jump in handball.

Using modern assisting tools in the sports field, which have proven its effectiveness for promoting physical and skill levels of the female students of the faculties of physical educations in order to reach the mastering stage.

References

Bodour, A., Soher, B. 2007. Physical education, its curriculum and teaching methods, Kuwaiti Association, 2006.

Diaa, E., Karim A. 1998. Handball, Dar Elkotob, Iraq.

Essam, E. Tarik A. 2000. Basketball, practical applications- teaching and education, Cairo.

Galal, K. 2000. Modern handball, fundamentals and applications, Reklam.

Kamal, A., Mohamed S., 2002. Handball modern quadrennial, part 2.

Kamal, S. 2007. Performance and education of handball and its applications, Dar El-Elm.

Kemal, D. et al. 1998. Physiological bases of training theories and applications, publishing house centre.

Laila, L. et al. 1999. Handball, 2nd edition, Cairo.

Mohamed, H. 1994. Sport training science, 12th edition, Dar El-Maaref, Cairo.

Mohamed, S. 1999. Measurement and evaluation in physical education and sport, 4th edition, Dar El-Fekr El-Araby.

Mohamed, T. 1995. Handball, teaching – training – technique.

Moufti , I. 2001. Modern sports training, planning, training and leadership, Dar El-Fekr El-Araby, Cairo.

Mounir, A, and Nermeen, F. 2008. The effect of using the Swiss ball to learn some offensive basketball skills, 3rd international scientific conference, faculty of physical education for girls, Zagazig, March 2008.

Mounira, M. 2000. Handball, history, skills, goalkeeper, plans, and law, 2nd edition.

Moustafa, G., Kazem, G. 2007. Physical fitness and health, Kuwait.

Nahed, S., Neli, R. 1997. Teaching methods in physical education, Book Center.

Romero-Franco N, Martínez-López E, Lomas-Vega R, Hita-Contreras F, Martínez-Amat, A., 2012, Effects of proprioceptive training program on core stability and centre of gravity control in sprinters. J Strength Cond Res. Aug; 26 (8): 2071-7.

Sahar, G., Nevein, B. 2003. The effect of using each of the biometrics training and trampoline on promoting the specific physical qualities, and shooting with high jump skill in handball, Journal of contemporary psychology of Humanities sciences, vol. 12, part 3, October.

Young W, Elliott S. 2001. Acute effects of static stretching, proprioceptive neuromuscular facilitation stretching, and maximum voluntary contractions on explosive force production and jumping performance. Res Q Exerc Sport. ;72:273–279.

Zainab, O 1991. Theoretical fundamentals and practical applications in teaching methods and physical education, Cairo.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 506-511

THE EFFECT OF 14 WEEK REGULAR AEROBIC-STEP EXERCISES ON FEMALE UNIVERSITY STUDENTS' CHOLESTEROL LEVELS

NEVZAT DEMİRCİ[1]

Abstract
Aim. It was aimed in this study to detect the effect of 14 week regular aerobic-step exercises on female university students' plasma cholesterol levels.
Method. The participants of the study were 64 healthy voluntary female university students. Out of these students, 32 students formed the exercise group and 32 students formed the control group. Students practiced the continuous aerobic-step exercise program for 60 minutes for 3 days a week. Intensity of the exercise was calculated as 50-70% via Karvonen formula. Prior to the practice of exercises; age, length, body weight, relaxation heart rate, systolic and diastolic blood pressure and blood lipids of the participants were measured. T-test was used for the statistical analysis of the data. Each physiological variable obtained from the measurements was accepted as significant at the level of $p<0.05$.
Findings. At the end of the study, body weight, relaxation heart rate, systolic and diastolic blood pressure, total cholesterol, LDL-Cholesterol, triglyceride levels of the exercise group significantly decreased while HDL-Cholesterol values significantly increased ($P<0,05$, $p<0.01$).
In conclusion, it was detected that regular and continuous 14 week aerobic-step exercises that are performed by the participants for 3 days in a week was effective on cholesterol levels of female university students.
Key Words: aerobic-step exercise, cholesterol levels, blood pressure

Introduction

Exercise is most important for every living being; in other words, we can also say that physical inactivity results in several types of diseases in the body. It mostly causes Cardio-vascular diseases. So, if we maintain and keep balance between our diets and regular exercise, it will result the best. Morning walk is often suggested by the doctors. It is also suggested by the experts that a human body needs a five day exercise in a week, irrespective of what age he/she belongs (Narayani and Sudhan, 2010). However, primary aim of regular exercise is to prevent organic deficiencies due to sedentary life style and, to the extent possible, to maximize physiological capacity and tolerances, which are the fundamentals of a dynamic and balanced life. Therefore, regular aerobic-step exercises improve physical capacity of individuals and play a role in primary and secondary protection from cardiovascular diseases (Morris and Froelicher, 1991; Ummanand and Kaya, 2001). Exercise improves functional capacity in addition to certain cardiovascular diseases in completely healthy people. In addition to controlling lipid, carbohydrate, diabetes and obesity, regular exercises slightly decrease blood pressure in some hypertensive groups (Martin et al., 1990). Exercises such as aerobic-step, walking, climbing stairs, joggings, cycling, swimming, rowing, tennis, football and basketball have a significant impact when they are done regularly. These types of exercises generally require an effort of higher than 50% of exercise capacity of an individual. But, Physical inactivity or sedentary life style is also considered a risk factor for Coronary artery disease (CAD). Regular exercise results in an increase in exercise capacity and lowers myocardial oxygen demand leading to cardiovascular benefits, including lower mortality rates and fewer occurrence of CAD. It is advised that those individuals who are inactive should increase their physical activity gradually (Shirazi, 2006). Those who participate in light levels of exercises or who are irregularly active should attempt to exercise more regularly at least at moderate levels. The beneficial effect will depend upon how active the individual is at the base line. For example sedentary people will gain the most followed by moderately active individuals (Wood, 1998).
Having high cholesterol can cause life-threatening diseases. However, it can be controlled through diet and exercise. When there is high cholesterol, the HDL and LDL cholesterol levels are reversed making LDL level higher than HDL level. It is also important to consult a physician before starting any diet or exercise routine. He/she will monitor the progress to determine if medication will be needed to control the high cholesterol (Kitamura et al., 2004). However, People doing exercise are expected to experience certain physiological changes along with acute and chronic adaptation. It was reported that regular and long-term

[1]Kafkas University Faculty of Education Department of Special Education, Kars, Turkey
nevzatdemirci44@hotmail.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

and moderate degree of aerobic-step exercises decrease lipids such as total cholesterol (Total C), low density lipoproteins (LDL-C), triglyceride (TG) and increase high density lipoprotein (HDL-C) level. Furthermore, it was emphasized that high blood pressure and obesity diseases are decreased by exercise (Lemuraand and Amdreacci, 2000).

It is widely suggested in the literature that regular exercise has positive impacts on lipid profiles and protects from coronary risk factors. However, in recent years, researchers report controversial results on the type and duration of exercise in terms of leading beneficial changes in lipid metabolism (Engeret al., 1997, Martı, 1991). While some researchers suggest that even an acute exercise changes lipid parameters, some others report that this change will occur after long-term and regular exercise (Martı, 1991). Although aerobic exercises are known to have positive impacts on blood volume, oxygen carrying hemoglobin and heart rate volume, lower number of heart rate number is required due to increased heart rate volume (Günay et al 1998).

This study aimed to analyze the effect of 14-week aerobics-step exercises (3 days a week, at 50-70% intensity) on cholesterol levels.

Material and Method

This study was carried out in accordance with Helsinki Declaration. The participants were informed about the aim and possible risks of the study. Written consents of the participants were taken. The study consisted of 64 healthy female university students (32 experiment group, 32 control group). Age, height, body weight (BW) (at a sensitivity of 0.1kg, 0.1 cm), resting heart rate (HR rest), (rate/min), systolic blood pressure (SBP), diastolic blood pressure (DBP), (mmHg) of the participants were recorded before and after the exercise program. Blood lipids (Total-C, HDL-K, LDL-C and TG) values were evaluated by analyses at Kafkas University Faculty of Medicine.

The subjects participated in an aerobic-step exercise program 3 days a week for 60 minutes. Exercise intensity: target heart rate number was determined according to reserve (Kravonen) method at the end of 10 second heart rate count from carotis artery immediately after the completion of exercise (Tamer, 2000 and Fox, 1999). The method is explained below.HR max= 220-Age HRR= HR max- HR rest, %50-70 THR = (0.50 x HRR or 0.70 x HRR) +HR rest. All measurements and tests on the subjects were performed for two times; prior to the exercise program (pre-teat) and after 14-week period (post-test). Arithmetic mean, standard deviations (standard errors) were calculated. Paired sample t-test was used to compare pre-test and post-test values of the subjects. The values ≤ 0.05 were regarded as significant.

Results

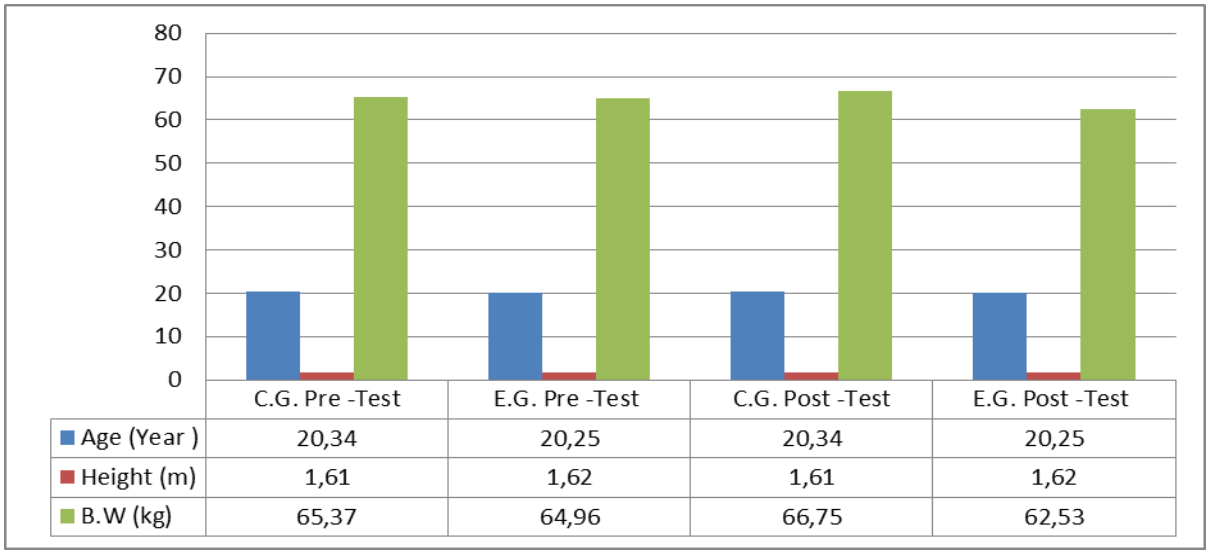
Measurement results obtained from the 14-week aerobic-step exercise program (3 days a week) are presented in Tables 1-3 and Figure 1-3

Table 1: Anthropometric Measurement Values on the Subjects in Exercise and Control Groups. Data is presented as mean ± standard deviation

Groups	Variables	Pre -Test	Post -Test	*p value
Control Group (n=32)	Age (year)	20.34 ± 1.91	20.34 ± 1.91	p> 0.05
	Height (m)	1.61 ± 5.30	1.61 ± 5.30	p> 0.05
	B.W. (kg)	65.37 ± 2.05	66.75 ± 1.95	p< 0.05
Exercise Group (n=32)	Age (year)	20.25 ± 1.75	20.25 ± 1.75	p> 0.05
	Height (m)	1.62 ± 4.88	1.62 ± 4.88	p> 0.05
	B.W. (kg)	64.96 ± 1.87	62.53 ± 1.41	p< 0.05*

B.W.: Body Weight

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories



	C.G. Pre -Test	E.G. Pre -Test	C.G. Post -Test	E.G. Post -Test
Age (Year)	20,34	20,25	20,34	20,25
Height (m)	1,61	1,62	1,61	1,62
B.W (kg)	65,37	64,96	66,75	62,53

C.G.: Control Group, E.G.: Exercise Group, B.W.: Body Weight

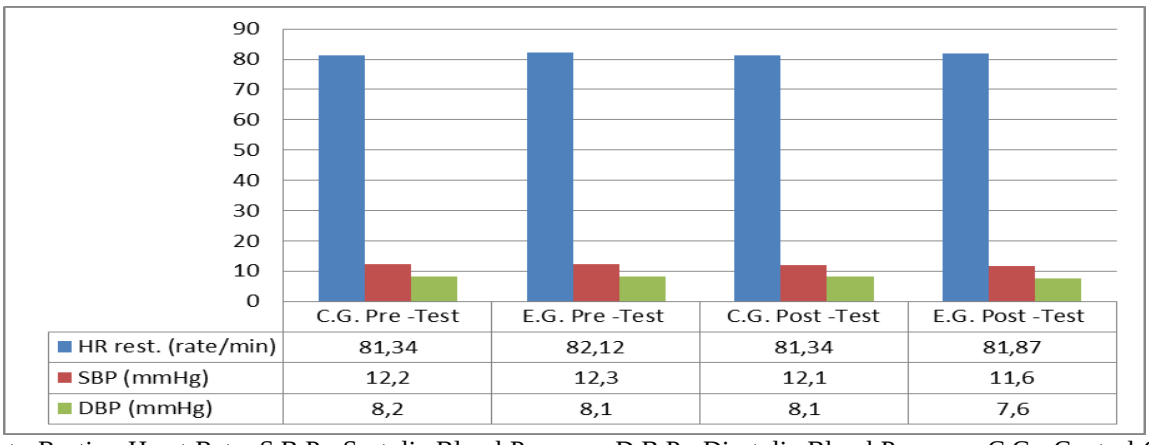
Figure 1: Anthropometric Measurement Values on the Subjects in Exercise and Control Groups. Data is presented as mean

It is understood from Table 1and figure 1 that exercise and control groups were similar in terms of age and height values and showed no significant difference ($p>0.05$). However, comparison of body weight values before and after starting the exercise program showed that there was a statistically significant decrease in body weights of the subjects in exercise group ($p<0.05$).

Table 2. Resting Heart Rate and Blood Pressure Values in Exercise and Control Group Subjects. Data is presented as mean ± standard deviation.

Groups	Variables	Pre-Test	Post- Test	*p value
Control Group (n=32)	HR rest. (rate/min)	81.34 ± 2.97	81.34 ± 2.96	p> 0.05
	SBP (mmHg)	12.2 ± 1.26	12.1 ± 1.17	p> 0.05
	DBP (mmHg)	8.2 ± 0.8	8.1 ± 0.8	p> 0.05
Exercise Group (n=32)	HR rest. (rate/min)	82.12 ± 3.17	81.87 ± 2.92	p< 0.05*
	SBP (mmHg)	12.3 ± 0.7	11.6 ± 0.5	p< 0.01*
	DBP (mmHg)	8.1 ± 0.8	7.6 ± 0.5	p< 0.05*

HR rest.: Resting Heart Rate, S.B.P.: Systolic Blood Pressure, D.B.P.: Diastolic Blood Pressure



	C.G. Pre -Test	E.G. Pre -Test	C.G. Post -Test	E.G. Post -Test
HR rest. (rate/min)	81,34	82,12	81,34	81,87
SBP (mmHg)	12,2	12,3	12,1	11,6
DBP (mmHg)	8,2	8,1	8,1	7,6

HR rest.: Resting Heart Rate, S.B.P.: Systolic Blood Pressure, D.B.P.: Diastolic Blood Pressure, C.G.: Control Group, E.G.: Exercise Group

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

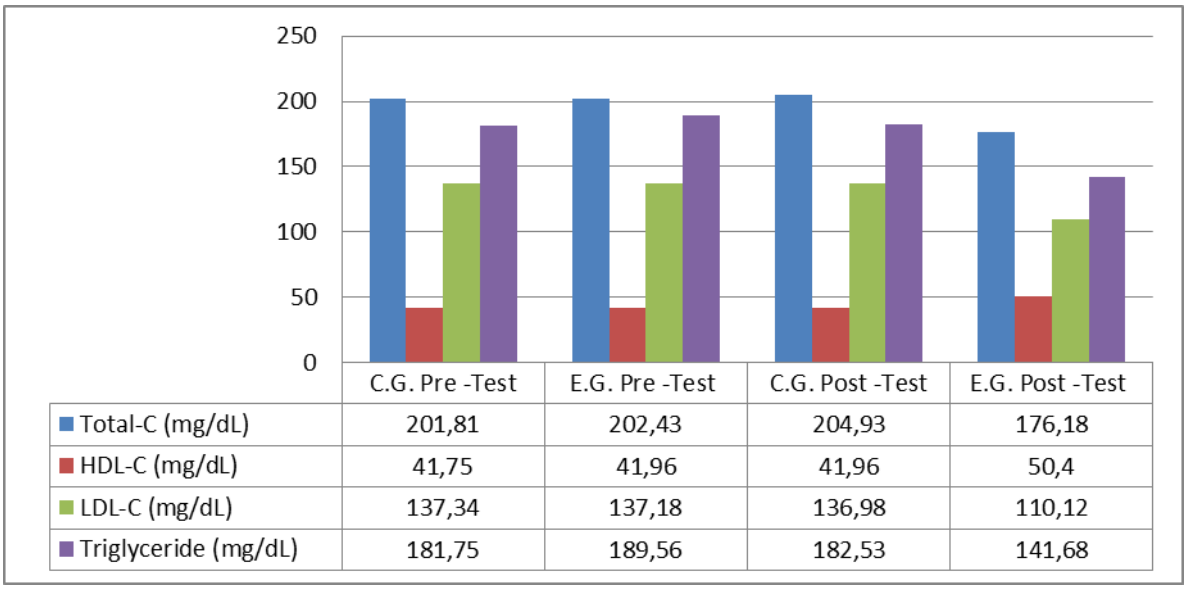
Figure 2: Resting Heart Rate and Blood Pressure Values in Exercise and Control Group Subjects. Data is presented as mean

Table 2 and figure 2 were examined, comparison of the values before and after the exercise showed that there was no significant difference in the control group. However, it was observed that HR rest, SBP and DBP values decreased in the exercise group ($p<0.05$ and $p<0.01$ respectively).

Table 3. Blood Lipid Values of the Subjects in Exercise and Control Groups. Data is presented as mean±standard deviation.

Groups	Variables	Pre-Test	Post-Test	*p value
Control Group (n=32)	Total-C (mg/dL)	201.81 ± 15.15	204.93 ± 12.56	p< 0.05*
	HDL-C (mg/dL)	41.75 ± 1.01	41.96 ± 0.93	p> 0.05
	LDL-C (mg/dL)	137.34 ± 5.95	136.98 ± 6.56	p> 0.05
	Triglyceride (mg/dL)	181.75 ± 2.57	182.53 ± 2.97	p> 0.05
Exercise Group (n=32)	Total-C (mg/dL)	202.43 ± 14.60	176.18 ± 7.35	p< 0.01*
	HDL-C (mg/dL)	41.96 ± 0.91	50.40 ± 2.38	p< 0.01*
	LDL-C (mg/dL)	137.18 ± 6.46	110.12 ± 3.92	p< 0.01*
	Triglyceride (mg/dL)	189.56 ± 3.60	141.68 ± 3.51	p< 0.01*

C: Cholesterol, HDL: High Density Lipoproteins, LDL: Low Density Lipoproteins, TG: Triglyceride Total-C: Total Cholesterol



C: Cholesterol, HDL: High Density Lipoproteins, LDL: Low Density Lipoproteins, TG: Triglyceride Total-C: Total Cholesterol, C.G.: Control Group, E.G.: Exercise Group

Figure 3: Blood Lipid Values of the Subjects in Exercise and Control Groups. Data is presented as mean

Table 3and figure 3 were examined, comparison of pre-test and post-test values of the subjects showed that Total-C, LDL-C, Triglyceride values of exercise group decreased, while HDL-C values increased ($P<0.01$). In control group, Total-C values were observed to increase ($p< 0,05$) while blood lipid values showed no statistically significant difference ($P>0.05$).

Discussion

In this study, which analyzed the effects of a regular 14-week aerobic-step exercise program on cholesterol levels of 64 healthy female university students, height, body weight, HR rest, SBP, DBP and blood lipid values of the subjects were measured prior to the exercise. Second measurements were conducted after the exercise. The values obtained before and after the exercise were compared to the values in previous studies. Various studies emphasized that an active lifestyle and regular aerobic exercises had positive effects on body fats and blood lipids (Fox et al., 1999; La Fontaine, 2003; Marso and Stern, 2005). But, Uğraş ve Savaş (2004) the purpose of this study was to determine the effects of specific endurance training program – 8 weeks long, 4 days a week, total of 32

practices - on some physiological characteristics and blood lipids of male students-players. 25 experiment (20.36 ± 1.55) and 25 control (21.56 ± 1.575) university male students volunteered to participate in this study. As a result of the specific endurance training program, statistically no significant changes were observed in the body weights, heights, RHR and anerobic power, blood lipids and diastolic blood pressure of the subjects. At the end of the specific endurance training program, aerobic power (maxVO2) values and systolic bloodpressure were statistically found significant ($p<0.01$).

Burning high amounts of calories through exercise decreases body fat percentage (Gökdemir et al., 2007).We obtained similar results in the present study. It was found that pre-test and post-test age and height values of the control and exercise groups were similar ($p>0.05$), while there was a decrease in body weight of the subjects in exercise group ($p< 0,05$). Similarly, Günay et al., carried out a study on 30 university students with a mean age of 20-21 and applied two types of interval training methods 3 days a week, for a period of 12 weeks, The values of the group, which underwent 1200mx4 series, were consistent with the results of the present study (Günay et al., 1998).

Dawson (1993) reported that a 30-minute exercise program at 75-85% intensity, which was applied 3 days a week for a period of 16 weeks, decreased systole and diastole blood pressure in males having the risk of coronary heart diseases. Van Zant et al. (1993) found that at the end of a 12-week exercise program, which lasted for 20 minutes, at maximal heart rate of60-80%, HR rest and SBP significantly decreased. Brill et al. (1989) carried out a study on leisure activities and found that systolic blood pressure was X = 121.6 mmHg ± 11.8 in athletes and it was X = 122.2 mmHg ± 12.9 in non-athletes. Diastolic blood pressure was X = 80.2 mmHg ± 8.4 in athletes and X = 80.6 mmHg ± 8.9 in the subjects who were non-athletes. Penny et al., (1982) carried out a study on athletes and found that systolic blood pressure was X = 120.67 mmHg ± 6.49 in marathon runners; X = 117.83 mmHg ± 5.44 in joggers and X = 124.91 mmHg ± 10.49 in control group. Diastolic blood pressure was found to be X = 77.33 mmHg ± 6.18 in marathon runners; X = 72.17 mmHg ± 6.85 in joggers and X = 85.64 mmHg ± 7.18 in the control group. In this study, we obtained similar results. In our study, comparison of value before and after the exercise showed that there was no significant difference in the control group, while the HR rest, SBP and DBP decreased in the exercise group ($p<0.05$ and $p<0.01$ respectively). Thus, aerobic-step exercises have a positive impact on blood volume, oxygen carrying hemoglobin and heart rate volume. Lower heart rate number is needed due to the increase in heart rate. The increase in heart rate facilitates transport of O2into the muscles, which is necessary during the exercises.

Various studies on blood lipids reported that following an aerobic training at enough intensity, triglycerides in blood decreased; total cholesterol sometimes decreased and sometimes remained unchanged; however high density cholesterol (HDL-C) increased; while low density cholesterol (LDL-C) decreased (Akgün, 1992). Thus, regular exercise positively affects lipid and carbohydrate metabolism. Exercise-related HDL "High Density Lipoprotein" increase is generally accompanied by the decreased body weight. Lakusic et al., (2004) carried out a study on 444 participants (male; n = 364, female; n=80) with a mean age of 58±9 and found that TC, triglyceride and LDL-cholesterol levels significantly decreased; HDL-cholesterol level significantly increased following a 3-week cardiac rehabilitation program. In this study, we obtained similar results with the literature. Comparison of pre-test values and post-test values of the subjects showed that Total-C, LDL-C, triglyceride values of exercise group decreased, while HDL-C values increased ($p<0.01$). On the otherhand, an increase was observed in Total-C values ($p< 0.05$) in the control group; while there was no statistically significant difference in other blood lipid values ($p>0.05$). Total-X, triglyceride, HDL-C and LDL-C levels are reported as important risk factors in coronary heart diseases. In another study, the effects of exercise and gender on these risk factors in participants who did and didn't do regular exercise were investigated and it was found that female athletes had higher HDL-C levels, however lower Total-C, triglyceride and LDL-C levels than males. Total-C and triglyceride levels of non-athlete females were found to be lower than those of non-athlete males (Kayatekin et al., 1998). Thus, we conclude that regular aerobic-step exercises at moderate intensity make positive and significant changes in blood lipids values and thus its effectiveness on prevention of coronary heart diseases can be increased. Furthermore, it can be stated that frequency and intensity of exercise programs can make positive changes in blood lipids.

Conclusion

Body weight decreased due to reduced body fat percentages through exercise. Our findings, which were consistent with the literature, indicate the importance of regular aerobic and step exercises in terms of regulating body weight, HRrest, SBP and DBP and preventing obesity. Exercise programs, diet programs and other factors can be used to protect from cardiovascular risk factors, to reduce LDL-C and to increase HDL-C. As understood from the results, it can be suggested that decrease of lipids such as Total-C, LDL-C and triglyceride and increase of HDL-C levels are an important effect of regular and long-term aerobic training. Similarly, based on our findings, it can be stated that longer exercise programs are

required to achieve permanent and beneficial effects on lipid parameters.

References

Akgun, N., 1992, Exercise Physiology Volume I, Ed.4. Ege University Bornova Publishing – İzmir. Page: 58-99.

Brill, P.A., Burkhalter, H.E., Kohl, H.W., Blair, S.N., 1989, "The Impact of Previous Athleticism on Exercise Habits, Physical Fitness, and Coronary Heart Disease Risk Factors in Middle- Aged Men", Research Quarterly For Exercise and Sport Vol. 60, No. 3, p. 209-215.

Dawson, P.K., 1993, Effects of Training on Resting Blood Pressure in Men Risk for Coronary Heart Disease: Strenght v.s. Aerobic Exercise Training, Research Quarterly for Exercise and Sport, (Suppl) 64-66.

Enger, C.S, Herbjrnsen, J., Fretland, A., 1997, HDL-C and physical activity: The influence of physical exercise age and smoking on HDL-C and HDL-C/ total cholesterol ratio. Scand J. Clin. Lab. Invest: 37:251-255.

Fox, E.L., Bowers, R.W., Foss, M.L., 1999, Physical Education and Physiological Basis of Sport.

Gökdemir, K., Koç, H., Yüksel, O., 2007, Effects of Aerobic Training Program on Respiration Circulation and Body Fat Ratio of University Students. Exercise, No: 1.

Günay, M., Cicioğlu, İ., Savaş S., 1998, The Effect Of Two Different Interval Training Programs On Aerobic, Anaerobic Power, Body Composition, Respiration Functions, Blood Lipids, Blood Pressure And Recovery Pulse, Kastamonu Education Journal: 4 (6), 163 -166. Translation: Cerit, M., Bağırgan Publishing, Ankara.

Kayatekin, B.M., Semin, I., Acarbay, S., Oktay, G., Selamoğlu, S., 1998, "A Comparison of Blood Lipid Profiles of Professional Sportspersons and Controls", Indian Journal Physiology Pharmacology. 42(4): 479–484.

Kitamura, A.H.I., Naito, I., 1994, High-density 17. Taylor, P.A. and A. Ward, 1993. Women Highlipoprotein cholesterol and premature coronary heart density lipoprotein Cholesterol and Exercise. Arch. disease in urban Japanese men. Circulation, 89: 25-33.

Lakusic, N., Mahovic, D., Ramqaj, T., Cerovec, D., Grbavac, Z., Babic, T., 2004, The Effect of 3-Weeks Stationary Cardiac Rehabilitation on Plasma Lipids Level in 444 Patients With Coronary Heart Disease, Coll Antropol. Dec.; 28 (2): 623-629.

Lafontaine, T., 2003, Resistance Exercise for Persons With Coronary Heart Disease, National Strength & Conditioning Association ;25 (5):17-21.

Lemura, L.M., Amdreacci, J., 2000, Lipit and Lipoprotein Profiles, Cardiovascular Fitness, Body Composition and Diet During and After Resistance, Aerobic and Combination Training in Young Woman", Eur. Journal Appl. Physiology: 82:5–6.

Marso, P.S., Stern, M.D., 2005, Diabetes and Cardiovascular Disease Integrating Science and Clinical Medicine (Cev. Ed.: Akgul. A., Ulus.T.). Turkey Middle East Advertising Promotion and Yayncılık AS Clinics Publications, Ankara.

Martin, J.E., Dubbert, P.M., Cushman, W.C., 1990, Controlled Trial Of Aerobic Exercise In Hypertension. Circulation; 81: 1560- 7.

Marti, B., 1991. Health effects of recreational running in women. J. Sports Med: 11 (1): 20- 51.

Morris, C.K., Froelicher, V.F., 1991, Cardiovascular benefits of physical activity. Herz;16: 222 36.

Narayani, U., Sudhan P.R.R L., 2010, Effect of Aerobic Training on Percentage of Body Fat, Total Cholesterol and HDL-C among Obese Women. World Journal of Sport Sciences 3 (1): 33-36.

Penny, G.D., Shaver, L.G., Carlton, J., Kendall, D., W., 1982, Comparison of Serum HDL-C and HDL - Total Cholesterol Ratio in Middle-Age Active and Inactive Males, Journal of Sports Medicine, Volume 22, p.432-439.

Shirazi, S., A., H., 2006, Effect Of Exercıse On Plasma Cholesterol. Gomal Journal of Medical Sciences July–Dec, Vol. 4, No. 2.

Tamer, K., 2000, The Sport Performance Measurement and Evaluation of Physical and physiological. Bağırgan Publications, Ankara.

Umman, B., Kaya İ., A., 2001, A Short-Term Diet, Regular Exercise In Sedentary Subjects Program Effects On The Lipid Profile. Ana Kar Der; 1: 272-275.

Van Zant, R., S., Kuzma, S.H., 1993, Effect of Community Based Exercise and Educaiton on Individual Fitness in a Corporate Setting. Research Quarterly for Exercise and Sport 64 (Suppl), 46-47.

Wood, D., 1998, European And American Recommendation For Coronary Heart Disease Prevention. Eur Heart J; 19 (Suppl A): A12-A19.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 512-517

THE EFFECT OF PHYSICAL ACTIVITY ON AVOIDANCE OF OBESITY IN SCHOOL-AGE CHILDREN

NEVZAT DEMİRCİ[1]

Abstract
Purpose. Obesity is an energy metabolism defect which occurs due the accumulation of excess body fat. Obesity starts at school-ages and the main reasons of obesity are decrease in physical activity, increase in sedentary behaviors and consumption of foods with high fat and energy contents. In this study, the effect of physical activity on avoidance of obesity in school-age children was researched.
Methods. First, all the permissions were taken for the study. Then students were informed on the content of the study. The study group was formed of 390 students in total; 210 male and 180 female students. Lengths and weights of the students were measured and their body mass indexes (BMI) were calculated. Physical activity levels of the students were determined via International Physical Activity Questionnaire (IPAQ).
Results. In the measurement which was carried out on 360 students with the calculation of their body mass indexes; 15% of the students were found as obese, 40% of them were overweight, 30% of them were normal and 15% of them were slim. A significant difference ($p<0.01$) between the levels of physical activity and obesity of primary school students were determined. It was also concluded that obesity increases in parallel with the decrease of physical activity.
Conclusion:.This study shows that obesity poses an important problem for school-age children and as well as genetic predisposition, insufficient physical activity can also cause obesity.
Key words: school-age, student, obesity, physical activity.

Introduction

In recent years, prevalence of obesity has gradually increased around the world. Epidemiological studies revealed that in addition to demographic factors such as age and gender and socio-cultural factors such as educational level and marital status, biological factors and dietary habits, smoking and alcohol consumption and lifestyle factors such as deficient physical activity also account for obesity (Akbulut et. al., 2007). Malnutrition and inadequate physical activity, which are the most important causes of obesity, are the second most common cause of preventable mortality due to tobacco-induced health problems (Chopra and Darntonhill, 2004).

Obesity is a serious nutrition problem affecting 25-30% of children and adolescents. Juvenile obesity has an increasing prevalence around the world, mostly in developed countries. In addition to obesity-related problems, obesity appears as an important health problem in terms of increased morbidity and mortality in adulthood in juvenile obesity; adulthood obesity in 50% of the adolescent obesity and the perception held by the families and doctors overlooking the seriousness of the disease (Gürel and İnan, 2001). Sedentary lifestyle is one of the reasons which increase the risk of juvenile obesity. Sedentary lifestyle can be a risk factor or an accompanying condition. Prevalent sedentary lifestyle among children can be explained by social, environmental and psychological reasons. Mechanization in industry, widespread use of assistive devices at homes, transport, widespread use of cars and watching TV results in decreased activity and thus lower energy consumption (Strock., 2005).

Obesity is a chronic illness whose prevalence decreased in developed and developing countries, that effects gradually children as adults. In these days, frequency of finding obesity in every age groups has increased. This is the cause of consuming too much oils and carbonhidrates in eating habits that modern life has brought and childrens being away from physical activities, inclining towards television and computer game (Parlak and Çetinkaya, 2007). Regular physical activity has a vital role in protection of health. Previous research indicate that regular physical activity have an important role in prevention of various diseases such as cardiovascular diseases. It was reported that moderate levels physical activity only for 5 days a week reduced cardiovascular mortality risk by 30% (Leitzman et. al., 2007). Therefore, technological progress decreased physical activity and the activities involving physical activity have changed. Thus, physical inactivity turned out to be a serious health problem. Physical activity is of great importance in terms of determining physical activity levels of individuals and encouraging the

[1] Kafkas University Faculty of Education Department of Special Education, TURKEY
Email: nevzatdemirci44@hotmail.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

individuals who are slightly active to adopt physical activity (Karaca,2000).

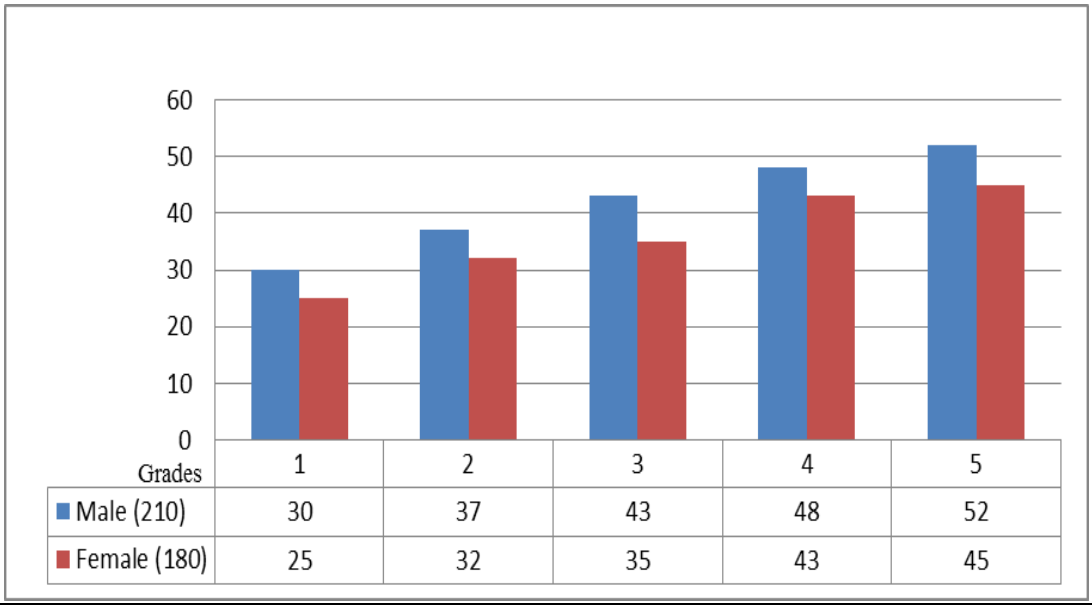
Especially the tendency to obesity is at an alarming level and the annual increase in this age group is gradually rising. In the 2003 report of the International Obesity Commission, it was stated that one out of then children aged between 5-17 worldwide was overweight or obese (Ergül and Kalkım, 2011). Today obesity is considered as one of the most common chronic diseases in primary education students. In Turkey, prevalence of obesity is reported to rise from 6-7% to 15-16% in the last 20 years. Juvenile obesity is believed to cause adulthood obesity and various chronic diseases (Parlak and Çetinkaya, 2007). Thus, this study is designed to determine the effect of physical activity levels on prevention of obesity in school age children.

Material and Method

The study consisted of primary students in Kars province of Turkey. Participation to the study was voluntary. Necessary permissions were taken for the study and all students were informed about the content of the study. The students having health problems which will affect physical activity levels were excluded from the study. A total of 390 students (210 male, 180 female) were included in the study. BMI values of the participants were calculated using [Body Weight (kg) / Height (m)2] formula. BMI results were classified according to WHO 2007 5-19 age reference values (WHO, 2007b) and intersection values suggested by WHO. The students were evaluated in 4 groups according to BMI values. The students with a BMI value of -3 SD - -2SD were grouped as "underweight"; -2 SD - +2 SD were grouped as "normal"; +1 SD - +2 SD were grouped as "overweight" and +2 SD and over were grouped as "obese" (Who., 2007). Physical activity levels were determined by International Physical Activity Questionnaire (UFAA) (Craig**,** 2003). Validity and reliability study of the questionnaire in Turkey was carried out by Öztürk (Öztürk, 2005). In this study, short-form of the questionnaire involving the last seven days was used to evaluate physical activity levels of primary education students. Performance of each activity for at least 10 minutes at each time was taken as evaluation criteria for all activities. A score of MET-minute/week is obtained by multiplying minute, day and MET values (multiples of resting oxygen consumption). Walking time (minute) was multiplied by 3.3 MET to calculate walking score. 4 MET values were taken for moderate level activity and 8 MET value was taken for intensive activity. Physical activity levels were categorized as follows: physically inactive (<600 MET- min/week), low physical activity level (600-3000 MET-min/week) and adequate physical activity level (beneficial for health) (>3000 MET- min/week) (Öztürk, 2005).

Statistical analysis: SPSS 17.0 statistics program was used for data analysis. One-Way Anova and t test were used to evaluate data. The results were presented as mean ± standard deviation. $p<0.05$ level was considered as statistically significant.

Findings



Grades	1	2	3	4	5
Male (210)	30	37	43	48	52
Female (180)	25	32	35	43	45

Figure 1: Distribution of School Age Children According to Gender

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Distribution of school age children according to grade levels and gender are presented in figure 1. It was found that 14.3% of male students were 1.grade students; 17.6% were second grade students; 20.4% were third grade students; 22.9% were fourth grade students and 24.8% were fifth grade students. It was found that 13.9% of female students were 1.grade students; 17.8% were second grade students; 19.4% were third grade students; 23.9% were fourth grade students and 25.0% were fifth grade students.

BMI, weight and height values of female of male students in the study were compared and summarized in Table 1. It was observed that there was a significant difference between BMI, weight and height values of the students ($p<0.01$). However, comparison of BMI, weight and height values of male and female students showed a statistically significant difference ($p<0.01$). Comparison of BMI, weight and height values according to grade levels showed that these values gradually increased in both genders as the grade levels increased.

Table 1: Distribution of BMI, weight and height of School Age Children. Data was presented as mean ± standard deviation.

Variables	Male (n=210) X±SD		Female (180) X±SD			
	1. Grade	2. Grade	3. Grade	4. Grade	5. Grade	*p value
Male						
Height (m)	118.10 ± 4.18	121.08 ± 5.28	130.16 ± 6.05	138.87 ± 5.65	141.32 ± 5.12	p<0.01**
Weight (kg)	20.43 ± 1.99	24.62 ± 2.33	29.95 ± 3.42	37.06 ± 3.73	40.90 ± 3.53	p<0.01**
BMI (kg/m^2)	16.95 ± 1.56	16.82 ± 1.60	17.30 ± 3.56	19.37 ± 2.95	20.55 ± 2.12	p<0.01**
Female						
Height (m)	109.12 ± 2.97	119.12 ± 4.43	124.51 ± 4.18	131.23 ± 4.67	140.17 ±5.84	p<0.01**
Weight (kg)	19.20 ± 1.55	22.21 ± 1.86	25.28 ± 1.99	33.69 ± 2.94	37.93 ± 2.78	p<0.01**
BMI (kg/m^2)	16.17 ± 1.66	16.66 ± 1.76	16.36 ± 1.74	19.59 ± 1.78	18.99 ± 3.56	p<0.01**

BKI, body mass index; X, average; SD, standard deviation; n, number of subjects

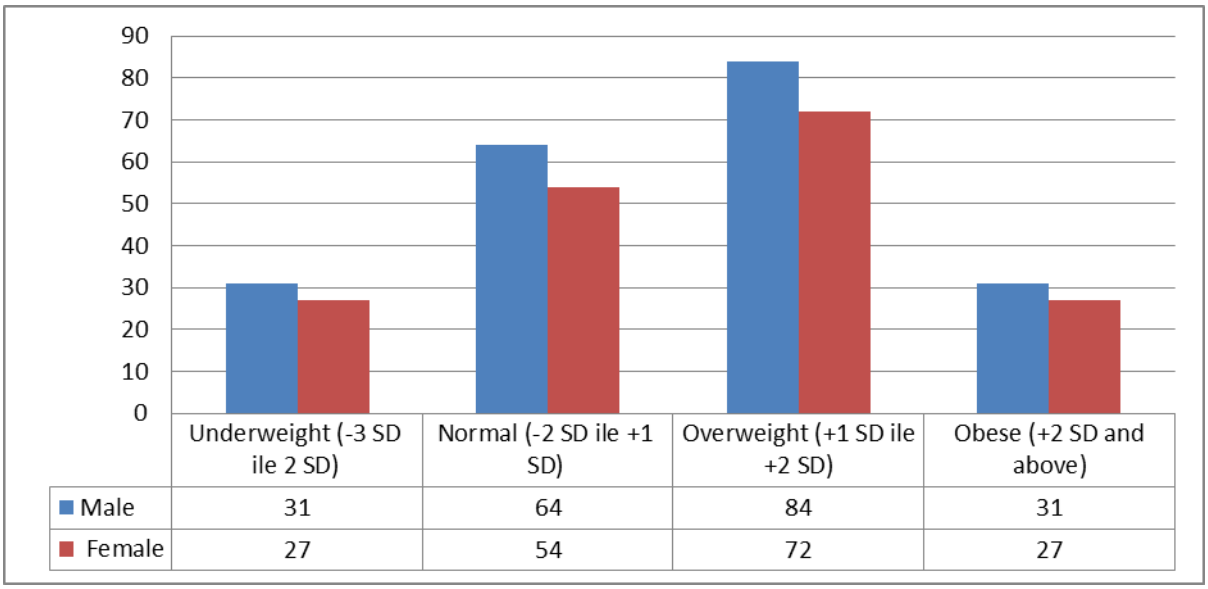


Figure 2: Distribution of Body Mass Index (BMI) Z score of Male and Female School Age Children

Body mass index (BMI) values were evaluated according to WHO, 2007 reference values for 5-19 age group children. It was found that 15.0% of female and male students were underweight; 30.0% were normal (-2 SD -+1 SD); 40.0% were overweight and 15.0% were obese.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

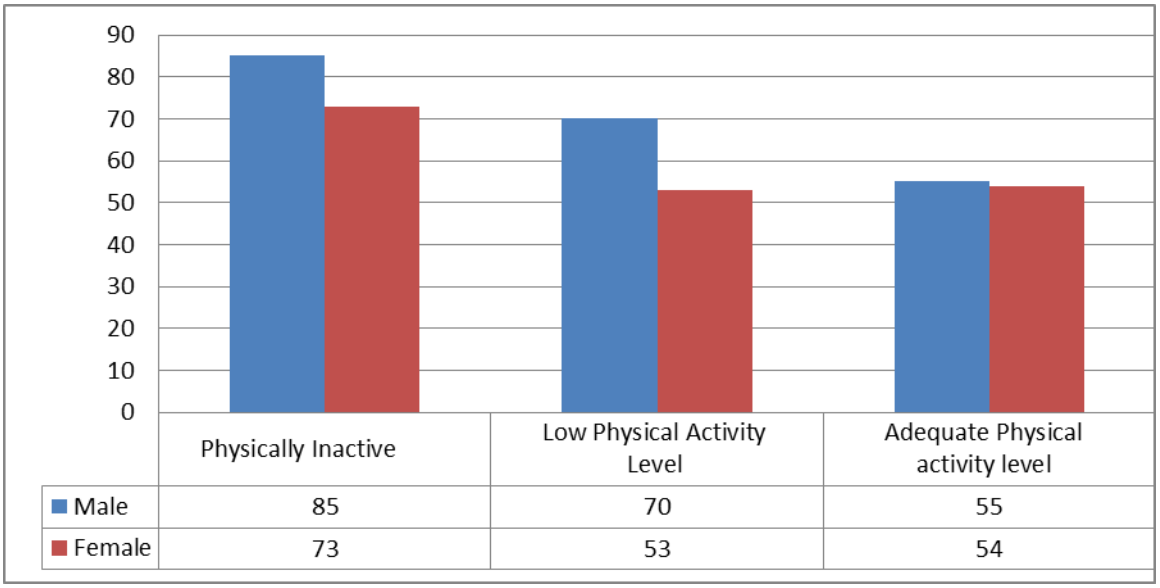


Figure 3: Physical Activity Levels of Male and Female School Age Children

Analysis of physical activity levels of school age children revealed that 40.5% (n=158) of male and females were physically inactive; 33.3% of males and 29.5% of females had low physical activity levels; 26.2% of males and 30.0% of females had adequate physical activity levels.

Table 2: The Relationship between Physical Activity MET-min/week Levels and BMI of Male and Female School Age Children. Data was presented as mean ± standard deviation.

Physical Activity	UFAA Values X±SD	Body Mass Index X±SD	*p value
Male			
Inactive (MET-min/week)	**173.23 ± 127.47**	**19.60 ± 2.17**	**p>0.05**
Low activity level (MET-min/week)	**161.25 ± 65.75**	**17.24 ±1. 72**	**p<0.05**
Adequate activity level (MET-min/week)	**44.11 ± 63.80**	**15.92 ± 1.14**	**p<0.01**
Female			
Inactive (MET-min/week)	**148.81 ± 109.5**	**18.57 ± 2.04**	**p>0.05**
Low activity level (MET-min/week)	**122.08 ± 49.78**	**17.08 ± 2.02**	**p<0.05**
Adequate activity level (MET-min/week)	**43.30 ± 62.64**	**16. 12 ±1.17**	**p<0.01**

X, average; SD, standard deviation

Physical activity levels of school age children were determined by Physical Activity Questionnaire. Analysis of MET-min/week values of physical activity levels showed that there was no significant difference between BMI values of physically inactive male and female children (p>0.05); however, BMI values were found to decrease as the physical activity levels between the groups with low and adequate physical activity increased. It was observed that the decrease in BMI of male and female students particularly having adequate physical activity was higher and thus there was a correlation between physical activity and BMI (p<0.05, p<0.01).

Discussions

Excessive weight is a serious health problem in childhood period. Childhood obesity in industrial regions has increased over the last decade. Considering that excessive weight in childhood has the risk of causing obesity in adolescence, the strategies to prevent adolescence obesity should be designed in childhood period (Gnavi. et al., 2000). Excessive weight and obesity prevalence in children and adolescents have shown a global increase. It was reported that the prevalence of excessive body weight at 6-17 age group gradually increased in the United States (Troiano et. al., 1995). Research conducted in Turkey showed that prevalence of obesity in children

varied between 1.9% and 30.7% (Esmailzadeh, 1994, Karakaş et. al., 2002, Özçırpıcı et. al., 2004). Obesity in childhood and adolescence is a serious health problem as it affects the whole life of an individual. Obesity is a multi-factorial condition, which results from the imbalance between calorie intake and calorie utilization. Thus, as the grade level increase, number of overweight students increase. While prevalence of being underweight is higher in females; the prevalence of obesity is higher in males (Aksoydan and Çakır, 2011). Previous research in Turkey analyzed the prevalence of obesity in various regions. In a study carried out in Ankara on a total of 6462 students in 9-16 age group found that prevalence of obesity was 2.3% based on BMI. In another study, obesity incidence in 1647 children according to BMI was reported as 3.6% (Hood and et. al., 2000). In this study we obtained similar results. This study aimed to determine the effect of physical activity levels in school age children to prevent obesity and found that there was a significant difference between the BMI, body weight and height values of students ($p<0.01$). However, comparison of BMI, body weight and heights of male and female students showed a statistically significant increase ($p<0.01$). Comparisons of BMI, body weight and height values according to grade levels showed a gradual increase in both males and females as the grade level increased.

BMI is a beneficial technique to categorize individuals according to body fat. In developed countries, obesity levels were found to be 31% in adults; 15.3% in children and 15.5% in adolescents. In a study carried out in Kayseri on a total of 3703 children (1032 in 6-10 age group, 2671 in 11-17 age group), it was found that 10.6% of children were overweight (BMI 85 - <95. percentage) and that 1.6% were obese (BMI 95) (Krassas et. al., 2004). In a study carried out in Kastamonu Body Mass Index of 480 students was estimated, and 46.5 % of them were found to be underweight while 10.4 % were overweight and 1.3 % were obese. Similarly, in a study carried out on 1044 adolescents in 12-13 age group in İstanbul, Ankara and İzmir provinces of Turkey found that 12% of children were underweight; 12% were overweight and 2% were obese (Sur et. al., 2005). The findings of this study are consistent with the literature. We found that 15.0% of female and male children were underweight; 30.0% were normal (-2 SD - +1 SD); 40.0% were overweight and 15.0% were obese. On the other hand, another study carried out in Ankara to determine growth and obesity status in school age children evaluated physical activity habits and activity levels of children and found that of the 469 (211 males, 258 females) children in 7-14 age group, 76% walked to school while 23.5% went to school using means of transport. It was reported that 22% of children didn't do sport regularly; 43% played outdoor games and used computer for 1.28 hours a day. Physical activity levels of children were found to be inactive (1.39), slightly active (1.40-1.59), active (1.60-1.89) and highly active (1.90) according to PAL (Physical Activity Level) values. It was suggested that 73% of children had an inactive lifestyle in weekdays and 61% of children had an inactive lifestyle at weekends (Yabancı, 2004). In a cross-sectional study carried out by Janssen et al. (2005) in 34 countries, it was reported that in the majority of countries, overweight children had lower physical activity levels and longer television watching durations than normal children. Similarly, in this study physical activity levels of school age children showed that 40.5% (n=158) of male and female students were physically inactive; 33.3% of males and 29.5% of females had low physical activity levels; 26.2% of males and 30.0% of females had adequate physical activity levels. Physical activity levels of school age children were determined by International Physical Activity Questionnaire. Analysis of MET-min/week values of physical activity levels showed that there was no significant difference between BMI values of physically inactive male and female children ($p>0.05$) and that as physical activity levels increased, BMI values decreased in the groups with low and adequate physical activity. It was observed that BMIs of male and female children who had adequate physical activity were particularly higher and thus there was a significant relationship between physical activity and BMI ($p<0.05$, $p<0.01$).

In conclusion, the fact that the reasons for obesity are multifactorial indicates that fight against obesity should adopt a multidisciplinary approach. Since lifestyles, dietary habits and physical activity levels of school age children are changeable factors affecting obesity, transition to adulthood with positive health habits should be given priority. Thus, the study showed that obesity is a serious problem in school children and that in addition to genetic tendency, dietary habits and lack of physical activity might be an important factor in obesity. Therefore, school age children are recommended to be physically active on daily basis and to do physical activity as a part of their lives.

References

Akbulut, G., Özmen, M., Besler, T., 2007, Disease of the Age: Obesity, TUBITAK science d Technology Journal, Annex p. 2-15, March.

Aksoydan, A., Çakir, Ç., 2011, Dietary Habits, Physical Activity Levels Of Adolescences, And Their Body Mass Index Evaluations. Gülhane Medicine Journal ; 53: 264-270.

Chopra, M., Darntonhill, L., 2004, Tobacco And Obesity Epidemics: Not So Different After All? BMJ, 3 28:1558-1560.

Craig, C., L., Marshall, A., L., Sjostrom, M., Bauman, A., E., Booth, M., L., Ainsworth, B., E., 2003, International Physical Activity Questionnaire: 12-Country Reliability And Validity. Med Sci Sports Exercise;35:1381-95.

Ergül, Ş., Kalkim, A., 2011. A Major Chronic Disease: Obesity in Childhood and Adolescence. TAF Prev Med
Bull; 10 (2): 223-230.

Esmailzadeh, L. 1994. Different Socio-Economic Level Of The Students In Ankara Obesity (Obesity) Prevalence
and Factors Affecting The Master's Thesis, Department Of Home Economics.

Gnavi, R., Spagnol, T., D., Galotto, C., et al., 2000, "Socioeconomic Status, Overweight and Obesity in Prepuberal Children: A Study in an Area of Northern Italy". European Journal of Epidemiology 16: 797-
803.

Gurel, S., Inan, G., 2001, Diagnosis Methods, Prevalence, and Etiology of Childhood Obesity,. AU Faculty of
Medicine Journal; 2(3) : 39 – 46.

Hood, M., Y., Moore L., L., Sundarajan-Ramamurti, A., et al., 2000, Parental Eating Attitudes And The Development Of Obesity In Children. The Framingham Children's Study. International Journal Of Obesity; 24: 1319-1325.

Janssen, I., Katzmarzyk, P., T., Boyce, W., F., et al., 2005, Comparison Of Overweight And Obesity Prevalence İn School - Aged Youth From 34 Countries And Their Relationships With Physical Activity And Dietary Patterns. Obes Rev. May;6:123- 32.

Leitzman, M., F., Park, Y., Blair, A., 2007, Physical Activity Recommendations And Decreased Risk Of
Mortality. Archives Of Internal Medicine, 167: 999-1008.

Karaca, A., Ergen, E., Koruc, Z., 2000, Reliability and validity study of Physical activity evaluation questionnaire. Journal of Sportive Sciences;11:17-28.

Karakaş, S., Okyay, P., Önen, Ö., Ergin, F., A., Beşer, E., 2002. "Body-Mass Indices Of Students In 7-14 Age Group Of Urban And Rural Primary Schools In Aydın Province", 8th National Public Health Congress,Dicle University, Faculty Of Medicine, Department Of Public Health Congress Book, Diyarbakır, p.741-748.

Krassas, G., E., Tsametis, C., Baleki, V., Constantinidis, T., et al., 2004, Balkan Group For The Study Of Obesity. Prevalence Of Overweight And Obesity Among Children And Adolescents In Thessaloniki- Greece And Kayseri-Turkey. Pediatr Endoc Rev:1 Suppl.3:460-464.

Metinoğlu, İ., Pekol, S., Metinoğlu, Y., 2012, Factors Affecting The Prevalence Of Obesıty In Students
Between The Ages Of 10-12 In Kastamonu. Journal of University Health Bilim Bitter Almond, vol:3,
number:2.

Özçirpici, B., Şahinöz, S., Özgür, S., Bozkurt, Aİ. 2004 "Adiposity Prevalence In Gaziantep Province",
IX National Public Health Congress, Book Of Abstracts, Ankara, P.37.

Öztürk, M., 2005, Reliability And Validity Of International Physical Activity Questionnaire In Students Receiving
Training And Education At University, Determination Of Their Physical Activity Levels. [Expertise Thesis].
Ankara: Hacettepe University Faculty Of Health Sciences.

Parlak, A., Çetinkaya, Ş., 2007, The Factors Affecting The Formation Of Obesity In Children, Fırat Health Services Journal, Volume:2, N:5.

Strock, G., A., Cottrell, E., R., Abang, A., E., Buschbacher, R., M., et al., 2005, Childhoo Obesity: A Simple Equation With Complex Variables. J Long Term Eff Med Implants;15(1):15-32.

Sur, H., Kolotourou, M., Dimitriou, M., Kocaoğlu, B., Keskin, et al., 2005. Biochemical And Behavioral Indices Related To BMI In Schoolchildren In Urban Turkey. Prev Med:41(2):614-621.

Troiano, R.P., Flegal, K., M., Kuczmarski, R., J., et al., 1995. "Overweight Prevalence And Trends For Children And Adolescents, The National Health And Nutrition Examination Surveys, 1963 to 1991". Arch
Pediatr Adolesc Med. 149: 1085-1091.

Who., 2007, Growth reference data for 5-19 years. 2007b. www.who.int/childgrowth/en/

Yabanci, N., 2004. Growth and Detection of Obesity in School-Age Children, Evaluation of Factors Effecting
Obesity, Hacettepe University Faculty of Health Sciences , Department of Nutrition and Dietetics, Phd Thesis,
Ankara.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 518-524

COMPARISON OF THE NUTRITIONAL HABITS OF THE STUDENTS AT THE FIRST AND FOURTH CLASSES IN THE PHYSICAL EDUCATION AND SPORT TRAINING DEPARTMENT OF AKSARAY UNIVERSITY

ÖZEN ÖZBOY ÖZBAŞ[1], FATMA ARSLAN[2], EMİN SÜEL[2], İBRAHİM ŞAHİN[2]

Abstract
Purpose. The goal of this study was to compare the nutritional habits of the students studying at the first (1st) and fourth (4th) classes in the Physical Education and Sport Training Department of Aksaray University.
Methods. The students at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University constitute the sampling of this research. Contrary to first-year students, fourth class students have taken nutrition class. Data were collected by performing a questionnaire including 33 items and analyzed by using SPSS 15.0 software. For statistical analysis, frequency and percentage (%) distributions and Chi-square test were used.
Results. Significant differences found between first and fourth class students such as skipping the meals, using foods as a reward to themselves, the amount of daily water consumption, and the reason behind the consumption of vitamin-mineral supplements ($p<0.05$). Frequency data of also gave important results.
Conclusions. Taking nutrition course gave rise to significant differences. Results reinforce that university students' nutrient intakes are less than ideal. Results have to be taken into account by students and lecturers of nutrition in order to increase health and nutrition conscious.
Key words: Nutritional habits, university students' nutrition

Introduction

The term 'Eating Habits' can be defined as what and how people eat, their selection of foods, their way of getting food. A good eating habit is necessary for human of all ages to maintain the proper nutrition their body needs and to perform well. It is also important for man to take in the right amount and eat at the right time for the metabolism and energy consumption of the body to do their tasks. On the other hand, nutrition education is a key element to promoting lifelong healthy eating and exercise behaviours and should start from the early stages of life (Perez-Rodrigo, Aranceta, 2001).

Physical Education and Sports School students need the proper intake of food to improve their study skills, memory, thinking capabilities and sporting achievements.

There are so many research studies carried out on the nutrition habits of university and Physical Education and Sports School students (Abu-Moghli, Khalaf, Barghoti, 2010; Bravo, Martin, Gonzales et al. 2006; Celik, 2006; Filiz, Demir, 2004; Friedman, Portela, Rodriguez et al. 2008; Korkmaz, 2010; Kumartaşlı, 2006; Li, Conception, Lee et al. 2012; Sevindi, Yılmaz, İbiş et al. 2007; Şanlıer, Arıkan, 2000; Ortega, Requejo, Sanchez Muniz et al. 1997; Rakıcıoglu, Akal Yıldız, 2011; Vançelik, Önal, Güraksın et al. 2007; Yıldırım, Yıldırım, Tortop et al. 2011; Yılmaz, Özkan, 2007).

Thus, the objective of this study, was to compare the nutritional habits of the students studying at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University.

Methods

The study was carried out during November-December 2012 and the universe of the study consisted of the students of Physical Education and Sports School of Aksaray University. The students at the first (n=32) and fourth (n=74) classes in the Physical Education and Sport Training Department of Aksaray University constitute the sampling of this research. Contrary to first-year students, fourth class students have taken nutrition class.

There is not any sampling method used in this study. The research's data are collected by using questionnaire technique including 33 items to 106 students and analyzed by using SPSS 15.0 software. For statistical analysis, frequency and percentage (%) distributions were used and the Chi-square test was conducted for variables. Differences were considered statistically significant at p value < 0.05.

Results

In this study, comparison of the nutritional habits of the students studying at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University was investigated.

The research's data are collected by using questionnaire technique including 33 items to 106

[1]Faculty of Engineering, Department of Food Engineering, Aksaray University, TURKEY
[2]School of Physical Education and Sport, Aksaray University, TURKEY
E-mail: ozenozboy@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

students.

It is well known that eaten three main meals per day is recommended by the nutritionists. The frequency and percentage (%) distributions of the reasons of students skipping meals are presented in Table 1.

It was determined that 55.3% (n=21) of the 4th class students were passed meals because of time, while the result for 1st class students was 44.7% (n=17). Most of the 4th class students skipped meals because of unwillingness (68.1%, n=32), on the other hand the value for the 1st class was 31.9% (n=15) (Table 1). The difference between the groups was compared according by Chi-square test and found to be statistically significant ($p < 0.05$).

Table 1. The Chi-square test results for reason of skipping meals at the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

Reasons	N/%	First Class	Fourth Class	Total	p
Did not have time	Count	17	21	38	
	%	44.7	55.3	100.0	
Unwillingness	Count	15	32	47	
	%	31.9	68.1	100.0	
Wish to loose weight	Count	0	11	11	
	%	0	100.0	100.0	0.005
Due to dissatisfaction of the food in workplace	Count	0	10	10	
	%	0	100.0	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

According to the results of our study, there were also statistically significant differences found between the groups (1st and 4th classes) in terms of having lunch and dinner when compared according to Chi-square test ($p < 0.05$) (Data not given).

The Chi-square test results of the answers of the students for the question "What is your style of breakfast?"at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University are given in Table 2.

Table 2. The Chi-square test results for breakfast style of the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

Breakfast Style	N/%	First Class	Fourth Class	Total	p
Classic Turkish	Count	27	47	74	
breakfast	%	36.5	63.5	100.0	
Breakfast cereals	Count	1	15	16	
	%	6.3	93.8	100.0	0.051
No breakfast	Count	4	12	16	
	%	25.0	75.0	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

Eating breakfast is a good way to start the day. Many nutritionists have been concerned about the numbers of students arriving at school without having had breakfast. It was determined that 63.5% (n= 47) of the 4th class students have classic Turkish breakfast, whereas the result for 1st class students was 36.5% (n= 27). Totally 16 of the students replied that they have no breakfast for both of the 1st (n= 4) and 4th (n= 12) classes, respectively.

According to the result of a study (Mason, Savage, 1997), 15% of the students surveyed on a weekday had not eaten any breakfast. It was also determined that breakfast and lunch were the most frequently skipped meals, with a total of 47.7% of students skipping breakfast and 25.2% skipping lunch (Rakicioglu, Akal Yıldız, 2011). According to Yıldırım, Yıldırım, Tortop et al. (2011), 61.5% of the students' did not do the regular breakfast and a very low proportion of students have regularly breakfast (38.5%). The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

Eating snacks is a common habit among students and the term "snack" generally refers to all foods and drinks taken outside the context of the three main meals (De Graaf, 2006). It was determined that 84.0%

(n= 21) of the 4th class students were not eating snack, while the result for 1st class students was 16.0% (n= 4). Moreover, most of the students (n= 32) replied that they were eating cakes, bagels, cookies etc as snack with the ratio of 59.4% for the 4th class students (n= 19) and 40.6% for the 1st class (n= 13). The result followed by eating candies, chocalate, waffles etc with the ratio of 85.0% for the 4th class students (n= 17) and 15.0% for the 1st (n= 3) class. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

One of the questions that asked was "how satisfied you are with the given workplace canteen meals". Most of the 4th class students answered that question as "glad" (64.7%, n= 22), and "so-so" (58.1%, n= 25). On the other hand, the answers of the 1st class students for the same question were "glad" (35.3%, n= 12), and "so-so" (41.9%, n= 18), respectively. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

The Chi-square test results of the students satisfaction with the workplace canteen meals at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University are shown in Table 3.

Table 3. The Chi-square test results of the students satisfaction with the workplace canteen meals at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University

Students satisfaction with the workplace canteen meals	N/%	First Class	Fourth Class	Total	p
Very glad	Count	0	16	16	
	%	0	100.0	100.0	
Glad	Count	12	22	34	
	%	35.3	64.7	100.0	
So-so	Count	18	25	43	0.009
	%	41.9	58.1	100.0	
Not glad	Count	2	11	13	
	%	15.4	84.6	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

The Chi-square test results of the daily water consumptions of the students at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University are shown in Table 4. The question "what is your daily water consumption" was answered by the 4th class students as "3 or less glasses of water", "4-6 of glasses of water" and "6-8 of glasses of water" with the ratios 89.3% (n= 25), 72.7% (n= 32) and 60.0% (n= 12), respectively. (Table 4).

Table 4. The Chi-square test results of the daily water consumptions of the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

Daily water consumption	N/%	First Class	Fourth Class	Total	p
3 or less glasses of	Count	3	25	28	
water	%	10.7	89.3	100.0	
4-6 of glasses of	Count	12	32	44	
water	%	27.3	72.7	100.0	
6-8 of glasses of	Count	8	12	20	
water	%	40.0	60.0	100.0	0.004
8-10 of glasses of	Count	4	4	8	
water	%	50.0	50.0	100.0	
10 or more glasses of	Count	5	1	6	
water	%	83.3	16.7	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

On the other hand, the following answers were obtained from the 1st class students for the consumption levels mentioned above as 10.7% (n= 3), 27.3% (n= 12), and 40.0% (n= 8), respectively. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p <$

0.05). Moreover, 75 of the students (n= 106) believed that consuming plenty amounts of water are beneficial to health (Table 5). The Chi-square test results of using vitamin and mineral supplements of the students at the first and fourth classes in the Physical Education and Sport Training Department of Aksaray University are given in Table 6.The question "what is your reason for using vitamin and mineral supplement? was answered as "to be fit and healthy" (59.3%), "suggestion of medical doctor"(80.0%), "to be prevented from illness" (57.1%), and "to heal" (100.0%) by the fourth class students, the corresponding results for the firsth class students were 40.7%, 20.0%, 42.9%, 0%, respectively. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

Table 5. The Chi-square test results of the students at the first and fourth class in the Physical Education and Sport Training Department of Aksaray University that "believing consumption of plenty amounts of water are beneficial to health ?

Consumption of plenty amounts of water are beneficial to health?	N/%	First Class	Fourth Class	Total	p
Yes	Count	27	48	75	0.043
	%	36.0	64.0	100.0	
No	Count	5	26	31	
	%	16.1	83.9	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

Tablo 6. The Chi-square test results of using vitamin and mineral supplements of the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

Reason for using vitamin and mineral supplements	N/%	First Class	Fourth Class	Total	p
To heal	Count	0	15	15	0.035
	%	0	100.0	100.0	
To be fit and healthy	Count	11	16	27	
	%	40.7	59.3	100.0	
Suggestion of medical doctor	Count	4	16	20	
	%	20.0	80.0	100.0	
To be prevented from illness	Count	6	8	14	
	%	42.9	57.1	100.0	
Other	Count	6	11	17	
	%	35.3	64.7	100.0	
Total	Count	27	66	93	
	%	29.0	71.0	100.0	

Most of the fourth class students replied the question about the amount of fat consumption as normal or less (48.8-92.3%). The answers of the first class students for the same question were ranged in between 7.7-51.7%. The Chi-square test results of "How much fat do you consume for your meals? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University are given in Table 7. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

Tablo 7. The Chi-square test results of "How much fat do you consume for your meals? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

"How much fat do you consume for your meals?	N/%	First Class	Fourth Class	Total	p
Without fat	Count	1	12	13	
	%	7.7	92.3	100.0	
Low fat	Count	8	28	36	
	%	22.2	77.8	100.0	
Normal	Count	22	21	43	0.001
	%	51.2	48.8	100.0	
Much fat	Count	1	13	14	
	%	7.1	92.9	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

The Chi-square test results of "What kind of fat do you generally prefer for your meals? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University are given in Table 8. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$). Sun flower oil and corn oil were chosen the most preferred oils with the total number of 58 students, 26 of them were 1st class and 32 of them were 4th class students.

Tablo 8. The Chi-square test results of "What kind of fat do you generally prefer for your meals? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

What kind of fat do you generally prefer for your meals?	N/%	First Class	Fourth Class	Total	p
Sun flower oil, corn oil etc	Count	26	32	58	
	%	44.8	55.2	100.0	
Soft margarine	Count	4	26	30	
	%	13.3	86.7	100.0	0.001
Solid margarine	Count	2	16	18	
	%	11.1	88.9	100.0	
Total	Count	32	74	106	
	%	30.2	69.8	100.0	

The Chi-square test results of "how often do you use foods as a reward to yourself? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University are given in Table 9. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$). Moreover, most of the 4th class students replied that they use foods as a reward to themselves with the ratio of 95.0% (n= 19) as everyday and 75.7% (n= 28) as 1-3 times in a week.

Tablo 9. The Chi-square test results of "do you use foods as a reward to yourself? for the first and fourth class students in the Physical Education and Sport Training Department of Aksaray University

How often do you use foods as a reward to yourself?	N/%	First Class	Fourth Class	Total	p
Every day	Count	1	19	20	
	%	5.0	95.0	100.0	
A few times a week	Count	9	28	37	
	%	24.3	75.7	100.0	

A few times a month	Count	11	9	20	0.001
	%	55.0	45.0	100.0	
Less frequent	Count	3	6	9	
	%	33.3	66.7	100.0	
Total	Count	24	62	86	
	%	27.9	72.1	100.0	

According to the result of this study, most of the students answered the question "What kind of changes occur in your diet when you are sad, tired, happy or excited?" as "eat less than usual" or "eat nothing" with the count of 51 and 19, respectively. The difference between the groups was compared according to Chi-square test and found to be statistically significant ($p < 0.05$).

Discussions

All human being must eat food to survive. Food also produces immunity against disease. People are accustomed with the habit of eating three meals in a day. In general breakfast meals consist of lighter food as compare to lunch and dinner. As time passes by, they have indulged themselves into loads of work. People nowadays lead very hectic lifestyles.

Eating, which was once a main priority, has now become a chore that they have to fit into their schedules, or something that they do rather thoughtlessly and carelessly. Most of them don't pay much attention anymore to what they put into their bodies. Furthermore, most of them develop bad eating habits because of their efforts to shed those excess pounds, with the belief that starving themselves on some occasions will actually help them.

Eating habits help a person to perform work especially for the young ones who are studying. With the right quality and quantity of the food taken into our bodies, our mental and physical capacities can be enhanced. This can improve our health and thus avoid risks for certain diseases and illnesses.

According to the results of the statistical analyses, there were significant differences found between first and fourth class students such as skipping the meals, using foods as a reward to themselves, the amount of daily water consumption, and the reason behind the consumption of vitamin-mineral supplements. According to the literature (Sakamaki et al, 2005), medical students (540) from Beijing University (135 men and 150 women) in Northern China and Kunming Medical College in southern China (95 men and 160 women) participated in a study and results indicated that habits involving regular eating patterns and vegetable intake were reported and represent practices that ought to be encouraged. The university and college arenas represent the final opportunity for the health and nutritional education of a large number of students from the educator's perspective. Their findings suggest the need for strategies designed to improve competence in the area of nutrition. According to the results of Lin, Cobiac, Skrzypiec (2002), similar consequences were reported. In that study was undertaken on a sample of 180 students pursuing different academic programs in a Malaysian university. The study objectives were to determine the students' eating behavior including body weight control and the extent of fear of being fat, their social self concept that reflects the five selves namely, the psychological self, the social self, the sexual self, the family self and the physical self. It was concluded that future studies on a larger sample size may help to unravel the extent to which psychological factors influence eating behavior of students, and the underlying psychosocial basis for some of the gender differences reported in this study. Similar results were also determined by Orak, Akgün, Orhan (2006), Vançelik, Önal, Güraksın et al. (2007) and Yılmaz, Özkan (2007) in relation with skipping meals and their preferences for drinks.

Conclusions

As a result, our findings showed that more attention to the nutrition course should be given in Physical Education and Sports Training Schools. In addition to theoretical and practical courses, information applicable in everyday life must also be given to the students.

Sound scientific data about the nutritional habits of university students are limited, therefore, it is not clear as to whether university students are following nutrition recommendations and maintaining nutritionally sound diets.

So, it was concluded that students need more information about healthy nutritional habits and adequate intake of nutrients. Also, this topic must be supported by new studies.

References

Abu-Moghlı, F.A., Khalaf, I.A., Barghotı, F.F., 2010, The Influence of a Health Programme on Healthy Lifestyles and Practices Among University Students, International Journal of Nursing Practice, 16 (1), 35-42.

Bravo, A.M., Martın, N.U., Gonzales, A.G., et al., 2006, Evaluation of Dietary Habits of a University Students in Relation with Their Nutritional Knowledge, Nutricion Hospitalaria, 21 (4), 466-473.

Celık, E., 2006, Comparison of the Attitudes and Knowledge of the Nourishment of the Students at the First and Fourth Class in the Physical Education and Sport Training Department of Sakarya University, Sakarya University, Master of Science Thesis, 97p, Sakarya, Turkey.

De Graaf, C., 2006, Effects of Snacks on Energy Intake: An evolutionary perspective, Appetite, 47: 18-23.

Filiz, K., Demir, M., 2004, The Investigation of Students's Accomodation and Nourishment Situation in Physical Education and Sport Academy, Gazi Universitesi Kırşehir Eğitim Fakültesi, 5 (2), 225-234.

Frıedman, S.M., et al., 2008, Comparative Study Between the Eating Habits of Argentine and Catalonian Students: Nutritional Characteristics, Spanish Journal of Community Nutrition, 14 (4), 240-246.

Korkmaz, N.M., 2010, Investigation of Nutrition Habits and Sport Practice of Uludağ University Students, Uludağ Üniversitesi Eğitim Fakültesi Dergisi, 23 (2), 399-413.

Kumartaşlı, M., 2006, Beden Eğitimi ve Spor Yüksekokullarında Okuyan Aktif Spor Yapan Öğrencilerin Beslenme ve Sağlık Durumlarının İncelenmesi, Master Tezi, Dumlupınar Üniversitesi, 119p, Kütahya, Türkiye.

Lı, K.K., et al., 2012, An Examination of Sex Differences in Relation to the Eating Habits and Nutrient Intakes of University Students, J.of Nutrition Education and Behavior, 44 (3), 246-250.

Lın, K.G., Cobıac, L., Skrzypıec, G., (2002), Gender Differences in Eating Behavior and Social Self Concept Among Malaysian University Students, Mal. J. Nutr., 8(1), 75-98.

Mason, S.L., Savage, G.P., 1997, Breakfasting Habits Among University Students, Proceedings of the Nutrition Society of New Zealand, 22, 102-108.

Orak, S., Akgün, S., Orhan, H., 2006, Investigation of Nutritional Habits of Süleyman Demirel University Students, S.D.Ü. Tıp Fak. Derg. 13 (2), 5-11.

Ortega, R.M., et al., 1997, Concern About Nutrition and its Relation to the Food Habits of a Group of Young University Students from Madrid (Spain), Zeitschrift fur Ernahrungswissenschaft, 36 (1), 16-22.

Perez-Rodrıgo, C., Aranceta, J., 2001, School-based Nutrition Education: Lessons Learned and New Perspectives, Public Health Nutrition, 4 (1a), 131-139.

Rakıcıoglu, N., Akal Yıldız, E., 2011, Energy and Nutrition Intake and Food Patterns Among Turkish University Students, Nutrition Research and Practice, 5 (2), 117-123.

Sakamakı, R., et al., 2005, Nutritional Knowledge, Food Habits and Health Attitude of Chinese University Students-a cross sectional study, Nutrition Journal, 4:4 doi:10.1186/1475-2891-4-4.

Sevindi, T., et al., 2007, The Evaluation of the Nutrition Habits Among the Students of Physical Education and Sport High School Department of Gazi University, TSA, 11 (3), 77-90.

Şanlıer, H., Arıkan, B., 2000, Ankara' da Çeşitli Üniversitelerde Beden Eğitimi ve Spor Yüksek Okullarına Devam Eden Son Sınıf Öğrencilerin Beslenme ve Ergojenik Yardımcıları Kullanma Durumlarının Saptanması, 1. Gazi Beden Eğitimi ve Spor İlimleri Kongre Bildirileri Kitabı 11, 26-27 Mayıs, Gölbaşı-Ankara, 210-217.

Vançelik, S., et al., 2007. Related Factors with Nutritional Habits and Nutrition Knowledge of University Students, TSK Koruyucu Hekimlik Bülteni, 6 (4), 242-248.

Yıldırım, I., et al., 2011, Nutritional Habits of Physical Education and Sport High School Students of Afyon Kocatepe University and Factors Affected the Nutrition Habits, International Journal of Human Sciences, 8 (1), 1375-1391.

Yılmaz, E., Özkan, S., 2007, Investigation of Nutritional Habits in University Students, Fırat Sağlık Hizmetleri Dergisi, 2 (6), 87-104.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 525-531

INFLUENCE GAME OF MOVEMENT ON THE PHYSICAL DEVELOPMENT OF PHYSICAL EDUCATION LESSON FROM PRIMARY SCHOOL

POPA CRISTIAN[1], MELENCO IONEL[1], POPESCU RĂDUCU[1], MUSAT GEORGE[1], POPA CORINA[2], ALEXE DAN IULIAN[3], OCHIULET DORIN[4]

Abstract
Purpose. We addressed this issue with the idea that current teacher, wants to inspire its students modern pleasure to work, to make physical effort to create habits and motivation to be healthy.
Method. This paper aims to implement motion gaming, enhanced, structured and implemented in physical education class at primary level.
The scientific approach we started from the premise that: If you use a program of games, relay races and runs the application will improve motor ability students.
Results. The difference between the two groups of subjects at final testing during Application 1 (experimental group 6.307 ± 1.077, 6.514 ± 1.099 control group, were not statistically significant at $p \geq 0.05$) during Application 2 - During the course of the journey made application (group experiment 8.428 ± 1.289, 8.554 ± 0.89 control group, were not statistically significant at $p \geq 0.05$) and throwing the target (experimental group 2.895 ± 0.658, 0.842 ± 0.688 control group at a significance level $p \leq 0.0005$) improved due to the introduction in physical education classes and sports group experiment the independent variable (relays and pathways applied).
Conclusions. The results of these pathways applied in physical education lessons, we confirm the hypothesis that the effects of the work and in the lessons of physical education and sport active participatory methods in class IV are positive (significant) in children between 10 -11 years.
Key words: students, physical education, movement games.

Introduction

Physical education and school sport activities are of great importance in education of children and students in our country (Octav, 2008).
Physical education is that aspect of education which aims at the harmonious development of body, better health and physical qualities necessary labor cultivating sports activity.
Theory and practice of physical education experienced a continuous development. If at first it was subordinated to the narrow purposes only seen as a means to unwind after an intense intellectual activity, educational ideal considers a vital component that contributes to the child's personality development.
School group is also a group educational setting in which the education of the young generation, the factor that generates itself educational and recipient effects of education (Dragu, Cristea, 2000).
The physical education contribute to the functioning of the nervous system, providing favorable conditions for such intellectual activities. It also has an important role in training and education of conscience and moral conduct in the formation of positive traits of will and character (courage, determination, perseverance, firmness, etc..). It then makes its contribution to the driving qualities such as strength, accuracy, strength, ability, mobility etc. (Yakovlev and Bogdanov, 1950).
Physical education lesson to be understood as the main form of practicing physical exercise in an organized manner, with extended coverage area, starting in kindergarten and ends with the completion of higher education. It can be organized as an activity under the "core curriculum", but also as an activity set out in the school curriculum. As a basic form of the organization of physical education, lesson provides a uniform and systematic implementation of the objectives and content of physical education. The presence of students is mandatory both those working and those exempted medical practice. The activity is led by a teacher in an organized and conducted (Rata, 2008).
This activity, with profound implications for formative, must be understood by all educational factors as a solution, its content, makes harmonious physical development, balanced training students physically and mentally, strengthening health, strengthening and youth recreation enrolled in education (Octav, 2008).
Physical education is always "own creation" must reflect the knowledge, skills, professional skills of the teacher and the student's assimilation possibilities. Decisive manifestation of physical education class efficiency is the ability to adapt particularly teacher to concrete material conditions, the particularities of individual and collective situations occurring within the inherent (Rata, 2008).

[1]Faculty of Physical Education and Sport, University Ovidius Constanta, ROMANIA
[2] „Maria Montessori" Constanta, ROMANIA
[3]Vasile Alecsandri University, Bacău, ROMANIA
[4]CSS Stiinta Constanta
Email:crispopa2002@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

The strengths of this work have long been known and applied in civilized countries, examples are numerous. In our society, however, although they are known, are insufficient to create the organizational work and material to attract interest and to ensure the practice of physical education and sport on a continuing basis (Octav, 2008).

Physical education contributes to the development of student's personality and mental processes. In this direction a particular emphasis on the development of cognitive processes, affective processes of volitional, and the formation of personality traits (Nicola, 1991).Physical education contributes to the formation of interest, such as the desire for self-improvement, willingness to work ceaselessly for achieving results increasingly better (Chivulescu, Benga, 1982).

In conclusion, we can say that physical education contributes to the instances in biopsychic unity of the human personality.In this respect we should mention, first, the role of physical education directing the growth process of the child for a great harmoniously developed physically healthy.

The focus is on strengthening the physical, aiming at:

-physiological capacity of the body, harmonious physical development of the child, motility development, skills training sanitary, correcting physical deficiencies, in a word, it is printing ago optimize biological development human being.

The objectives of physical education for primary education are subordinated to the final development process and ensure continuity of children made in kindergarten.

Organizing and conducting physical education, for the period of schooling framework aims objectives deriving from specific endpoints and continues the education of preschool education. They reflect the specific contribution that physical education needs to generate in terms of education at this age.

These objectives are to: maintain health, influencing fair and harmonious development of the body, hygienic skills training, psychomotor skills D center, knowing core basic motor skills, basic applicative and sports; habit of exercising independent training exercise Educate sociability, cooperation, spirit and action sequence based on a system of rules compliance. (Rata, 2008).

Methods

We used in our research the following methods: bibliographic information, observation method pedagogical method records, experimental methods, statistical and mathematical method, graphical method.

Measurement of anthropometric parameters

To highlight the results of the experiment applied in our research were considered the following anthropometric measurements: height, weight and chest area.Methods of measuring the parameters driving

To assess the level of traction we used 2 pass parameters applied to test driving the children in both groups: experimental and control

Data processing means

Population was characterized by estimating the values of central tendency, therefore, in our research the average and standard deviation below mention formula $\bar{x} \pm Ds$.

The differences between populations were obtained by applying the value "t" test for dependent samples (linked) to a small volume, as well as administration of "t" test for independent samples (unrelated) small volume. Differences were considered significant for the following thresholds of significance: $p < 0.05$, $p < 0.025$, $p < 0.01$, $p < 0.005$, $p < 0.0005$.

The research was conducted in weekly physical education lessons. In September 2012 we implemented a set of anthropometric and driving tests that were applied to the experimental and control.

Physical education classes were held every Wednesday and Friday from 11 am to 12 noon.

Initial testing we made at the beginning of the experiment (September 2012), when I started accommodating staff with this type of activity focusing on learning elements designed to develop motor skills, muscles staggered.

Final testing was done in February 2013, when the team was already consolidated applied exercises physical education classes and sports.

All subjects had the same training conditions and drives and tests were conducted at the same times but on different days of the week.

Subjects

Our research was conducted at the School "Nicolae Tonitza" in Constanta, a class IV A, with a mean age $\bar{x}$ =10,8 years, which was the experimental group consisting of 19 subjects (Table 1), including 12 girls and 7 boys, the control group was represented by students of class IV B, in the same educational institution, with a mean age $\bar{x}$ = 10,7 years, consisting of 19 subjects, 10 girls and 9 boys (Table 2).

Presentation experiment

In the present study were followed for 6 months, several parameters such as active participatory methods of acquiring specific items moving game, height, weight and chest area.

Assuming the work, that: If you use a program games, relay races and runs the application with content moving game will improve motor ability students, we followed the behavior of the dependent variable (paths applied) in the two groups (group experiment and control group), the application of the independent variable was performed only in the experimental group (introduction to physical education class relays and

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

games pathways applied to specific elements of movement).

The research tracks the evolution of two variables, the dependent variable and the independent variable and the positive or negative influence of these variables exerted by certain factors throughout the research. Evolution of the dependent variable, if the results of evolution paths applied depends on how it is applied to the independent variable in the lessons and the actual test conditions. Testing was done on the first day of the week as the children came after two days without filing specific effort being rested.

Testing the dependent variable (paths applied) was done on the sports field, by performing two tests, whichever is the best result for each subject, resulting in achievement scores for statistical treatment of the data. Children were tested on the following two paths applied, namely:

Applied throughout 1

The child is placed in the starting position with the ball handball handled, will have to go the following route: Start standing, running with huge among 5 cones placed at a distance of 2 m bypassing latest milestone and return speed running straight . It carries against time. Time is recorded for statistical interpretation achieved.

Applied throughout 2

The child is seated in the middle. Draw a triangle with sides of 2 m based on the middle. The start order will be subject to touch the tips of the triangle leg after running to running with huge semicircle of 9 m, throwing the gate (gate is divided into 4 zones to derive the score if 4 center points, left 3 points right 2 point and the bottom gate 1 pt. outside 0 points) and return to running in the middle. It carries against time.

Sports equipment of subjects during testing was identical. There were no reported health problems or injuries (muscular or otherwise) arising prior to testing that could adversely affect the development subjects.

Results

Tabel 1

Analysis of somatic parameters
Experiment group - Testing the initial and final testing

Nr. crt	Parameters Compare		P	Experiment Group Testing initial	Testing final
1	**Height (Cm)**		M ± Ds	140,842±7,697	143±7,594
			CV	5,465	5,31
2	**Weight (Kg)**		M ± Ds	33,768±8,466	33,042±7,618
			CV	25,071	23,056
3	**Thoracic perimeter (cm)**	**Insp.**	M ± Ds	76,789 ± 7,576	77,789 ± 7,576
			CV	9,866	9,739
		Exp.	M ± Ds	71,842± 7,794	70, 842± 7,794
			CV	11,099	11,256
		Elas.	M ± Ds	2,474±0,612	4,421± 0,607
			CV	24,737	13,73

Somatic indices registered in the experimental group revealed a significant increase statistically between the two tests, initial testing and final testing, the subjects progress is normal for their age and in full compliance with national averages school population.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

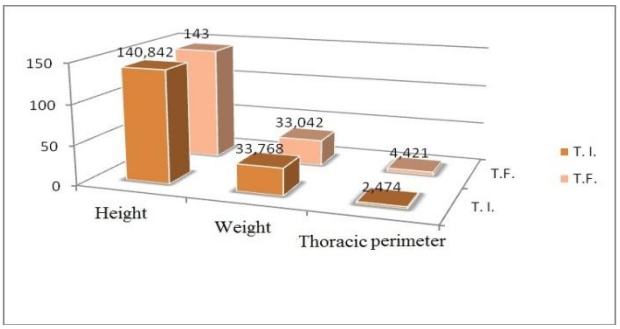


Figure 1 Dynamics of somatic parameters - experimental group

Tabel 2

Analysis of somatic parameters
Control group - initial testing and final testing

Nr. crt	Parameters Compare		P	Control Group Testing initial	Testing final
1	Height (Cm)		M ± Ds	140, 474±6,415	141,789±6,52
			CV	4,567	4,598
2	Weight (Kg)		M ± Ds	34,532±6,457	34,816±6,174
			CV	18,699	17,733
3	Thoracic perimeter (cm)	Insp.	M ± Ds	75,842±6,882	76,842±6,882
			CV	9,074	8,956
		Exp.	M ± Ds	73,421± 6,777	72,421±6,777
			CV	9,23	9,358
		Elas.	M ± Ds	2,474±0,612	4,421±0,607
			CV	24,737	13,73

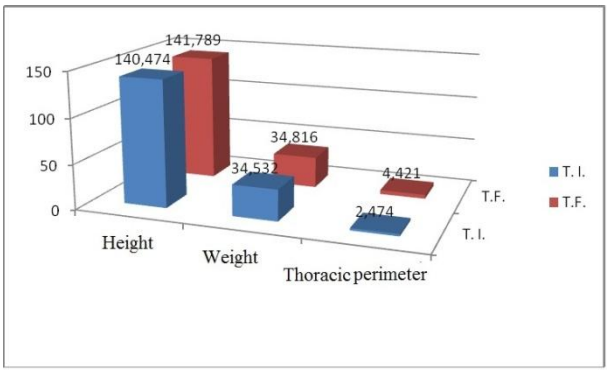


Figure 2 Control group, the dynamics of the somatic

The results achieved in the control group as shown in the table 2 are statistically significant, demonstrating that the control group subjects had the same trend, positive, harmonious physical development at puberty.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Tabel 3 Group Experiment, Analysis of the driving parameters, initial testing and final testing

Nr. crt	Parameters Compare		P	Experiment Group Testing initial	Testing final
1	Application 1		M ± Ds	6,522±1,094	6,307±1,077
			CV	16,744	17,076
		Running	M ± Ds	8,971± 1,576	8,428± 1,289
			CV	17,568	15,294
2	Application 2	Trow	M ± Ds	1,842±0,958	2,895±0,658
			CV	52,009	22,729

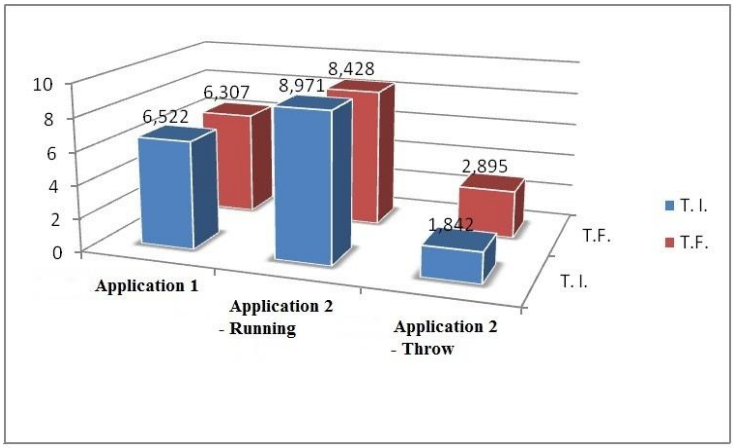


Figure 3 Experimental group dynamics of the driving, initial testing and final testing

Tabel 4 Control group, the driving parameter analysis, initial testing and final testing

Nr. crt	Parameters Compare		P	Control Group Testing initial	Testing final
1	Application 1		M ± Ds	6,522±1,095	6,514±1,099
			CV	16,789	16,871
		Running	M ± Ds	8,851± 0,884	8,554±0,89
			CV	10,302	10,404
2	Application 2	Trow	M ± Ds	0,789±0,631	0,842±0,688
			CV	79,975	81,71

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

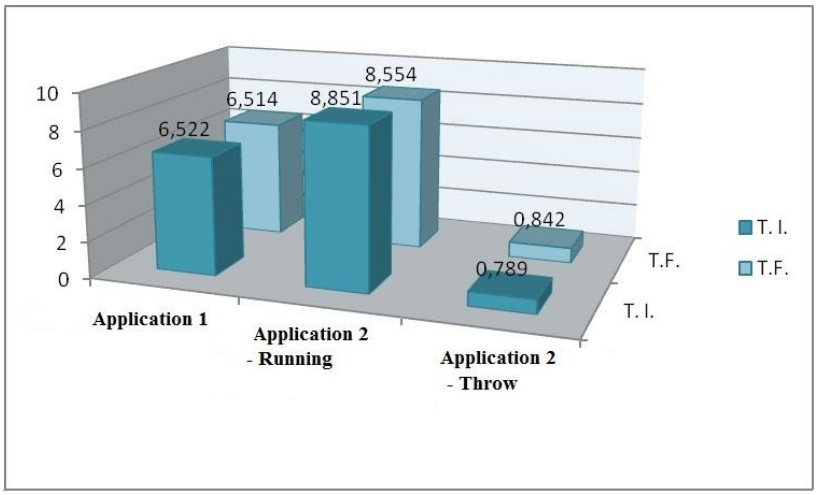


Figure 4 Control group, the dynamics of the driving, initial testing and final testing

Discussions

On the experimental group (Table 3) we see that the results of the 2 pathways applied subjects, during Application 1 (6.522 ± 1.094 initially and after 6 months the final testing 6.307 ± 1.077, at a significance level $p \leq 0.0005$) during the application 2 regarding travel time (8.971 ± 1.576 initially and after 6 months the final testing 8.428 ± 1.289, at a significance level $p \leq 0.0005$) and throwing the target (1.842 ± 0.958 initially and after 6 months to final testing 2,895 ± 0,658, at a significance level $p \leq 0.0005$) improved due to the independent variable, application in physical education lessons and pathways applied to relays.

The results of the control group subjects (Table 4) applied to the two paths, the path Application 1 (6.522 ± 1.095 initially and after 6 months the final testing 6.514 ± 1.099, is not statistically significant at $p \geq 0.05$) during application 2 in terms of travel time (8.851 ± 0.884 initially and after 6 months the final testing 8.554 ± 0.89, is not statistically significant at $p \geq 0.05$) and disposal of the target (0.789 ± 0.631 initially and after 6 months 0.842 ± 0.688 in final testing, is not statistically significant at $p \geq 0.05$) were statistically insignificant improved only by application programs that do not contain the independent variable.The difference between the two groups of subjects at final testing during Application 1 (experimental group 6.307 ± 1.077, 6.514 ± 1.099 control group, were not statistically significant at $p \geq 0.05$) during Applicative 2 - During the course of the journey made application (group experiment 8.428 ± 1.289, 8.554 ± 0.89 control group, were not statistically significant at $p \geq 0.05$) and throwing the target (experimental group 2.895 ± 0.658, 0.842 ± 0.688 control group at a significance level $p \leq 0.0005$) improved due to the introduction in physical education classes and sports group experiment the independent variable (relays and pathways applied). The results of these pathways applied in physical education lessons, we confirm the hypothesis that the effects of the work and in the lessons of physical education and sport active participatory methods in class IV are positive (significant) in children between 10 -11 years.On materiality thresholds and corresponding average difference between each group on T.I. and T.F. we find that subjects have developed about the same pace, time how long the experiment could equally influence, positive or negative, both groups.In other words we can say that height and weight in the same position but insignificant influence both groups means that paths lessons containing relays and applied the principal means to increase the results of the experimental group compared to the control group in the results of the two runs the application.

Richard Bailey, et al. 2009, in the social domain, there is sufficient evidence to support claims of positive benefits for young people. Importantly, benefits are mediated by environmental and contextual factors such as leadership, the involvement of young people in decision-making, an emphasis on social relationships, and an explicit focus on learning processes. In the affective domain, too, engagement in physical activity has been positively associated with numerous dimensions of psychological and emotional development, yet the mechanisms through which these benefits occur are less clear. Likewise, the mechanisms by which PESS might contribute to cognitive and academic developments are barely understood. There is, however, some persuasive evidence to suggest that physical activity can improve children's concentration and arousal, which might indirectly benefit academic performance.

Darren et al. 1995, given the widespread concern regarding the motivation of students, the paucity of research in education on motivation enhancement is surprising (Arnes, 1992a; Maehr & Midgley, 1991). Recent research from an achievement goal perspective, however, has begun to address this issue. The purpose of this paper is to provide a review of the basic tenets of achievement goal theory and to analyze the research that has been conducted in physical education that focuses extensively on instructional practices and strategies that may improve the quality of school-age children's motivation.

Kenneth, 1996, this paper compares the policies and assumptions in Sport: Raising the Game, with the findings of three recent national surveys. These show, contrary to the assumptions in the government policy statement, that England's schools have been increasing, not cutting back on their sports teaching and facilities, and that young people are now playing more sport in and out of school than in earlier decades. Also, the drop-out rate in late-adolescence has declined substantially over the last generation which seems to be due mainly to the spread of community provisions rather than the school-club links whose importance is emphasised in the policy statement. This statement makes no reference to equal opportunities, which may be considered justified by the research findings that social class differences have become blurred, that girls now receive equal treatment in school sport, and the persistence of sex differences in out of school participation is caused by the sexes' prior orientations rather than their different experiences in school. However, the recent evidence also shows that there are still pronounced social class and gender differences in sport participation, and that equal opportunities issues remain unresolved.

Conclusions

Results somatic indices registered in the experimental group revealed a significant increase statistically between the two tests, initial testing and final testing, the subject's progress is normal for their age.

Results somatic indices registered in the control group are statistically significant, demonstrating that the control group subjects had the same trend, positive, harmonious physical development at puberty.

Assuming the work, that: If you use a program games, relay races and runs the application will improve motor ability students, we followed the behavior of the dependent variable (paths applied) in the two groups (experimental group and control group) application of the independent variable was performed only in the experimental group (introduction to physical education class relays and pathways applied).

The results of these pathways applied, applied in physical education lessons, we confirm the hypothesis that work well: if you use a program games, relay races and runs the application will improve students' motor capacity, which leads to the following conclusion:

Active participatory methods (relays and pathways applied) improve motor ability of students in class IV.

Bibliography

Chivulescu, M., Benga, I., 1982, Metodica predării educaţiei fizice, E.D.P., Bucureşti, p.43-46.

Darren C.T. & Glyn C.R., 1995, Applications of Achievement Goal Theory to Physical Education: Implications for Enhancing Motivation, Publishing models and article dates explained, Published online: 16 Mar 2012, pages 475-489.

Dragu, A., Cristea, S., 2003, Psihologie şi Pedagogie Şcolară, Edit. Ovidius University Press, Constanţa, p.25-26.

Iakovlev, V., Bogdanov, P.G., 1950, Educaţia fizică a elevilor în clasele I-IV, Ed. Cultură fizică şi sport.

Kenneth, R. 1996, Young People, Schools, Sport and Government Policies, pages 47-57, Publishing models and article dates explained. Published online: 28 Jul 2006.

Nicola, I., 1991,Teoria educaţiei şi noţiuni de cercetare pedagogică, E.D.P., Bucureşti, p.78-81.

Octav C., 2008, Metodica predării educaţiei fizice în ciclul primar, Edit. „Gheorghe Alexandru", Craiova, p. 35-45.

Rata, G., 2008, Didactica Educaţiei fizice şi sportului, , Edit. PIM, Iaşi.

Richard Baileya, Kathleen Armourb, David Kirkc, Mike Jessd, Ian Pickupa, Rachel Sandfordb & BERA Physical Education and Sport Pedagogy Special Interest Group, The educational benefits claimed for physical education and school sport: an academic review, Publishing models and article dates explained, Received: 5 Feb 2007, Accepted: 17 Jul 2007, Published online: 17 Feb 2009pages 1-27.

Şchiopu, U., 1991, Psihologia vârstelor, Edit. Didactică şi pedagogică Bucureşti.

Weineck, J., 1994, Fundamente generale ale biologiei aplicate sportului la copii şi adolescenţi – Biologia Sportului, Edit. C.C.P.S., Bucureşti.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 532-538

THE HEART RATE TO SOME EFFORT AT GIRL STUDENTS AGES BETWEEN 16 AND 17

SABAU ELENA[1], **NICULESCU GEORGETA**[1], **GEVAT CECILIA**[2]

Abstract
The purpose of our research is to identify if the recovery response of teenage girl students of 16-17 years old, after performing some strength and aerobic effort.
The hypothesis: there are similar aspects in the ability of adjusting to effort and the capacity of body recovery of teenage girl students of 16-17 years old, after muscular strength and endurance effort and aerobic effort.
Methods. We have identified the phenomenon with a sample of 39 teenage girl students, ages between16-17, divided into two groups: Group 1 evaluated after some muscular strength and endurance effort and Group 2 evaluated after aerobic effort. The effort was specific to age and gender, ordered in circle of strength and a sequence of aerobics. The length of the monitored effort was of 12 minutes each, placed at the end of the physical education lesson. The physiological post effort state was observed with the help of the Dorgo test, which identifies the degree of post effort recovery. The gathered data represented different values of the heart ratepost effort minutes. The statistics-mathematics analysis was applied, through which we could characterize the two groups, from the angle of tendencies of grouping or scattering the variables., by ANOVA and Post Anova Scheffe Test.
Results. As for the results associated to Dorgo index, the recovery capacity of the two groups is average to low.
Conclusions. The physical condition and the physical and physiological abilities of the two groups do not support them similar in their capacities of coming back to the rest state.
Keywords: adolescence, muscular strength and endurance, aerobic endurance, recovery, Dorgo index

Introduction

Maintaining and consolidating health is the main objective of physical education and sport activity. Health is a good condition of a human being's biological, psychological and social status. The longitudinal and transversal studies prove the positive effects of the physical activities on physical and psychic health of the body (Dumitru, 1997, Boroş-Balint, Tache, 2007). Practicing physical exercise and sport, even with moderate intensity, improves the quality of life (Lupu, Bocu, 2005).The sportive activity which takes place in the physical education system or in practicing sports for performance uses as specific means physical exercises, specific materials and means of recovering the effort capacity(Dragnea, 2000, Farcaş, 2003, Sabau 2009). The recovery process includes a series of steps whose purpose is quickening the recovery of the biological balance of the body (Drăgan, 2002) and protecting the health of those who practise it(Mihăilescu, 2011).During the sportive training the recovery process has an important place, given the effort that is made during the sports for performance. During the physical education activity, recovery implies simple, natural steps similar to the level of the effort made. According to Farcas, 2003, recovery has a less important role in physical education practised in schools because of the reduced values of physical effort, comparatively to the effort made at training or competitions.As for recovery during physical education, the measures applied refer especially to the breaks between exercises which represent moments of fighting against fatigue caused by effort.Adjusting the body to physical effort takes shape through immediate cardio-respiratory effects, which offer the energetic resources to the muscular system. The adjusting reactions depend on the degree of challenge, age, gender and level of training. Practicing aerobic effort strengthens the cardio-respiratory system, fights against stress (Nina 1996, Borza, Mateescu, Mihalaş 2006, Niculescu 2008). High school students are motivated to practice physical exercises for their looks, relaxation and they notice the value of a physical education lesson in maintaining their health (Hârjan, Nistor, Lupu, 2007).

Methods

This paper represents a quick investigation among teenage girl students. This study has as purpose to establish the adjusting ability to different kinds of effort specific to age. During adolescence, one can act directly in order to strengthen motility and functional capacities of the body. According to requirements in the high school curricula, for developing motor qualities at X th grade students, the development of strength for main muscular groups and of resistance to uniform and variable effort are established among

[1]Faculty Of Physical Education And Sport, Spiru Haret University, ROMANIA
[2]Faculty Of Physical Education And Sport, Ovidius University, ROMANIA
Email: elenasabau20@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

others. Thus, we have studied the teenage girls' response to strength and aerobic effort. Work hypothesis: the recovery response of teenage school girls of 16-17 years old, after performing some strength and aerobic effort, is similar.The research methods used were ordered in specialized literature study, the observing type experiment, ANOVA statistics-mathematics analysis, Post Anova Scheffe Test, graphic representation of the recorded results. Comparisons between different post effort moments have been performed, obtained from applying the Dorgo recovery test. After performing some specific effort, the Dorgo test was applied, which investigates the recovery capacity of the body.

$$\text{Dorgo Index} = \frac{(P_1+P_2+P_3+P_4)-300}{10}$$

The values of the heart rate were registered, analyzed and graphically represented in four moments: pre effort (at rest P_1) and post effort at minute 2 (P_2), minute 4 (P_3), and minute 6 (P_4), post effort (Zamora, Merca, Zamora 1996). The data were compared and the degree of significance of the differences noticed between the investigated moments were analyzed.The studied sample consisted of 39 school girls of 16-17 years old, divided into two groups. Group 1 included 20 subjects and Group 2 – 19 subjects. Girls in Group 1performed the program for the development of strength of the main muscular groups, which represented a interrupted effort circuit of muscular and strength endurance with 4 stops which challenge the muscles of the lower limbs, of the upper limbs, of the abdomen and of the back. The exercises are: from standing position bent-knee; from hanging at the fixed ladder, alternative lifting of the knees bent to horizontal; from lying on the back, trunk extension; from sitting with both legs stretched close, arms bent leaned against the gymnastics bench, stretching and bending the arms. The continuous circuit is a methodical process which can be used in the training of high school students (Tibacu 1974, Scarlat, M., Scarlat, E, 2003). The structure of the circuit: 30 seconds work + 30 seconds rest, the whole circuit was repeated three times. The girls in Group 2 performed a short program of aerobics, which contained combinations of rhythmic elements on music. Both programs lasted 12 minutes each and they were placed at the end of the physical education lesson.

Results

Results obtained at Group 1 (Table 1.1. and Graph 1.1.)

The data recorded for heart rate at Group 1 show the pre effort moment (P1 - at rest) an average value of the heart rate of 78±7.46 b/min, with an amplitude of values of 28 units. The homogeneity of the group is high if we notice the value of the variability coefficient of 9.47%. For the first post effort moment of the heart rate (P2), respectively after 2 minutes, the average value of the heart rate is 95.6 ±7.33, with a value of amplitude of 32 units. The homogeneity of the group at this moment is high (C=7.66%). For the second post effort moment, after 4 minutes (P3), the average value of heart rate is 88.4±7.09, with an amplitude of the values of 24 b/min and a great homogeneity with the value C=8.02%. For the last moment of the investigation for G1, respectively after 6 minutes (P4) the mean of values is of 82.8±6.50 b/min. The homogeneity is high with C=7.85%.

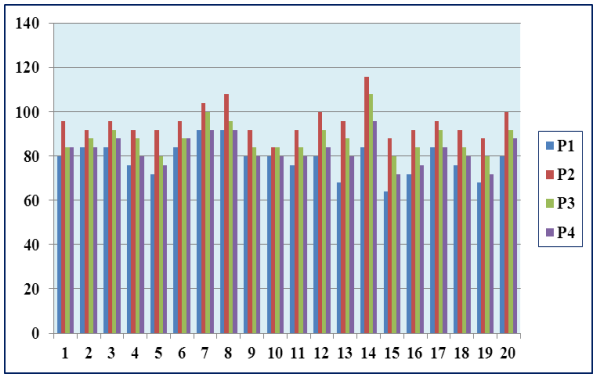
Table 1.1. Values of heart ratein 4 moments - Group 1

Parameters	Values	Difference
P1 ± DS	78.8±7.46	
P2 ± DS	95.6±7.33	16.8
P3 ± DS	88.4±7.09	7.20
P4 ± DS	82.8±6.50	5.60
P4-P1		4.00
C_V P1	9.47%	High omogeneity
C_V P2	7.66%	High omogeneity
C_V P3	8.02%	High omogeneity
C_V P4	7.85%	High omogeneity

By observing the differences among the four moments, we notice that the average difference between the rest value and the one at minute 2 post effort is of 16.80 units. After four minutes, the heart raterecovers another 7.20 units and after six minutes it gains another 5.60 b/min. The average difference of the heart ratebetween rest and six minutes post effort is of 4 b/min.ANOVA statistics-mathematics analysis shows the existence of some differences in the recorded moments. Thus, the ratio F=21.02 at threshold p>0,01 confirms the presence of some differences in the investigation moments. The mathematical processing, Post Anova Scheffe Test, identifies significant differences of the heart rateamong the following

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

moments: P1 versus P2, respectively from the rest moment to the second post effort minute (7.47 at p>0,01) and P2 versus P3, respectively from the second minute of effort to the fourth (3.20 at p>0,01). Between moments P3 and P4, respectively from the fourth minute to the sixth, significant differences (2.49 at p>0.05) are noticed. The gathered data show insignificant differences of the heart ratebetween the initial and the final moment P4 versus P1, respectively 1.78 at p>0.05.



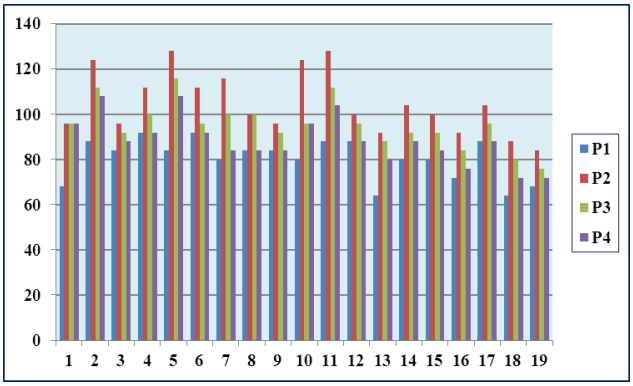
Graph 1.1. Values of heart ratein 4 moments – Group 1

Results obtained at Group 2 (Table 1.2 and Graph 1.2.)

The data gathered at Group 2 show for the cardiac frequency, at pre effort (P1) moment, the average value of 80.42±12.02 b/min. The range of values enlarges on a 28 units segment. The homogeneity of the group at this moment is high according to value C_v=14.60%. On the first post effort moment (P2), respectively after 2 minutes from effort, the heart raterecorded an average value of 105.05±13.71 b/min. The amplitude of the values is of 44 units. The variability of the group at moment P2 is low, with C_v=13.05%. After 4 minutes post effort (P3) the average value of the heart rateis 95.57±10.23 b/min, with an amplitude of 40 units. The homogeneity of the group at 4 minutes post effort is high, respectively 11.87%.

Table 1.2. Values of heart ratein 4 moments – Group 2

Parameters	Values		Difference
P1 ± DS	80.42±12.02		
P2 ± DS	105.05±13.71		22.74
P3 ± DS	95.57±10.23		9.48
P4 ± DS	88.63±10.52		6.94
P4-P1			6.32
C_V P1	14.60%	High omogeneity	
C_V P2	13.05%	High omogeneity	
C_V P3	10.70%	High omogeneity	
C_V P4	11.87%	High omogeneity	



Graph 1.2. Values of heart ratein 4 moments – Group 2

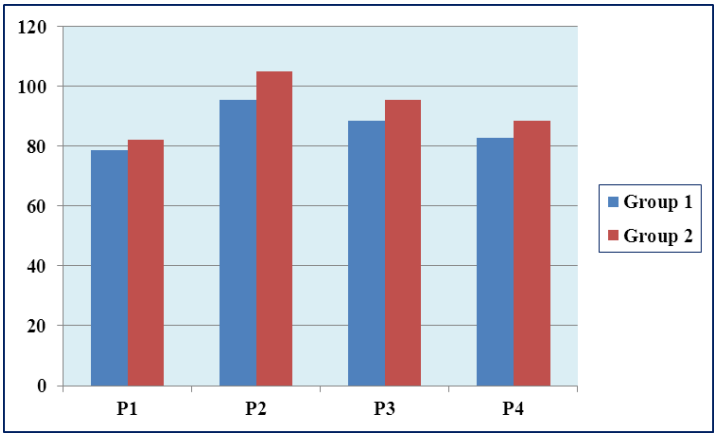
By observing the differences among the four moments of investigation, we notice that the difference between the rest moment and the one after 2 minutes post effort is of 22.47 b/min. After four minutes of effort, the heart raterecovers 9.48 units. After other six minutes of effort, the heart raterecovers another 6.94 b/min. The average difference of the heart ratefrom the pre effort moment to the sixth minute post effort is of 6.32 units.ANOVA statistics-mathematics analysis shows the existence of some differences among the four investigated moments, according to the ratio F=3.17 at p>0.01. The mathematical processing by Post Anova Scheffe Test indicates significant differences of the heart rateamong the following moments: P1 versus P2 (5.98 at p>0,01) and P2 versus P3 (2.49 at p>0.05). For P3 versus P4 (1.82 at p>0.01). Between the rest moment (P1) and the final one (P4) post effort, a significant difference (2,66 at p>0,05) is observed.

Results between groups

The data obtained are compared between groups (Group 1 versus Group 2) for each moment of investigation. In the analysis of the mean of heart rateat the rest moments of each group ($P1_{Grupa\ 1}$versus $P1_{Grupa\ 2}$), we notice differences, which related to t test, for non-correlated samples, show insignificant differences at threshold p>0.01, where 1.09<2.02. The comparison of the heart ratefor minute 2 post effort at both groups ($P2_{Grupa\ 1}$versus $P2_{Grupa\ 2}$) indicates significant differences where 2.66>2.02 at p>0.01. As for the values of the heart rateat minute four post effort, significant differences between the two groups ($P3_{Grupa\ 1}$versus $P3_{Grupa\ 2}$) are noticed, by the values of t test for non-correlated samples, where 2.53>2.02 at p=0.01. The values proper to heart rateat minute six ($P4_{Grupa\ 1}$versus $P4_{Grupa\ 2}$) show slightly significant differences 2.07>2.02 at p=0.025

Table 1.3. Average values – comparison between groups

	Group 1 (b/min)	Group 2 (b/min)	Difference (b/min)
P1	78.8	80.42	1.62
P2	95.6	105.05	9.45
P3	88.4	95.57	7.17
P4	82.8	88.63	5.83



Graph 1.3. Average values –comparison between groups

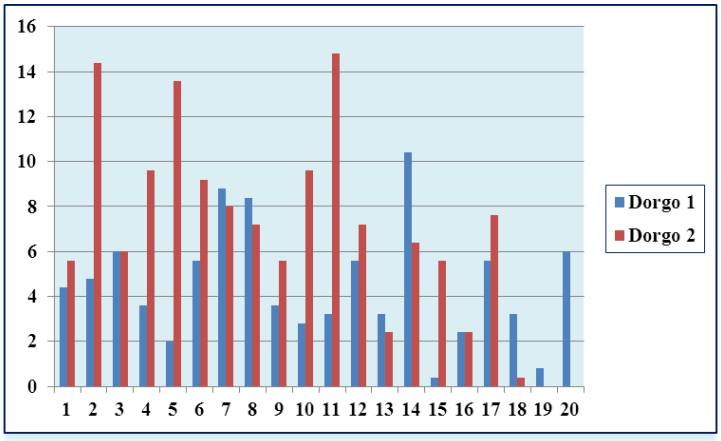
The values calculated for Dorgo index show a mean of 4.54±2.59 for Group 1 and 7.13±4.22 for Group 2. The amplitude of values is of 10 units for Group 1 and 14.8 for Group 2. The values of the Dorgo index are very scattered at both groups, respectively Cv=57.04% at Group 1 and Cv=59.14% at Group 2. The difference between the two groups for the Dorgo index is significant and it is confirmed by the value of the t test for the non-correlated samples, where t=2.30 at p=0.025.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 1.4. Dorgo index

Parameters	Values		Diference
Dorgo G1M ± DS	4.54±2.59		
Dorgo G2 M± DS	7.13±4.22		2.59
C_V Dorgo G1	57.04%	Low omogeneity	
C_V Dorgo G2	59.14%	Low omogeneity	

Graph 1.4. Dorgo index



Discussions

On analyzing the data registered at Group 1, which was investigated after performing the strength program, we notice a good homogeneity of heart ratevalues, in all four moments, respectively at rest, after minutes 2, 4 and 6 post effort. The cardiac frequency, at two minutes after ending the strength circuit, was over 92 b/min. The effort was challenging, given the statistically significant difference between this value and the rest one. After four minutes, the heart ratediminishes and we observe a statistically significant difference, which meant a more obvious recovery of the subjects towards the rest state. After six minutes from the effort, the heart raterecorded a diminution, in comparison to the previous moment, but statistically insignificant, which indicates an incomplete recovery. On analyzing the value of the Dorgo recovery index, we see some result that indicates a mean recovery (4.54). The group is extremely heterogeneous, the speed of recovery of girls' body is completely different. The group succeeded in recovering after the strength effort, after six minutes (the difference between the post effort heart rateat minute six and the rest one is of 4 b/min). The effort induced by the challenge of main muscle group's strength, for 12 minutes, has caused fatigue which was annihilated after six minutes. For school girls, the strength of the motor system muscles can be improved. The cardiac response to the strength effort performed in the circuit, effort which has effects on the somatic level, caused an obvious degree of fatigue. The development of the muscular system is more obvious from birth to the age of 15, with a rise of almost 90%, but until 18 years old the progress is only of 10-12 % (Fray, 1998). So, the strength challenges can continue at teenage girls, given the appropriate biological support. The experimental study made by Oprea and Lupu (2003) emphasizes a different evolution of strength capacity at high school students. If the strength of arms increased from one grade to another, the strength of lower limbs diminished at 16-17 years old; the strength involution was seen at arms, abdomen and lower limbs at 18-19 years old, respectively senior high.

By analyzing the data registered at Group 2, which was moderately subjected to aerobics, we notice high homogeneity of the group, in all moments of the investigation. The effort made required a significant part of the girls' body. The global resistance requests 2/3 from the body and organic mass and it is an important factor of the prolonged effort (Fray, 1998, Delamarche, Delamarche, 1992). Two minutes after the end of the effort, the heart ratewas over 105 b/min, which statistically represents a significant difference in comparison with the rest one. After four minutes post effort, the difference between the two consecutive moments becomes insignificant, which indicates a slow recovery, with values of heart rateclose to one another. On analyzing the value of heart rateat minute six post effort, we see a statistically slight insignificant difference between minute six and minute four. For the subjects in Group 2, which performed resistance continuous effort, post effort recovery is almost closed after minute six.The comparative analysis of the values

of heart ratein the four moments show close values, with slightly equal difference at rest. The two groups have the same physical condition, highlighted by rest cardiac frequency. The response of the body at the two kinds of effort is different. There are significant differences between the two groups, concerning the values of heart rateafter two minutes post effort. The same situation is seen after four minutes post effort and the values of heart rateare significantly higher at Group 2 which performed some effort of continuous effort. Recovery in Group 2 was slower in comparison with Group 1, which indicates the significant difference that continues after six minutes post effort. From a study which compares the national evaluation system with Eurofit system, the aerobic capacity at girls diminishes from X^{th} grade until XII^{th} grade (Mateaş et al, 2003).

The speed of recovery of the two groups is different. At Group 1 the value of the Dorgo index shows a mean recovery and at Group 2 the recovery is slow. For both teenage girls groups, recovery appeared at the end of the six minute. As a result of the data gathered from the two groups, we notice the need of a greater number of physical education lessons or other physical activities, which can imprint favorable effects of immediate and long adjustment on teenage girls' bodies. In Romanian schools, physical education lessons are insufficient, with a great number of excused students and this does not sufficiently contribute to the development of an active lifestyle (Bogdan, Bogdan, 2009). In order to fulfill this healthy purpose, physical education and sports activity should be a rhythmic practice, with minimum three sessions of effort per week, lasting 30-90 minutes (Bocu, Tache, 2004). Unfortunately, teenagers' interest is not sufficiently stimulated to make physical effort with healthy effects. Teenagers admit that they are not enough active and included in sport activities (Baciu, Rusu, Santa, 2008). The effort made in aerobic can bring favorable effects to the cardio-vascular system of teenage girls if it is rhythmically repeated with adequate length and content. Even the medium intensity challenges can lead to a higher adjustment of teenagers' bodies (Stoica, 2010).

Conclusions

- The hypothesis initially established is partially confirmed.

- Teenage girls of 16-17 years subjected to research, during the physical education lesson, performed two categories of challenges, respectively muscular strength and endurance effort (circuit – interrupted effort) and aerobic effort (continuous effort).

- The post effort response and recovery for the two situations which the teenage girls were subjected to, were partially different. Both groups had an obvious response to the effort made, identified by the cardiac frequency, two minutes after ending the effort. Also, at both groups the recovery of heart ratebetween minutes two and four was significant. The recovery was lower between minutes four and six, the difference between the compared values of heart ratewas insignificant. The recovery of the group which performed strength effort was more obvious, in comparison with the group which performed resistance effort, the difference between the initial and the final moments was higher at the subjects who performed aerobics exercises.

- From the calculated values of the Dorgo recovery index, at teenage girls subjected to this study, we notice a recovery during the normal interval, medium of heart ratefor girls who performed strength effort. For the girls who made resistance effort, the value of the Dorgo index shows a weak recovery.

- For teenage girls included in the study, the adjusting capacity to effort is normal and the post effort recovery is between medium and low. This can be explained by the lack of physical condition, of an effective adjustment to effort.

- Challenges during a physical education and sport lesson are not enough, given the number of classes in the curricula and teenagers' interest for physical effort.

References

Baciu, A., Rusu, F. I., Santa, C., 2003, Teenager's opinions and attitudes on sport practice. In: Contemporary paradigms of Sport Science on International Conference of Physical Activity and Sport Sciences. Cluj Napoca, pp. 63-68.

Bocu, T., Tache, S., 2004. Physical education and sport, important part of health primary assistance. In: Palestrica Mileniului III – Civilizatie si Sport, Anul V, Nr. 2 (16), Cluj Napoca, 25-36

Bogdan, V., Bogdan, A.2009, Healthy Role of Physical Activities. Why wait until it is too late? In: Palestrica Mileniului III – Civilizaţie şi Sport, Volumul X, Nr. 1 (35), Cluj Napoca, 48-53

Boroş-Balint, I., Tache, S., 2007, Psycho-physiological particularities of a human being, stress and physical effort. In: Palestrica Mileniului III – Civilizaţie şi Sport, Volumul VIII, Nr. 2 (28), Cluj Napoca, 93-97

Borza, C. Mateescu, R, Mihalaş, G. 2006, The adjustment of the cardio-vascular system to effort. In: Palestrica Mileniului III – Civilizaţie şi Sport, An VII, Nr. 3 (25), Cluj Napoca, 25-27

Delamarche, A., Delamarche, P., 1992, Psysiologie féminine et aptitude physique. In: Revue Scientifique de l'ACAPS, Science et Motricité, No. 16, 35-45

Dragnea, A. 2000, Teoria educaţiei fizice si sportului, Editura Cartea Şcolii 2000, Bucureşti, 181-182

Drăgan, I. 2002, Medicina Sportivă. Editura Medicală, Bucureşti, 530-538

Dumitru, G. 1997, Sănătate prin sport pe înţelesul fiecăruia. Editura Federaţia Română Sportul pentru Toţi, Bucureşti, 13-14

Farcaş, V. 2003, Didactica educaţiei fizice. Editura Universităţii Petru Maior, Tg Mureş, pg 58-59

Fray, H. 1998. L'age et le development des qualities physiques. In: Bulletin Scientifique et Technique. No. 69, 33-38

Hârjan, O., Nistor, A., Lupu, I. 2007, The motivation of practicing physical education and sport activities at Xth grade students in Cluj-Napoca. In: Palestrica Mileniului III – Civilizaţie şi Sport, Volumul VIII, Nr. 1 (27), pp. 54-59 http://www.edu.ro/programe şcolare (April, 24, 2013)

Lupu, I., Bocu, T. 2005. The role of physical education and sport in improving the quality of life. In: Palestrica Mileniului III – Civilizaţie şi Sport, Anul VI, Nr. 4 (22), Cluj Napoca, 25-36

Mateaş, C., Chiriac, M., Mateaş, A., Papp, T. 2003, Comparative study between the national system of evaluation and the Eurofit test for high school grades. In: Fascicula Educaţie fizică şi Sport. Editura Universităţii din Oradea, 519-527

Mihăilescu P. D. 2011, Refacerea în sportul de performanţă. Editura Universităţii din Piteşti, 84-88

Niculescu, G. 2008, Gimnastica aerobică Aprofundare. Editura Fundaţiei *România de Mâine*, Bucureşti, 14-17

Nina, S., 1996. Recommandations methodiques pour la pratique de l'aerobic. Education Physique&Sport Bulletin Scientifique et Technique, Paris, 21-25

Oprea, V., Lupu, E., 2003, Dynamics of developing the motor quality – strength at students at Energetic High School in Ploiesti. In: Noi coordinate prinvind creşterea eficienţei educaţiei şi sportului. A XIII –a Sesiune Anuală de Comunicări Ştiinţifice, Bucureşti, 48-51

Sabau, E. 2009, Refacere – Recuperare Kinetoterapie în activitatea sportivă.: Editura Fundaţiei România de Mâine , Bucureşti, 34-35

Scarlat, M. B., Scarlat, E. 2003, Educaţie fizică şi sport. Editura Didactică şi Pedagogică, R. A., Bucureşti, 15-26

Stoica, A., 2010, Comparative study regarding the effects of aerobic gymnastics and sportive dance during the physical education lesson on aerobic capacity. In: Anuar ştiinţific. Volum II, Nr. 2, Bucureşti, 2010, 126-139

Tibacu, V. 1974, Circuitul în lecţia de educaţie fizică. Editura Stadion, Bucureşti 103-105

Zamora, E., Koroy Merca, M., Zamora, D. C. 1996, Elemente practice de fiziologie şi de fiziologie a efortului sportiv. Casa Cărţii de Ştiinţă. Cluj Napoca. 63-66.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 538-544

MOTOR IMAGERY AS A TOOL TO IMPROVE PHYSICAL EDUCATION AND SPORT

SCASSILLO ISABELLA[1], RAIOLA GAETANO[1]

Abstract

Purpose. The motor imagery is a cognitive process of mental simulation of actions in absence of movement. There are two methods to improve skills learning trough motor imagery: in first person and In third person. The biological basis on which the motor imagery theory is founded, is formed by: mirror neurons. The aim wants to evaluate the effects of motor imagery practice in training.

Methods. It is an experimental approach and it consists of two steps:

1)To administrate the questionnaire. The participants are asked to evaluate the sensation of their own motor act and then their mate's one in accordance with valuation methods of Italian federation of artistic gymnastics. 2) The means used in the second part of the study is the video recording. The participant are given the vision of their own motor gesture that will be stopped and the participant are asked a final forecast of the performance result.

Results. The results are based on the assumption neuro-scientific by the activity of mirror neurons that allow you to use the same nervous substrate for actions performed or observed, or thought. Interpretation of data concerning evaluation of others, namely evaluation of the athletes towards the companions emerged a more low outside awareness of the

[1]University of Salerno, ITALY
Email: raiolagaetano@libero.it

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

motor act that is looked. However, there are consistency and improvements for about 80% of the ratings that shows how the training of motor imagery in the first person may be accompanied by one in the third person. In order to contribute to improving the performance in training and the race since it the same neuronal synapses are activated for both actions you thought or observed both for themselves (ie in the first person), and other (ie in the third person).
Conclusions. In this study two basic aspects of the performance are examined: the motor execution and the motor imagine. Both share the same neuro-motor mechanism: the motor imagery. Concerning the woman artistic gymnastics, it can be useful during the training and the race. So providing the athletes and trainers of a means which uses the motor imagery as a possible application for the improvement of the performance. So in conclusion, the study aims to provide a standard training feasible on a large scale to train the cognitive and physical abilities of an athlete and provide a support tool in the race in order to improve performance, optimize time and to reduce the margin of error.
Keywords: mirror neurons, VMIQ and MIQ-R, vividness, motor skills.

Introduction

The motor imagery is a cognitive process of mental simulation of an action in the absence of physical movement. (Jeannerod, 1995). MI was deeply investigated also by Marc Jeannerod. One of the most scientist about the neurological process. He had lived between 1935 and 2011, its scientific life was entirely dedicated at neurology and neurophysiology, as well as other Scientifics about cognitive neuroscience and experimental psychology are interested. Specially, yhe mechanisms underpinning motor control, motor cognition are investigated by Decety in 1996, Driskell and Copper in 1994, Gallese and Rizzolatti between 1996-2012, Lafleur in 2002, Sanders in 2004. It also defined as a state of general activation during which a person feels himself to perform an action. The motor imagery should be distinguished from mental practice, the first refers to the cognitive process while, the second refers to the process of mental training that takes advantage of the first process. There are two types of motor imagery: in first-person and in third-person. In first person mode, the subject imagines himself to perform an action but not in the sense of seeing himself as an external or reflected image, in the sense to see what he would see, if he performed a movement and at the same time feel emotions, excitation, stress and changes of arousal. In third person mode, the person sees himself or another person as an external image, as with the use of a camera. The most effective for learning is that first-person. Numerous studies have shown that the performance is optimized through the cognitive process of motor imagery. During the motor imagery the cerebral areas of the pre-motor cortex, the same which a muscular contraction would put in action, are activated. The pre-motor cortex is responsible for complex sequences of movements and selects them in response to a stimulus. The pre-motor cortex is located in front of the primary motor cortex and laterally on the surface of the frontal lobe The execution and imagination activate the same regions of the cerebellum, basal ganglia and motor cortex. All this is possible thanks to mirror neurons which are the biological basis on which is based the motor imagery. Mirror neurons are a class of neurons which are activated when we make a move and when we observe it, as if the observer did the movement (Rizzolatti, Sinigaglia, 2006). Mirror neurons were discovered in the 90's by a group of researchers in a macaque, group coordinator is Giacomo Rizzolatti. In 1995, the same group of researchers demonstrated the existence of a neuronal group, similar to that of macaques, also in man. Mirror neurons have been found in the pre-motor cortex and the parietal lobe, area to which deputed only motor function and not the cognitive function. The activation of mirror neurons allows to map on the same nervous substrate actions performed and observed or imagined. In this way you create an internal image released from execution. (Jeannerod, 2002a). Mirror neurons are a particular class of visual-motor neurons which allows to learn and optimize a motor gesture without executing it. Mirror neurons represent the space of internal sharing that allows us to imitate, learn and understand the intentions of motor events. The ability to create an inter-subjective space which is then shared with the world is connected to the role played by embodied simulation, neuro-scientifically based on mirror neurons. (Jeannerod, 2002b). The study aims to evaluate the potential benefits of motor imagery on a group of gymnasts practicing gymnastics, especially for the round off flick. (image 1). The artistic gymnastics is a sport of precision and the movements are complex, then it use the abilities closed skills serial type, skills that are used in stable environments consist of a number of discrete skills are placed in sequence to form a more complex and protracted movement; as round off flick. The round off is like the wheel but at half movement the legs join. The flick is often performed after the round off and consists of two times: the first time you push whit the legs and then you put your hands back to the ground, in the second time you push by the upper limbs and then return to the position departure. The artistic gymnastics uses the model of closed-loop control with the use of feedback (Schmdit, Wrisberg 2000). In sport activity the phenomenon of the influence of mental aspects run

usually. In the School of Sport, Health, and Exercise Sciences at Bangor University, the project proposal module is worth 10 credits and comprises of a verbal presentation and written proposal. Nichola Callow and Ross Roberts propose the module project is worth 10 credits and comprises of a verbal presentation and written proposal on sport activity. In physical education and sport medicine was realized many studies about the mental function and the results show the preeminent position on imagination and its pattern in movement and performance (Astin et al. 2003). Curry and Maniar, researched in academic course combining psychological skills training and life skills education for university students and student-athletes (Curry 2004). The aim of this study is to apply the tool of the evaluation by oneself, by others and by judge according to a specific standard tests. Two imagery measures (VMIQ and MIQ-R) were used to capture whether the self-modeling video would influence competitive divers' imagery vividness and ability.

Methods

The method used for this study is an experimental one and it consists of two steps: the first step is a direct experimental type while the second is an indirect experimental type. The means used in the first part of the study is the questionnaire (here attached) formed by three columns and different items. The first columns concerns the evaluation by oneself, the second one concerns the oneself evaluation of others and the third one the valuation by a judge/technician. The participants are asked to evaluate the sensation of their own motor act and then their mate's one in accordance with valuation methods of Italian federation of artistic gymnastics. The data will be compared with those of judge/technician. The means used in the second part of the study is the video recording. The participants are given the vision of their own motor gesture and then the others' one, previously recorded, and the video will be stopped before the gesture ends. The participants are asked a starting evaluation of external type, which will be compared with those of the judge/technician and at last a final forecast of the performance result will be asked. The forecast will be compared with the final results (internal, external and judge/technician) and collective according to an appropriate statistical pattern. The sample that are part of the experiment consists of two athletes to medium-high level practicing gymnastics for not less than 5 years of age between 12 and 15 years. The athletes before beginning the training, they will be educated on the modalities cognitive and practices that must be performed (MI in the first and third person) and the means by which they are evaluated. The research hypothesis is to provide a standard training feasible on a large scale to train the cognitive and physical abilities of an athlete and provide a support tool in the race in order to improve performance, optimize time and to reduce the margin of error.

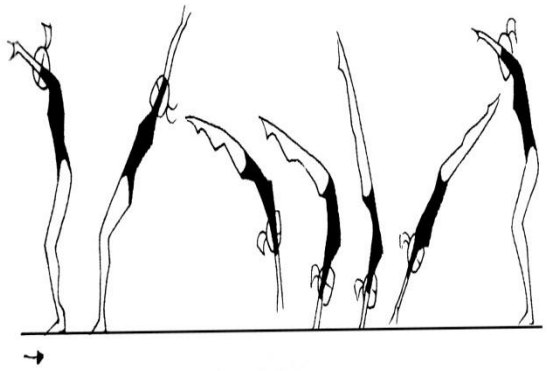


Image 1. flick

Results

The results are based on the assumption neuro-scientific by the activity of mirror neurons that allow you to use the same nervous substrate for actions performed or observed, or thought. Interpretation of data concerning evaluation of others, namely evaluation of the athletes towards the companions emerged a more low outside awareness of the motor act that is looked. However, there are consistency and improvements for about 80% of the ratings that shows how the training of motor imagery in the first person may be accompanied by one in the third person. In order to contribute to improving the performance in training and the race since it the same neuronal synapses are activated for both actions you thinked or observed both for themselves (ie in the first person), and other (i.e. in the third person). In the table 1 and 2 there are evaluation of the athlete 1 and 2. In the table 3 there are evaluation by judge. In the figure 1 there is the comparison between hetero-evaluations and

evaluation of the judge. As can be seen from Figure 1, the evaluation by athletes have not assonance with those by the judge. However, we note an improvement of performance and of skill to evaluate in the second part of study (month 4 and 5). First the athletes tend to underestimate the performance then there is more consistency. As can be seen from Figure 2, there is a 80% improvement of the 'assessment skills.

Table 1: hetero-evaluation by the athlete 1.

	Athlete 1	**Athlete 2**
1 ROND- OFF FLICK		3,5
2 ROND- OFF FLICK		3
3 ROND- OFF FLICK		4,5
4 ROND- OFF FLICK		4,5
5 ROND- OFF FLICK		5,5
6 ROND- OFF FLICK		8,6
7 ROND- OFF FLICK		8.5
8 ROND- OFF FLICK		7
9 ROND- OFF FLICK		8,2
10 ROND- OFF FLICK		7,9
11 ROND- OFF FLICK		8,2

Table 2: hetero-evaluation by the athlete 2.

	athlete 2	**athlete 1**
1 ROND- OFF FLICK		3
2 ROND- OFF FLICK		4
3 ROND- OFF FLICK		3,5
4 ROND- OFF FLICK		4,5
5 ROND- OFF FLICK		6,5
6 ROND- OFF FLICK		6
7 ROND- OFF FLICK		6
8 ROND- OFF FLICK		7,5
9 ROND- OFF FLICK		7,5
10 ROND- OFF FLICK		8,2
11 ROND- OFF FLICK		9

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 3: evaluation by judge.

	athlete 1	athlete 2
1 ROND- OFF FLICK	6.3	6,5
2 ROND- OFF FLICK	6.2	7,9
3 ROND- OFF FLICK	6.5	6
4 ROND- OFF FLICK	6,9	7.5
5 ROND- OFF FLICK	7	7
6 ROND- OFF FLICK	7,5	7,5
7 ROND- OFF FLICK	8	7.8
8 ROND- OFF FLICK	8,3	7,9
9 ROND- OFF FLICK	7,9	7,5
10 ROND- OFF FLICK	8	8
11 ROND- OFF FLICK	8,5	8.5

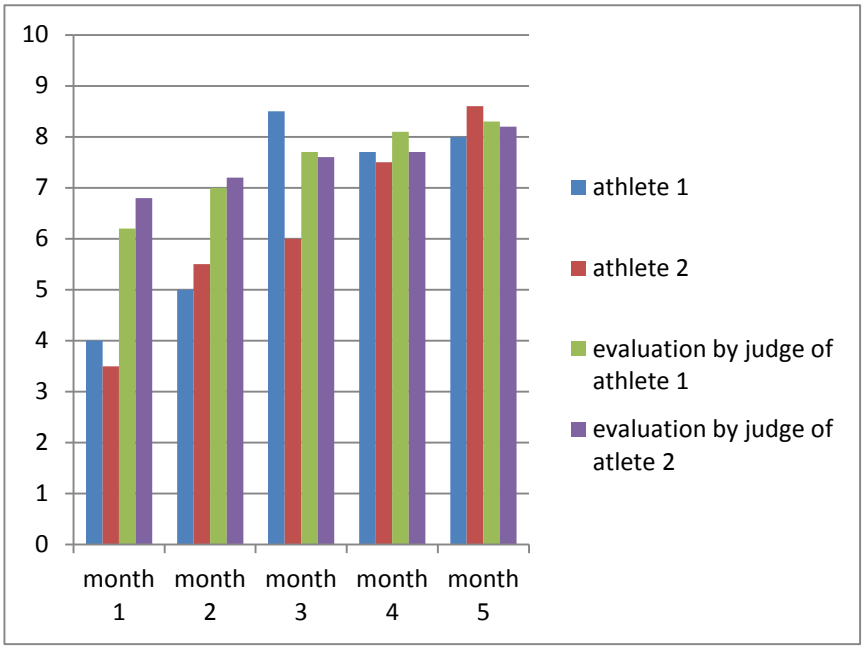


Figure1. Comparison between hetero-evaluations and evaluation of the judge.

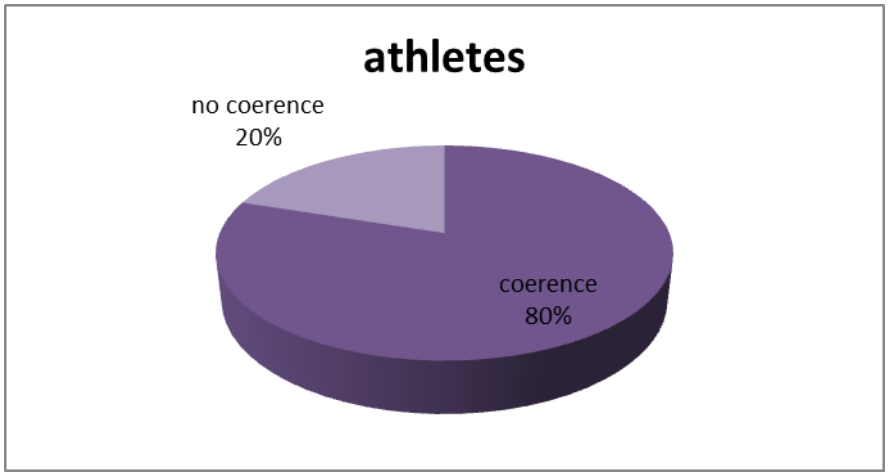


Figure 2: assonance between judge's evaluation and athletes' evaluation.

Discussions

The innovative aspect of this study is the use of hetero-evaluation tool. It is rarely used, but the data show improvements in the performance and ability to evaluate, after using for 5 months of this methodology. Another innovative aspect is the use of motor imagery in the third person. Also it is rarely used. These tools use the same nervous substrate used for movements executed, thought or observed. In this way stimulates neural connections and improving performance, racing and training. Awareness improves in young athletes too. Study provides a valuable tool for improving performance, minimally but it is a great starting point. In sport activity the phenomenon of the influence of mental aspects run usually. In the School of Sport, Health, and Exercise Sciences at Bangor University, the project proposal module is worth 10 credits and comprises of a verbal presentation and written proposal. Nichola Callow and Ross Roberts propose the module project is worth 10 credits and comprises of a verbal presentation and written proposal on sport activity. In physical education and sport medicine was realized many studies about the mental function and the results show the preeminent position on imagination and its pattern in movement and performance (Astin et al. 2003). Curry and Maniar researched in academic course combining psychological skills training and life skills education for university students and student-athletes (Curry et al. 2004).

Conclusions

In this study two basic aspects of the sports performance are examined: the motor execution and the motor imagine. Both share the same neuro-motor mechanism: the motor imagery. Concerning the woman artistic gymnastics, it can be useful during the training and the race. It gives a pattern of action in first person which allow to concentrate all emotions, sensations and mood of a motor action without moving a muscle but putting all the neuro-motor proceeding in action. The motor imagery is a natural ability and so if trained, it is useful for the performance strengthening. So providing the athletes and trainers of a means which uses the motor imagery as a possible application for the improvement of the performance is very ambitions. So in conclusion, the study aims to provide a standard training feasible on a large scale to train the cognitive and physical abilities of an athlete and provide a support tool in the race in order to improve performance, optimize time and to reduce the margin of error. This tool aims to be refined with the use of notational video methods that will allow the analysis of quantitative aspects (such as the strength, the explosive strength, the resistance etc.) other than those quality of the internal and external evaluation, in relation to the effective role played by the motor imagery widely used for sports that use closed skills and therefore useful for artistic gymnastics. The study aims to use the motor imagery in first person (much used) and in the third person (less used) for the training of gymnasts practicing artistic gymnastics. The study also in some small way confirms the usefulness of using the tool of motor imagery in third person.

References

Astin, J. A., Shapiro, S. L., Eisenberg, D. M., & Forys, K. L., 2003., Mind-body medicine: State of the science, implications for practice. Journal of the American Board of Family Practice, 16, 131-147.

Curry, L. A., & Maniar, S. D., 2003, Academic course combining psychological skills training and life skills education for university students and student-athletes. Journal of Applied Sport Psychology, 15, 270-277.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Curry, L.A., & Maniar, S. D., 2004., Academic course for enhancing student-athlete performance in sport. The sport Psychologist, 18, 297- 316.
Jeannerod, M., 2002a, Le Cerveau intime. Paris: Editions Odile Jacob
Jeannerod, M., 2002b. La Nature de l'esprit. Paris: Editions Odile Jacob
Jeannerod, M., 2006, Motor cognition: What actions tell the Self. Oxford University Press.
Raiola G., 2012, Controllo motorio e Apprendimento, Edisud, Salerno, Italy
Rizzolatti G, Sinigaglia C., 2006, So quel che fai. Il cervello che agisce e i neuroni specchio, Raffaello Cortina Editore, Milano
Rymal A M, Ste-Marie M., 2009, Does Self-Modeling Affect Imagery Ability or Vividness Journal of Imagery Research in Sport and Physical Activity

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 544-551

NUTRITIONAL HABITS OF PHYSICAL EDUCATION AND SPORT SCHOOL STUDENTS OF AKSARAY UNIVERSITY

ŞAHİN İBRAHİM[1], EMİN SÜEL[1], FATMA ARSLAN[1], ÖZEN ÖZBOY ÖZBAŞ[2]

Abstract
Purpose. The aim of this study was to determine the nutritional habits of Physical Education and Sport School students of Aksaray University.
Methods. The students in the Physical Education and Sport School of Aksaray University constitute the sampling of this research. Data were collected by performing a questionnaire including 33 items to 261 students and analyzed by using SPSS 15.0 software. For statistical analysis, frequency and percentage (%) distributions were calculated.
Results. It was determined that 84.2% of the students were passed meals because of time (43.8%) and unwillingness (40.4%). 44.2% of the students have two meals in a day and evening meals were more regular than breakfast and lunch. The frequency of consumption of milk, water, fruit and vegetables among students were under the necessary levels.
Conclusions. The results of this study indicated that university students often skip meals, the most leaving out meal was lunch and they had an unhealthy nutritional pattern in general.
Key words: Nutritional habits, university students' nutrition.

Introduction

Nutrition is the intake of food, considered in relation to the body's dietary needs. Good nutrition – an adequate, well balanced diet combined with regular physical activity – is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

Eating habits help a person to perform work especially for the young ones who are studying. With the right quality and quantity of the food taken into our bodies, our mental and physical capacities can be enhanced. This can improve our health and thus avoid risks for certain diseases and illnesses. On the other hand, nutrition education is a key element to promoting lifelong healthy eating and exercise behaviours and should start from the early stages of life (Perez-Rodrigo, Aranceta, 2001).

Since the effects of nutrition on school and sporting performance are well-known and nutrition habits of Physical Education and Sports School students has a special significance, there are so many research studies carried out on this topic (Li, Conception, Lee et al. 2012; Rakıcıoglu, Akal Yıldız, 2011; Sevindi, Yılmaz, İbiş et al. 2007; Ortega, Requejo, Sanchez Muniz et al.1997; Yılmaz, Özkan, 2007; Yıldırım, Yıldırım, Tortop et al. 2011; Vançelik, Önal, Güraksın et al. 2007; Korkmaz, 2010).

Methods

The study was carried out during November-December 2012 and the universe of the study consisted of the students of Physical Education and Sports School of Aksaray University. The students studying in the Physical Education and Sport School of Aksaray University constitute the sampling of this research. There is not any sampling method used in this study. Data were collected by performing a questionnaire including 33 items to 261 students and analyzed by using SPSS 15.0 software. For statistical analysis, frequency and percentage (%) distributions were calculated.

Results

[1]School of Physical Education and Sport, Aksaray University, TURKEY
[2]Faculty of Engineering, Department of Food Engineering, Aksaray University, TURKEY
E-mail: ozenozboy@yahoo.com

In this study, the nutritional habits of Physical Education and Sport School students of Aksaray University were determined by performing a questionnaire including 33 items to 261 students and analyzing the data collected. The results obtained were summarized below.

The frequency and percentage (%) distributions of number of main meals and snack that students having per day are shown in Table 1. The number of the meals that participants had per day (one meal, two meals, three meals) were determined as 25.0%, 44.2% and, 28.1%, respectively. The results of our study showed that most of the students have irregular meals with two main meals per day. It is well known that eating three main meals per day is recommended by the nutritionists.The term "snack" refers to all foods and drinks taken outside the context of the three main meals (De Graaf, 2006). Eating snacks was a common habit among students and daily snack consumption was reported as once a day by 57.6% and twice a day by the 30.7% of the participants (Table 1).

The frequency and percentage (%) distributions of students skipping meals are given in Table 2. The percentage distribution values of skipping breakfast, lunch and dinner are 86.4%, 80.7%, and 47.7%, respectively. Moreover, 52.3% of the students replied that they never missed dinner or missed dinner more rarely in 15 days period. Evening meals were more regular than breakfast and lunch (Table 2).

Table 1. The frequency and percentage (%) distributions of number of main meals and snack that students having per day

Meals	Number of Meals	N	%
Main	One meal	65	25.0
	Two meals	115	44.2
	Three meals	73	28.1
	Four meals	5	1.9
	Five meals	2	0.8
	Total	260	100
Snack	One meal	151	57.6
	Two meals	79	30.7
	Three meals	20	7.8
	Four meals	7	2.7
	Five meals	3	1.2
	Total	260	100

Table 2. The frequency and percentage (%) distributions of students skipping meals

Meals		N	%
Breakfast	Always	91	42.7
	1or 3 times a week	93	43.7
	1 time and more rarely per 15 days	16	7.5
	Never	13	6.1
	Total	213	100.0
Lunch	Always	70	32.3
	1or 3 times a week	105	48.4
	1 time and more rarely per 15 days	22	10.1
	Never	20	9.2
	Total	217	100.0
Dinner	Always	73	28.3
	1or 3 times a week	50	19.4
	1 time and more rarely per 15 days	73	28.3
	Never	62	24.0
	Total	258	100.0

Eating breakfast is a good way to start the day. Many nutritionists have been concerned about the numbers of students arriving at school without having had breakfast. In this study, although irregular meals consumption was reported in 69.2% of students, the majority of them (57.3%) have breakfast at least three times per week. According to the result of a study, 15% of the students surveyed on a weekday had not eaten

any breakfast (Mason, Savage, 1997). In another study, it was determined that breakfast and lunch were the most frequently skipped meals, with a total of 47.7% of students skipping breakfast and 25.2% of them skipping lunch (Rakicioglu, Akal Yıldız, 2011). According to Yıldırım, Yıldırım, Tortop et al. (2011), 61.5% of the students did not have the regular breakfast and a very low proportion of students (38.5%) have regular breakfast. The frequency and percentage (%) distributions of the reasons of students skipping meals are presented in Table 3. It was determined that 84.2% of the students were passed meals because of time (43.8%) and unwillingness (40.4%).

Table 3. The frequency and percentage (%) distributions of the reasons of students skipping meals

Reasons of students skipping meals	N	%
Did not have time	114	43.8
Unwillingness	105	40.4
Wish to loose weight	24	9.2
Due to dissatisfaction of the food in workplace	17	6.5
Total	260	100.0

The frequency and percentage (%) distributions of the breakfast preferences of the students are presented in Table 4. The results have shown that most of the students (76.2%) prefered classic Turkish breakfast. Only 11.7% of the students replied that they have no breakfast. Among them, 12.1% replied the same question as prefering breakfast cereals

Table 4. The frequency and percentage (%) distributions of the breakfast preferences of the students

Breakfast preferences	N	%
Classic Turkish breakfast	200	76.02
Breakfast cereals	31	12.1
Do not have breakfast	30	11.7
Total	261	100.0

In another study, it was determined that total percentage of the students passing meals was determined as 83.2%. Among them, 46.6% and 26.4% passed meals because of time and anorexia, respectively (Yıldırım, Yıldırım, Tortop et al. 2011).
The frequency and percentage (%) distributions of the lunch place preferences are given in Table 5.

Table 5. The frequency and percentage (%) distributions of the lunch place preferences

Lunch place preferences	N	%
Home	64	24.6
Refactory	70	26.9
Out	119	45.8
Brought with me	7	2.7
Total	260	100.0

Moreover, 45.8% of the students replied that they had lunch out and 26.9% of which preferred refactory for lunch place. One of the questions that has been asked was "how satisfied you are with the given workplace canteen meals". Most of the students answered that question as "so glad" (9.7%, n= 25), "glad" (23.2%, n= 60), and "so-so" (52.1%, n= 135). The frequency and percentage (%) distributions of the students satisfaction with the workplace canteen meals are given in Table 6.

Table 6. The frequency and percentage (%) distributions of the students satisfaction with the workplace canteen meals

Satisfaction degree	N	%
So glad	25	9.7
Glad	60	23.2
So-so	135	52.1
Not glad	39	15.1
Total	259	100.0

The question "where do you eat when you eat out more often?" was replied as 40.4% of the students grilled, kebap, pide etc serving restaurants. The following answers were "at the restaurants that offer fast-food" (35.0%) and "at the restaurants that offer homemade food" (16.5%). The frequency and percentage (%) distributions of the students preferences when they eat out are given in Table 7.

Table 7. The frequency and percentage (%) distributions of the students preferences when they eat out

Food preferences	N	%
At the restaurants that offer homemade food	43	16.5
At the restaurants that offer fast-food	91	35.0
At the restaurants that offer gril, kebap, pide, döner etc	105	40.4
At the restaurants that offer international cuisine	9	3.5
Other	12	4.6
Total	260	100.0

The answer for the question "how often do you consume fast food? once or 3 to 5 times or more per week was calculated as 65.4%. The frequency and percentage (%) distributions of the students consuming fast-food is given in Table 8.

Table 8. The frequency and percentage (%) distributions of the students consuming fast-food

Fast-food consuming frequency	N	%
3-5 or more times a week	86	33.1
Once a week	84	32.3
Once a 15 days	39	15.0
Once a month or less	36	13.8
Never	15	5.8
Total	260	100.0

The question "what do you think about the health hazards of fast-foods?" was answered as "I don't think it's harmful if not consumed so often" by the 43.8% of the students. On the other hand, 52.4% of the participants found fast foods as "very harmful" or "harmful". The frequency and percentage (%) distributions of students thought about the health hazards of fast-foods are shown in Table 9.

Table 9. The frequency and percentage (%) distributions of the students thought about the health hazards of fast-foods

Health hazards of fast-food	N	%
Very harmful	48	18.6
Harmful	88	33.8
I don't think it's harmful if not consumed so often	114	43.8
No harmful	10	3.8
Total	260	100.0

40.5% of the students described their speed of eating as fast. The frequency and percentage (%) distributions of students speed of eating is given in Table 10.

Table 10. The frequency and percentage (%) distributions of students speed of eating

Speed of eating	N	%
Fast	105	40.5
Slowly	59	22.8
Normal	95	36.7
Total	260	100.0

The question "what kind of changes occur in your diet when you are sad, tired, happy or excited" was answered as "eat less" by 45.4% of the students. Moreover, 60.4% of the students replied that they use foods as a reward to themselves.

The frequency and percentage (%) distributions of daily water consumption are given in Table 11. The question "what is your daily water consumption" was answered as "3 or less glasses of water", "4-6 of glasses of water" and "6-8 of glasses of water" by 26.5%, 37.7% and 18.5% of the participants, respectively (Table 11).

Table 11. The frequency and percentage (%) distributions of daily water consumption

Amount of daily water consumptions	N	%
3 or less glasses of water	69	26.5
4-6 of glasses of water	98	37.7
6-8 of glasses of water	48	18.5
8-10 of glasses of water	20	7.7
10 or more glasses of water	25	9.6
Total	260	100.0

The frequency and percentage (%) distributions of "consuming plenty amounts of water are beneficial to health" are given in Table 12. However, 78.1% of the students believed that consuming plenty amounts of water are beneficial to health.

Table 12. The frequency and percentage (%) distributions of the result of "consuming plenty amounts of water are beneficial to health?"

Consuming plenty amounts of water are beneficial to health?	N	%
Yes	203	78.1
No	57	21.9

Total	260	100.0

The question "do you use vitamin and mineral supplements?" was answered as "no" with the ratio of 51.5% and "yes" with the ratio of 17.3%. The answer "others" was chosen by 67.6% of the students for the question who suggested the vitamin-mineral supplement that you are using. The other answers for the same question were medical doctor (19.0%), dietitian (8.6%), and pharmacist (4.8%). The frequency and percentage (%) distributions of the results of "who suggested the vitamin-mineral supplement" are given in Table 13.

Table 13. The frequency and percentage (%) distributions of the results of "who suggested the vitamin-mineral supplements?"

Who suggested the vitamin-mineral supplements?	N	%
Medical doctor	40	19.0
Dietitian	18	8.6
Pharmacist	10	4.8
Other	142	67.6
Total	260	100.0

The question "what is your reason for using vitamin and mineral supplement?" was answered as "to be fit and healthy" (36.2%).

"Which cooking method you prefer for preparing foods" was answered with the ratio of 46.5% of the students as frying, followed by 20.4% as boiled in water. However, 23.1 % of the students replied the question "which cooking method/ methods is/are useful in terms of the food value" was boiled in water, followed by 23.1% as boiled in steam. The frequency and percentage (%) distributions of food types consumed at main meals are shown in Table 14.

Table 14. The frequency and percentage (%) distributions of food types consumed at main Meals

Food types	N	%
Red meat	57	21.9
White meat	60	23.1
Legumes	51	19.6
Vegetables	60	23.1
Dough Products	32	12.3
Total	260	100.0

According to the results of this study, most of the participants prefered meat at main meals (45.0%) with 21.9% of red and 23.1% of white meat, while 19.6% of students took legumes, 23.1% of vegetables, and only 12.3% of dough products. Moreover, 45.4% of the participants preferred chicken instead of turkey, lamp, fish, cow and sheep meats.

Most of the participants prefered francala (49.2%), instead of flat bread, home made bread, yufka and whole grain, rye or bran breads (38.8%). It was also found that 11.9% of participants do not eat any kind of bread.

Vegetable and fruit consumption values have shown that 54.9% of the participants consumed only one fruit and 27.2% of them consumed two fruits per day.

While the most prefered drinks as snack was determined as coca-cola (36%), followed by water (20.2%), ayran and milk (16.3%) and fruit juices (15.1%), respectively. The frequency and percentage (%) distributions of the drink preferences of the students are presented in Table 15.

Table 15. The frequency and percentage (%) distributions of the drink preferences of the students

Drink types	N	%
Concantreted fruit juice	39	15.1
Coca-cola	93	36.0
Ayran, milk	42	16.3
Fruit juice	32	12.4
Water	52	20.2
Total	260	100.0

Salt (sodium chloride) is a modifiable risk factor and although controversial, its relation with blood pressure and cardiovascular disease has been largely documented (He, Burnier, MacGregor, 2011). Excessive salt consumption concerns many countries, so World Health Organization has promoted a less than 6 g daily intake to prevent stroke and heart disease (World Health Organization, 2007).

The results of our study showed that most of the participants (77.7%) have less or one tea spoonful of salt per day. The ratio of participants consuming more than two and three spoonful of salt was only around 22.3%.

Most of the students replied the question about the amount of fat consumption as normal (48.8%) or less (28.1%). Sun flower oil and corn oil were chosen the most preferred oils with the ratio of 67.7%.

Discussions

People are accustomed with the habit of eating three meals in a day. In general breakfast meals consist of lighter food as compare to lunch and dinner. As time passes by, they have indulged themselves into loads of work. Eating habits help a person to perform work especially for the young ones who are studying. With the right quality and quantity of the food taken into our bodies, our mental and physical capacities can be enhanced. This can improve our health and thus avoid risks for certain diseases and illnesses.

In this study, results indicated that university students often skip meals, the most leaving out meal was lunch. Most of the students have irregular meals with two main meals per day. The majority of the participants eat vegetables and fruits ones or twice daily. As well, about half of the students eat fast foods three times per week. The frequency of consumption of milk and water among students were also under the necessary levels. Similar results were also determined by Orak, Akgün, Orhan (2006) in relation with skipping meals and their preferences for drinks. According to the literature (Sakamaki et al., 2005), medical students (540) from Beijing University (135 men and 150 women) in Northern China and Kunming Medical College in southern China (95 men and 160 women) participated in a study and results indicated that habits involving regular eating patterns and vegetable intake were reported and represent practices that ought to be encouraged. The university and college arenas represent the final opportunity for the health and nutritional education of a large number of students from the educator's perspective. Their findings suggest the need for strategies designed to improve competence in the area of nutrition. According to the results of Lin, Cobiac, Skrzypiec (2002), similar consequences were reported. In that study was undertaken on a sample of 180 students pursuing different academic programs in a Malaysian university. It was concluded that future studies on a larger sample size may help to unravel the extent to which psychological factors influence eating behavior of students, and the underlying psychosocial basis for some of the gender differences reported in this study.

Conclusions

Our findings showed that more attention to the nutrition course should be given in Physical Education and Sports Training Schools. In addition to theoretical and practical courses, information applicable in everyday life must also be given to the students.

These habits need to be corrected using educational programs to promote healthy eating habits of university students and this topic must be supported by new studies.

References

De Graaf, C., 2006, Effects of Snacks on Energy Intake: An evolutionary perspective, Appetite, 47: 18-23.

He F., BURNIER M., Macgregor, N., 2011, Nutrition in cardiovascular disease: salt in hypertension and heart failure. Eur Heart J., 32: 3073-3080.

Korkmaz, N.M., 2010, Investigation of Nutrition Habits and Sport Practice of Uludağ

University Students, Uludağ Üniversitesi Eğitim Fakültesi Dergisi, 23 (2), 399-413.
Lı, K.K., et al., 2012, An Examination of Sex Differences in Relation to the Eating Habits and Nutrient Intakes of University Students, J.of Nutrition Education and Behavior, 44 (3), 246-250.
Lın, K.G., Cobıac, L., Skrzypıec, G., (2002), Gender Differences in Eating Behavior and Social Self Concept Among Malaysian University Students, Mal. J. Nutr., 8(1), 75-98.
Mason, S.L., Savage, G.P., 1997, Breakfasting Habits Among University Students, Proceedings of the Nutrition Society of New Zealand, 22, 102-108.
Orak, S., Akgün, S., Orhan, H., 2006, Investigation of Nutritional Habits of Süleyman Demirel University Students, S.D.Ü. Tıp Fak. Derg. 13 (2), 5-11.
Ortega, R.M., et al., 1997, Concern About Nutrition and its Relation to the Food Habits of a Group of Young University Students from Madrid (Spain), Zeitschrift fur Ernahrungswissenschaft, 36 (1), 16-22.
Perez-Rodrıgo, C., Aranceta, J., 2001, School-based Nutrition Education: Lessons Learned and New Perspectives, Public Health Nutrition, 4 (1a), 131-139.
Rakıcıoglu, N., Akal Yıldız, E., 2011, Energy and Nutrition Intake and Food Patterns Among Turkish University Students, Nutrition Research and Practice, 5 (2), 117-123.
Sakamakı, R., et al., 2005, Nutritional Knowledge, Food Habits and Health Attitude of Chinese University Students-a cross sectional study, Nutrition Journal, 4:4 doi:10.1186/1475-2891-4-4.
Sevindi, T., et al., 2007, The Evaluation of the Nutrition Habits Among the Students of Physical Education and Sport High School Department of Gazi University, TSA, 11 (3), 77-90.
Vançelik, S., et al., 2007. Related Factors with Nutritional Habits and Nutrition Knowledge of University Students, TSK Koruyucu Hekimlik Bülteni, 6 (4), 242-248.
World Health Organization, 2007, Prevention of Cardiovascular Disease: Guidelines for assessment and management of cardiovascular risk. World Health Organization, Geneva.
Yıldırım, I., et al., 2011, Nutritional Habits of Physical Education and Sport High School Students of Afyon Kocatepe University and Factors Affected the Nutrition Habits, International Journal of Human Sciences, 8 (1), 1375-1391.
Yılmaz, E., ÖZKAN, S., 2007, Investigation of Nutritional Habits in University Students, Fırat Sağlık Hizmetleri Dergisi, 2 (6), 87-104.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 551-557

ASPECTS ON THE MOTOR AND PSYCHOMOTOR DEVELOPMENT OF THE CHILD WITH INTELLECTUAL DISABILITIES

TEODORESCU SILVIA[1], POPESCU OFELIA[1]

Abstract
Purpose. To highlight aspects on the motor and psychomotor development of the 6-7 years aged children with intellectual disabilities.
Methods. Bibliographic study, observation method, measurement and assessment methods, statistical-mathematic method.
Content. Investigation of the bodily scheme, general coordination level, segmental and intersegmental coordination levels, followed by the design and implementation of the kinetic stimulation programmes in view of educating the bodily scheme, the spatial-temporal structuring, organization and orientation, favoring the involvement of the child in different motor experiences.
Conclusions. The child with intellectual disabilities shows disorders at bodily scheme, perceptive-motor development and coordination levels, but properly stimulated, he/she can reach significant progress in psychomotor and motor fields.
Keywords: child with intellectual disabilities, bodily scheme, coordination.

[1]National University Of Physical Education And Sport, Bucharest, ROMANIA
Email: teo.silvia@yahoo.com

Introduction

Motor and psychical-motor development of the child with mental disability represents a very complex process, led by own and special laws. The analysis and in-depth knowledge on such individuals is a must for any educational action which should consider the child as a bio-psychic-social entity.

The motor development and the psychic-motor development, although they seem to be similar, refer to distinct aspects of the child development (Rigal, 2008). The first refers to the development of the motor skills of the child in growth period, which means that the motor education is part of the physical education and addresses the consolidation of the motor control of the child and the improvement of his/her motor coordination. The motor difficulties occur when the child is required to voluntarily and consciously perform some actions. Difficulties are not related to performing the movement itself, but to the efficiency of such movement as determined by the way information is received and interpreted and by the quality of the answer. Hence, this is a complex process, corroborating the motor forces with the psychical ones to the end of performing the action, such process involving also the perception, sensorial and intellectual functions, representing in fact the psycho-motority. This characterizes the cognitive development in relation with the motor actions, during the first years of the child life. The motor actions and their result are the source of perceptive information based on which the child conceptualizes more or less complex and abstract notions, reason for which such information represents the essence specific for the psychomotor education. The action required to the subject to actively and consciously participate leads to awareness.

„Investigation of psychomotor performance of the child with mental disability starts from the comparison of such performance with the performance achieved by a non-disabled child. In most of the cases, frequency and severity of psychomotor difficulties grow directly proportionally with the severity of the mental disability" (Radu, Ulici, 2003).

Every child has his/her own development rhythm and unique grow and development pattern, for this reason the motor coordination difficulties children faced with being heterogeneous and found in different situations as when jumping, when maintaining the balance by supporting on palms, when using the teeth brush, when tiding the shoe laces or when copying a square. The varied association of the mental disorders, sensorial-perceptive disorders and psychic disorders at the children with intellectual disabilities defines a conduct specific to each individual, characterized by the following under-capacities, incapacities and difficulties, forming the psychomotor deficiencies (Albaret, 2004, Păunescu, Muşu, 1990):

- lack of strength and low muscular tonus which can cause difficulties in maintaining a correct body posture, favoring the installation of fatigue;
- lack of coordination between the left part and the right part of the body and difficulty in body ax displacement;
- difficulty in executing the trunk rotation with the balance maintenance;
- discomfort and hesitation when executing a familiar task because the child must think at every movement (lack of anticipating ability);
- psychomotor instability;
- insufficient understanding of spatial concepts (direction, location) and temporal concepts;
- difficulties in learning complex activities as dressing or walking by bicycle;
- tendency to confuse hands with fingers;
- difficulties in coordinating hand-eye, with impact on throwing and catching the ball, threading beads;
- poor motor control over delicate movements, with graphic-motor difficulties (having a pencil in hand, drawing, coloring images);
- emotional disorders.

To identify the motor coordination disorders the children face with, in 1994, Dewey and Kaplan (quoted by Albaret, 2004) evaluated 102 children aged between six and ten years and eleven and half months, who were tested to assess:

- their ability to reproduce movements on order and by imitation;
- their ability to keep balance and to coordinate their movements (Bruininks-Oseretsky Test) ;
- their ability to perform repetitive or alternative movements;
- their academic performance.

Data analysis emphasized the existence of four groups: the first group shows disorder in all the motor abilities, the second group is characterized by lack of coordination and balance, presenting difficulties in performing the daily gestures, the third group presents poor results in execution of sequences of movements and the fourth group is formed by children presenting no disorders (Albaret, 2004).

The motor development of a child is a hierarchical and predictable process, a certain behavior of the children, sooner or latter, "deriving" from the patterns.

Coordination of movements starts from early ages and continues until the full maturity of the human being. The age optimal for potentially successful intervention is within the frame of 7 - 10 years old, when the cognitive and motor abilities support each other. At this age, the segmental coordination ability must be improved (Dragnea, Bota, 1999).

Some specialists advocate that the age between 7 and 11 years old is the golden age, when child has no

responsibilities and can freely play (Mitrache, Bejan, 2011).

In this context, the psychomotor education represents a process of learning which can be efficient if the child is aware of his/her own body, knows his/her laterality, can locate himself/herself in space, controls the time, has stability and coordinates his/her movements and gestures.

American specialists Gallahue D. (1993), HousnerL. (2000) and GowerR. (2005), initiators of the ***development-dedicated education***, considered that movements learning and movements-based learning are the central objective of the motor education.

The main characteristic of this orientation is represented by the adaptation of the learning content to the singularity of each subject, starting from the assumption that although the motor development is correlated with the age, it does not depend on the age. Therefore, **adequacy to individual** and not to the age stage features is the specificity of this developmental perspective.

Organization of the research

Scope

Investigation of the bodily scheme, general coordination level, segmental and intersegmental coordination levels, followed by the design and implementation of the kinetic stimulation programmes in view of educating the bodily scheme, the spatial-temporal structuring, organization and orientation, favoring the involvement of the child in different motor experiences.

Subjects

The survey was carried out within the Special Secondary School No 1 of Bucharest which has a sport hall and a kinetotherapy cabinet very well equipped with apparatus, objects and materials required to carry on the training-educational process. The sample subject of the preliminary study consisted of 29 pupils intellectual disabilities and associated affections. The characteristics specific for these children are: the psychic-motor immaturity compared to normal children, the insufficient perceptive-motor development, the poor development of the complex movements (especially those of the hands and those executed based on oral indications), static and dynamic balance disorders, inefficient spatial coordination of movements, respiratory rhythm difficulties, shamble march with the legs spread, ambiguous laterality, motor slowness, deficient posture, reduced muscular control ability, movement accuracy disorders.

Methods

Bibliographic study, observation, the Bruininks – Oseretsky Test for intersegmental, upper and lower limbs coordination, as well as for general coordination, the Body Schema Knowledge Test , statistical processing methods and data interpreting.

Body Schema Knowledge Test (Moţet, 2001, pg. 193)

Subject must correctly answer to the following orders:

Show me the eyelids! – 1point

Show me the elbow! – 1point

Show me the right thigh! – 1point

Lift the right arm and the left leg! – 1 point

Move the right leg backward and take it in the left hand! – 1 point

Touch my heel! – 1 point

Show my left shoulder! – 1 point

Show my right shoulder! – 1 point

Staying face to face with the therapist, the subject must execute the same movement as the therapist, to investigate the mirror movements.

Touch the right eye with the right upper limb – 1 point

Lift the upper right limb, flex the left lower limb from the knee joint and keep it lifted from the soil - 1 point.

Maximum score to be obtained is 10 points. It is awarded 1 point for each order correctly executed.

The test verifies the knowledge of the own body schema and of the partner's body schema, the spatial orientation and the balance.

Intersegmental Coordination Test (Bruininks – Oseretsky Test of Motor Proficiency-Moţet, 2001, pg. 195-196)

Subject must execute:

Item 1. 10 alternative and consecutive leg tapping, cutting circles in the air with the fingers = 10 points (if the subject does not maintain the rhythm or does not tap alternatively or does not succeed to cut simultaneously circles in the air with both arms, the test is considered incorrectly executed);

Item 2. 10 simultaneously tapping with the forefinger and the leg selected by the subject at own discretion = 10 points;

Item 3. 10 simultaneously tapping with the forefinger and the opposite leg = 10 points;

Item 4. Capriole jumps accompanied by synchronized movements of the arm and lower leg of the same side. 10 complete jumps in 90 seconds = 10points;

Item 5. Capriole jumps accompanied by synchronized movements of the opposite arm and lower limb. 10 complete jumps in 90 seconds = 10 points;

Item 6. Vertical jumps by clapping the palms at every jump. 5 jumps with palm claps at each jump = 5 points.

Maximum score to be obtained: 55 points.

Lower limb movement coordination test

Subject stays on a straight line drawn on the soil. The line crosses the soles of the subject, dividing them into two halves: the anterior half and the posterior half. Subject must execute 20 jumps as it follows: 1 – the selected leg in front of the start line and the opposite on the rear; 2 – legs come back on the line; 3 – the opposite leg in front of the line and the selected one on the rear; 4 – coming back on the line with both legs.

For each phase correctly executed shall be given 0.05 points. The maximum score to be obtained is 10 points.
The subject is required to execute 20 jumps by crossing his/her legs starting from the above mentioned position, provided he/she remains all the time on the start line, as it follows:
1 – the selected leg passes, during the jump, in face of the opposite leg and then reaches the soil; 2- coming back in the initial position; 3 – the opposite leg passes, during the jump, in face of the selected leg and then reaches the soil; 4 – coming back in the initial position.
The maximum score to be obtained is 10 points.
Maximum score to be obtained is 20 points.

Upper limb movement coordination test (Bruininks – Oseretsky Test of Motor Proficiency) (Moțet, 2001, pg. 196-197)

Item 1. The subject taps the ball against the floor and catches it by both hands, 5 correct executions – 5 points (1 point for each exercise correctly executed);
Item 2. The subject taps the ball against the floor and catches it by the selected hand, 5 correct executions – 5 points;
Item 3. The subject catches by both hands the ball thrown by the partner, 5 correct executions – 5 points (1 point for each correct execution);
Item 4. The subject catches by the selected hand the ball thrown by the investigator, 5 correct executions – 5 points;
Item 5. The subject throws the ball on target with the hand selected by him/her, 5 correct throws from 5 attempts = 5 points;
Item 6. The subject touches a swinging ball by the selected hand, 5 correct attempts = 5 points;
Item 7. The subject having the arms laterally stretched must touch the nose tip by bending the arms from the elbow, eyes shut during the movement (nose-index test). For 4 correct touches (2 by each finger) shall be obtained 4 points;
Item 8. The subject must touch the hand thumb with each of the other fingers (in the following order: forefinger, middle finger) = 4 points;
Item 9. Rotation of thumb and forefinger, 5 correct rotations in 90 seconds = 5 points
Maximum score - 43 points.

Matorin Test (Grosu, 2009, pg. 98) – the Matorin test measures the general coordination and the balance and it consists of a jump on vertical with turn around the longitudinal ax of the body (to the right or to the left). For a rotation of more than 360^0 it is given the "very good" mark.

Findings and results

The preliminary analysis of the results obtained by the investigated subjects shows that there is no central data grouping trend because of the heterogeneity of the group, the data rank wideness being very large. This is proved also by the value of the variance coefficient.

Table 1.

Indicatori statistici	Body schema	Intersegmental coordination	Lower limb coordination	Upper limb coordination	General coordination
AVERAGE	3.821	12.32	1.571	13	85.18
AVEDEV	3.082	14.41	1.806	10.29	69.11
MAX	10	55	8	41	360
MEDIAN	2.5	2	0	10	67.5
MIN	0	0	0	0	0
MOD	2	0	0	10	180
STDEV	3.507	16.98	2.316	12.45	88.61
Variability coefficient	91.78	137.8	147.4	95.8	104

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

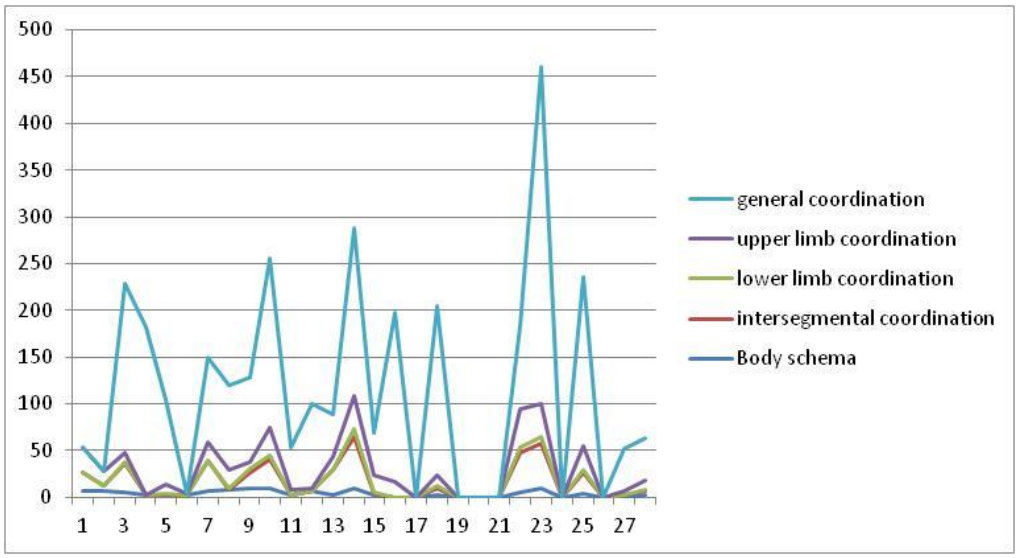


Figure 1.

Figure no 1, presenting the scores obtained by each child to the applied tests, shows that there are 8 subjects who did not obtain any score for the body schema knowledge test, 13 subjects who did not obtain any score for the intersegmental coordination test, 15 subjects who did not obtain any score for lower limb movement coordination test, 7 subjects who did not obtain any score for the upper limb movement coordination test and 9 subjects who did not obtain any score for the general coordination test. We specify that 6 children (five boys and one girl) did not obtain any score for any of tests applied.

Variabile	Coeficient de corelație Pearson
Body Schema Knowledge-intersegmental coordination	0,67448349
Body Schema Knowledge- lower limb coordination	0,683955882
Body Schema Knowledge- upper limb coordination	0,647814872
Body Schema Knowledge-general coordination	0,4905503
Intersegmental coordination– general coordination	0,585918579
General coordination - lower limb coordination	0,67983062
General coordination - upper limb coordination	0,56636864
Upper limb coordination- lower limb coordination	0,758777005

Discuss

Pearson coefficient values point out a very good positive correlation between the upper limb movement coordination variables and the upper limb movement coordination (0.758), as well as between the body schema knowledge and the lower limb movement coordination (0.683); the lowest value, namely 0.490, was recorded for the body schema knowledge – general coordination variables.

There are some researches carried out on the same category of children showing that: children with mental deficiencies represent a heterogeneous category of subjects, both in terms of somatic and motor values. These aspects are reflected on the level of motor abilities development and on the psychomotor training. (Șuță, 2010). Voinea (2011) also demonstrated significant differences between two groups, one experimental and a control one, in case of applying a psychomotor program for improving the body schema and the coordination between different limbs.

Programme of exercises for the body schema development

Normal march with the hands on the hip joints, lift of right arm while the left arm remains on the hip joint, on first sound signal, on second sound signal, coming back of the right arm on the hip joint and lift of the left arm and on the third sound signal, coming back of both arms in the initial position.

The exercise will be repeated by reversing the initial order of the sound signals (1, 3, 2 or 2,1,3 etc.)

Normal march and, on vocal order, turning and moving one step to the right/to the left.

Staying with the legs spread and the hands on the hip joints, in front of the mirror: 1-2: execution of head flexions; 5-6: bending the head to the right, 7-8: bending the head to the left.

Staying with the arms close to the body in front of the mirror: 1-4: lifts of the right arm up, through lateral displacement; 5-8: coming back in the initial position.

From staying with the legs spread and the hands on the hip joints, on vocal order, covering the left eye (ear) by the right hand, and then covering the right eye (ear) by the left hand.
From staying with the legs spread and the hands on the hip joint in front of the mirror: 1-4: twisting the trunk to the right; 5-8: twisting the trunk to the left.
From staying on the knees with the arms along the body and a ball put on the right side, on vocal order catching the ball by both hand, moving it to the left via forward, by stretching the arms, and putting it the fixed position (circle drawn on soil), then repeating the exercise to the right.
From lying on the back, with the lower limbs tripled flexed, with 5 balls put on the right side and other 5 balls put on the left side, on vocal order twisting the trunk to the right, catching the ball by both hands and throwing the ball to the left until there are no balls left on the right, then repeating the exercise for the left side.
Same exercise as the above one, on alternative orders (ball throwing to the right/ to the left).
Lateral rolling to the right and to the left from lying on the back.
From lying face down, lifting the right arm and the left leg; same exercise for the other pair of limbs.
From sitting position, kicking, on vocal order, the ball with the right leg/ the left leg

Programme of exercises intended to the coordination development

Exercises for the coordination of the arms' and hands' movements

a. From sitting position, lifting the upper limbs and lowering them until they are supported on the knees.
b. From upright position with the legs spread, with the arms at the chest level: 1-2: arms' flexions; 3-4: stretching arms with the palms toward up; 5-6: stretching the right arm straight close to the ear while the left arm remains along the body; 7-8: stretching the left arm close to the ear while the right arm remains along the body.
c. From upright position with the hands on the hip joints:1-2: lifting the right arm in lateral with the palm oriented toward the soil, while the left arm is lifted up with the palm oriented to the right; 3-4: coming back to the position with the hands on the hip joints; 5-6 lifting the left arm in lateral with the palm oriented toward the soil while the right arm is lifted up with the palm oriented to the left; 7-8: coming back to the initial position with the hands on the hip joints.
d. From sitting position with the arms stretched forward and the palms oriented toward the soil: 1-2: orienting the palms toward up; 3-4: orienting the palms toward the soil.

Exercises for the coordination of the lower limbs' movements

a. Exercises on the ergonomic
b. March on the "treadmill"
c. From upright position with the legs spread and the hands on the hip joints: 1-2: lifting the right knee to the chest; 3-4: coming back in the initial position; 5-6: lifting the left knee to the chest; 7-8: coming back in the initial position.
d. From upright position withthe legs close each to other and the hands on the hip joints, jumping as a ball.
e. From upright position, kicking the ball firstly with the right leg and then with the left leg.

Exercises for the coordination of the head movements with the eyes' movements

a. Sitting on the gym bench, moving the look from one object to another (up-down, to the right/to the left) without moving the head.
b. From upright position with the legs spread and the hands on the hip joints, twisting the head to the right and then to the left, keeping the eyes closed.
c. From upright position with the legs spread, bending the head forward and backward on different sound signals (cock sound – bending forward; hen sound – bending backward).

Exercises for the general intersegmental motor coordination

a. From upright position with the legs close each to other and the hands on the hip joints: 1: jump jack with the arms laterally stretched and then lifted above the head where a clap is executed; 2: coming back in the initial position; 3 - similar with 1; 4: similar with 2.
b. From upright position with the legs close each to other and the hands on the hip joints: 1: cutting a caper with the right leg forward and the arms laterally stretched with the palms oriented toward the soil; 2: coming back in the initial position; 3: cutting a caper with the left leg forward and the arms laterally stretched with the palms oriented toward the soil; 4: coming back in the initial position.
c. From lying on the back with the arms along the body: 1-2: lifting the left leg and the right arm; 3-4: coming back in the initial position; 5-6: lifting the right leg and the left arm; 7-8: coming back in the initial position.

Conclusions

Children with intellectual disabilities show significant disorders at the level of body schema knowledge and general, segmental and intersegmental movement coordination, which result in adverse effects on learning/executing the basic motor, stability and handling skills.
The educational programmes must focus on the use of the sensorial-motor skills and basic skills, basic movement patterns and fitness components.
The programmes for the complex stimulation of the children with intellectual disabilities must ensure the individualizing of the motor and functional requirements according to the mental age of each of the

subjects

Bibliography

Albaret, J., M., 2004, Les troubles de l'acquisition de la coordination. Available from: http://www.psychomot.ups-tlse.fr/Albaret2004-EdC-TAC.pdf. Last message received on 09.04.2013 at 23:13

Bota, A., Teodorescu, S., 2011, Orientări actuale în predarea educaţiei fizice în învăţământul primar. Editura Discobolul, Bucureşti.

Dragnea, A., Bota, A., 1999, Teoria activităţilor motore, Editura Didactică şi Pedagogică, Bucureşti.

Gallahue, D.L., (1993), Developmental physical education for today's school children, 2nd edition. Editura Brown & Benchmark, Madison.

Mitrache, G., Bejan, R., 2011, Dezvoltarea motoră şi psihomotoră a copiilor de 7-11 ani, Editura Discobolul., Bucureşti

Păunescu, C., Muşu, L, 1990, Recuperarea medico-pedagogică a copilului handicapat mintal, Editura Medicală, Bucureşti.

Radu, D., Ulici, G., 2003, Evaluarea şi educarea psihomotorităţii, Editura Fundaţia Humanitas, Bucureşti.

Rigal, R, 2008, L'éducation motore et l'éducation psychomotore au préscolaire et au primaire. Available from: http://www.er.uqam.ca/nobel/r17424/documents/Chapitre_introduction.pdf.Last message received on 11.04.2013 at 23:13

Salvan, M., Albaret J.M., 2006, Quelle rééducation psychomotore pour le trouble de l'acquisition de la coordination (TAC). Approche Neuropsychologique des Apprentissages chez l'Enfant, 18, 164-171.

Şuţă V., 2010, Adaptarea ariei curiculare educaţie fizică şi sport la copiii cu deficienţă mintală severă, cu vărste cuprinse între 10 şi 16 ani, Teză de doctorat, UNEFS Bucureşti, p.230.

Voinea, A, 2011, Optimizarea capacităţii psihomotrice la elevii cu deficienţă mintală, Teză de doctorat, Piteşti, p.198, 209.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 557-563

SOMATIC, FUNCTIONAL AND MOTOR DIMENSIONS OF NORMAL WEIGHT AND OVERWEIGHT STUDENTS FROM A.S.E. BUCHAREST

URZEALĂ CONSTANTA[1], POPESCU VIORELA[2]

Abstract

Aim. The aim is to identify the differences between the somatic, functional and motor indicators of some young normal weight and overweight women.

Objectives. This paper is part of a wider research with thematic related to physical exercise and life quality. The main objective of this study is to dimension, based on the obtained results, physical exercise programmes in accordance with the characteristics of the subjects.

Methods of research. We used: the bibliographic study, the observation, the experiment to find out, the test, the questionnaire, the statistics methods. The sample is built up of two groups of subjects, each including 30 students of 18 – 24 years old, studying at A.S.E. Bucharest. The participants were initially tested at the beginning of the academic year. To determine the somatic dimension, the following parameters were measured: height, weight, body mass index, body fat percentage, muscular tissue percentage. To determine the functional dimension, Ruffier Test was carried out and the vital capacity was measured. To determine the motor dimension, strength trials were performed aiming the great muscular and strip testing was used for determining the flexibility.

*Results.*The results enabled, the identification of some significant statistic differences between the normal weight students and the overweight students with regard to somatic dimensions. Concerning the functional and motor dimensions investigated by us, no significant statistic difference were found, all the students proving an initial low level of the strength and flexibility. Some aspects relating to the physical activism of these students, during their leisure time, resulted from the questionnaire they answered to. For obtaining an as complete as possible overview on the characteristics of the two groups of subjects, statistic correlations between the somatic, functional and motor dimensions have been carried out.

Discussions. An objective diagnosis of the development level of subjects was obtained, enabling a proper selection of the contents of the physical education classes, the selection of the most adequate means and the setup of the effort

1Sports Performance Department - Unefs Bucharest, ROMANIA
[2] Ph.D. Studies Department - Unefs Bucharest, ROMANIA
Email: ritmicuta@yahoo.com

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

parameters, aspects which will be concretized in the design of distinct exercise programmes for normal weight students, respectively for overweight young ladies.
Conclusions. The mandatory sport and physical education class remains the organizational physical exercise form with highest effects on shaping the individual's habit to practice motor activities during the leisure-time, its content ensuring the premises for an active life style from somatic, functional and motor standpoint.
Key-words: normal weight, overweight, somatic, functional, motor, students.

Introduction

A major issue many countries currently faced with is in connection to the overweight and obesity to individuals, exposed due to such causes to severe health affections. Statistics brought to our attention the alarming percentages relating to different categories of population suffering of obesity (30% in USA, 24% in United Kingdom, 23% in Ireland, more than 22% in Malta, 20% in Luxemburg, 12% in Germany). In Romania, this phenomenon gains weight in the last years, mostly at infant level, our country being the third in Europe with an overweight and obese population. To those alarming aspects, data on the inactive lifestyle of individuals add. W.H.O. specifies that 60-85% of the adult population is physically inactive. Bota (2006) shows objective study data of the Romanian Federation „Sport for All" by which she emphasizes the poor representation of sport leisure phenomenon in the people conscience at national level, as well as the poor practice of physical exercise by them.
The deficient nutrition habits and the absence of the physical exercise in the daily activities of an individual represent two of the factors adversely affecting the individual's health condition and, implicitly, leading to the decrease of the life quality. Among the population categories falling under the attention of the researchers with this regard, are students, too, most of them being of youthful age. We hereby remind Lartey, Mishra, Odonwodo et al. (2009), who spotlight the interest of students in the American campuses for a healthy life style as result of the interactions of three factors: good nutrition habits, physical exercise systematically practiced and making regular medical consultations. The individual life style can be characterized by the level of motor activities he/she is involved into, by the energy consumption implied by the daily activities and the physical exercise practice, by the nutritional variations caused by the season changes, as well as by the oscillations of the inner energetic balance of the individual. The individuals' efforts to evolve went towards a global industrialization, responsible for the so called, by the experts, an „obesogenic" environment, providing people with a quick access to unhealthy nutritional supplements and fast food products, a low physical activity level and, by consequence, a low energy consumption rate, aspects favoring the obesity and the metabolic diseases (Leonard, 2010). Change in somatic indexes is obvious in a passive life style, most of individuals becoming gradually aware of their physical aspect and, equally becoming unsatisfied by their body-built. The functional changes doubling the weight difficulties will be felt in short time and will result in human organs and systems' affections whom the individual can no longer control without the intervention of a medical professional. The specialized studies emphasize that the adipose tissue percentage generally is an indicator for the high risk metabolic diseases, heart infarction and type-2 diabetes, being studied the relations between the physical activity and the possibility to diminish the fat deposits from different areas (Davidson, Tucker, Peterson, 2010). The abdominal belt is considered an area sensitive to fat deposits being known that the adipose tissue is more accentuated here and more difficult to be diminished by physical exercises, compared to that in other areas. This is the reason for which many physical exercise programmes promise to offer energetically quick and cheap solutions, but the progress is hard, especially when the goal aims the diminishing of the umbilical fold.

Even if the physical activities represent an important support for the individual good health condition, and the population is informed by different media on the benefits of the physical exercises, more and more children, teenagers and young people live a sedentary life, estranging themselves from sports. Taking into consideration that active life style habits form during the early ages, subsequently it is unlikely for such individuals to be part of the active population. This is the reason for which practicing physical exercises is stimulated under a form intended to be attractive, relaxing and pleasant, able to cultivate the taste for exercise and to become a long term habit (Shores, West, 2010). The specialized literature makes frequent referrals to barriers preventing people to practice individual, social or environmental physical activities. Out of such barriers, we mention the absence of programme attractiveness, the precarious access to the material base, the insufficient family and social support, the deficient leisure-time management, the poor transport options, the motor activities non-supportive infrastructure and policies (Cerin, Leslie, Sugiyama et al. 2010). In this context, we consider that a major influence will have the physical education and sports classes, which will provide the individual with many exercise alternatives, which best fit the needs, abilities and expectations of the participant. The content of the physical education and sports classes must ensure both the motor base (motor skills and features), as well as the somatic, functional and psychic

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

premises for the physical exercise programmes to be practiced after leaving the education system. Physical education and sports remains the main discipline from the curriculum pursing as goal the physical and psychical health of the participants, starting from pre-school, elementary and primary schools, college and higher education levels (Vasile, 2008). Starting from those facts, our survey regards the evaluation of some somatic, functional and motor dimensions of young ladies, comparing normal weight with overweight female students, in order to elaborate the most adequate physical exercises programs for them.

Methods

There were used: the bibliographic study, the observation, the experiment to find out, the test, the questionnaire and the statistics methods SPSS (Popa, 2008).

To investigate the somatic dimension, the following anthropometrical measurements were applied: height, weight, BMI, adipose tissue percentage, muscular tissue percentage.

To investigate the functional dimension, the vital capacity was measured by a spirometer, as well as the workload, by Ruffier test.

To investigate the motor dimension, the following strength trials for main muscle groups were carried out, the flexibility of the spine being measured by the flexibility ruler:

- Lift up of the trunk, from lying on the back, repeatedly, correctly executing the movement during 30 seconds;
- Lift up of the trunk from lying face down, repeatedly, correctly executing the movement during 30 seconds;
- Push-up from staying on the knees with forearms-supported, repeatedly, correctly executing the movement during 30 seconds;
- Squats, repeatedly, correctly executing the movement during 30 seconds;
- Bending forward the trunk from sitting on the floor – measurement of the distance between fingers and toes, expressed in centimeters and transformed in grades (insufficient, enough, good, very good).

The sample consisted of 60 female students at the Faculty of Accountancy and Management Informatics within the Academy of Economic Studies of Bucharest, aged between 18 and 24 years, following the bachelor degree study cycle. Subjects were divided into two experimental groups, according to their type of body structure, namely a group of 30 normal-weight students and a group of 30 overweight students, all involved in physical exercise programmes according to the physical education and sports curriculum mandatory in the first two academic years. Students did not practice a performance sport and they rarely practice physical exercises during their leisure-time.

Trials were carried out at the beginning of the academic year 2012-2013, representing the initial test which will provide objective data required to design the physical exercise programmes.

Also, subjects answered to a questionnaire consisting of 24 items, by which collection of anamnestic data, as well as data on nutritional habits, life style and motor activities practiced by students, was aimed.

The observation method supported the subjects' investigation and the collection of data on the manifestations during the assessments and the physical education and sports classes.

The experiment to find out was used aiming to identify the differences between the somatic, functional and motor indicators of some young normal weight and overweight female students, in order to establish the most adequate physical education programs.

Results

Statistically significant differences between the normal-weight female students and the overweight female students were found only with regard to the investigated somatic parameters. For all the results obtained pursuant investigating subjects, the related statistical indexes (average, independent t-test, statistical significance threshold) were calculated as summarized presented in Table 1.

Table 1. Summary of the calculated statistical indexes

Investigated Dimension	Assessment Trial/Test	Arithmetic Mean Value for: Normal-weight	Overweight	T test Sig. 2 tailed	Sig.
Somatic	Height (m)	1.63	1.64	0.63	> 0.05
	Weight (kg)	62.70	71.23	0.00	< 0.05
	Body Mass Index	23.59	26.65	0.00	< 0.05
	Adipose tissue (%)	34.88	40.16	0.00	< 0.05
	Muscular tissue (%)	27.48	25.72	0.0002	< 0.05
Functional	Vital capacity (ml)	2216.67	2416.67	0.074	> 0.05
	Ruffier index	15.47	15.03	0.476	> 0.05

Motor capacity (strength)	Lift up of the trunk from lying on the back (no/30s)	14.50	14.00	0.645	> 0.05
	Lift up of the trunk from lying face down (no/30s)	19.30	17.73	0.215	> 0.05
	Push-ups from staying on the knees forearms supported (no/30s)	12.03	12.63	0.656	> 0.05
	Squats (no/30s)	18.40	18.93	0.473	> 0.05

Hereinafter, trial data, related to which statistically significant differences were found, are analyzed. For BMI (table 2), the Levene's Test shows that data dispersion is not the similar in case of the two groups (Sig. < 0.05), and that the variance coefficient shows homogenate structures. The effect magnitude (2.70) emphasizes a very big difference between the averages of the two groups, for 95% of the cases, this difference varying between 2.47 and 3.64. According to the independent t-test, the difference between averages reached the statistical significance threshold, Sig. = 0.000 (Sig. < 0.05). It is accepted the research hypothesis and it is rejected the null hypothesis. These results are graphically illustrated in Figure 1.

Table 2. Statistics for the BMI

Equal variances assumed	Levene's Test		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Diff.	
								Lower	Upper
Yes	4.734	.03	10.46	58.00	.0000	3.06	.29	2.47	3.64
No			10.46	51.63	.0000	3.06	.29	2.47	3.64

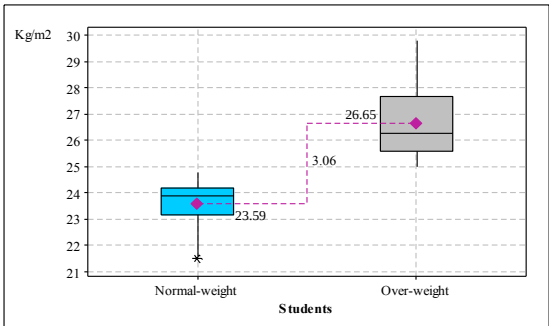


Figure 1. Graph of the BMI evaluation results

With regard to the adipose tissue percentage (Table 3), the Levene's Test shows that the data dispersion is similar in case of both groups (Sig. > 0.05) and the variance coefficient shows homogenate structures. The effect magnitude (2.02) proves a very big difference between the averages of the two groups. It is found that, in 95% of the cases, the difference varies between 3.93 and 6.63. The independent t-test emphasizes that there are statistically significant differences of Sig. = 0.000 (Sig. < 0.05) between the averages of the two groups. It is accepted the research hypothesis and it is rejected the null hypothesis. The evaluation results on the adipose tissue percentage are graphically illustrated in Figure 2.

Table 3. Statistics for the adipose tissue percentage

Equal variances assumed	Levene's Test		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Diff.	
								Lower	Upper

Yes	.211	.65	7.82	58.00	.0000	5.28	.67	3.93	6.63
No			7.82	57.84	.0000	5.28	.67	3.93	6.63

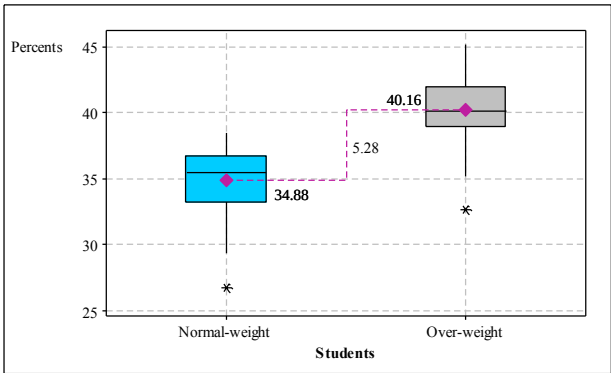


Figure 2. Graph of the adipose tissue percentage evaluation results

With regard to the muscular tissue percentage (Table 4), the Levene's Test shows that the data dispersion is similar for both groups (Sig. > 0.05). The variance coefficient shows homogenate structures. The effect magnitude (1.04) points out a very big difference between the averages of the two groups, in 95% of the cases the difference varying between -2.63 and -0.88. The independent t-test shows that there are statistically significant differences of Sig. = 0.0002 (Sig. < 0.05) between the averages of the two groups. It is accepted the research hypothesis and it is rejected the null hypothesis. The evaluation results on the muscular tissue percentage are graphically illustrated in Figure 3.

Table 4. Statistics for the muscular tissue percentage

Equal variances assumed	Levene's Test		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Diff.	
								Lower	Upper
Yes	.003	.96	-4.02	58.00	.0002	-1.76	.44	-2.63	-.88
No			-4.02	57.97	.0002	-1.76	.44	-2.63	-.88

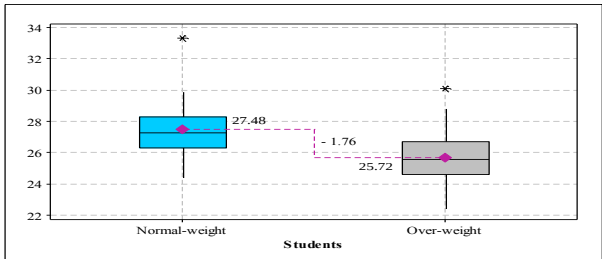


Figure 3. Graph of the muscular tissue percentage evaluation results

The Ruffier's Test results in case of normal-weight, respectively overweight female students are very similar with those obtained by using the spirometer, being recorded no statistically significant difference. Also with regard to the motor dimensions investigated by us, there are no statistically significant differences between the two groups of subjects. With regard to the flexibility evaluation trial (figure 4), we can see that the number of overweight students having obtained the "very good" grade is bigger by 10% than the number of normal-weight students having obtained identical grade (13 overweight students vs. 5 normal-weight students). The number of normal-weight students having obtained the "good" grade is bigger by 26.7% than the number

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

of overweight students having obtained the identical grade (21 normal-weight students vs. 13 overweight students). The "enough" grade is obtained by 7 overweight students, higher by 10% than the number of normal-weight students (4 students) having the same grade. The "poor" grade is present only within the group of overweight students, being obtained by 2 students, representing 6.7%.

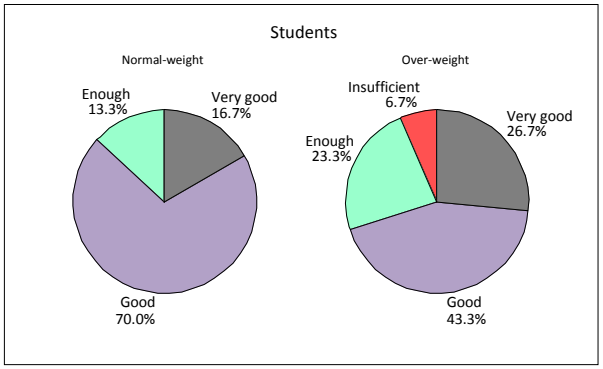


Figure 4. Graph of the flexibility evaluation results

To have an overview as much complete as possible on the two groups of subjects, statistical correlations were determined between the somatic, functional and motor dimensions. In case of normal-weight students, negative correlations between both height and weight, and higher limb strength, as measured during the push-ups from staying on the knees forearms-supported, were identified. In case of overweight students, positive correlations between the muscular tissue percentage and the back strength, as measured during the lift-ups of the trunk from lying face down, were identified.

Following the use of the questionnaire, it results that 33.3% of the subjects systematically practice physical exercise, 33.3% of the subjects practice only occasionally a certain physical activity and 33.3% of the subjects do not practice physical exercise at all. The activity preferred by the young ladies is to navigate on internet and to spend the leisure-time with their friends and families. Taking into account the common professional activity of the students from this sample, studying and reading represent implicit forms of spending the leisure-time.

Discussions

Even if there are statistically significant differences from somatic standpoint, students subject of our survey express similar features in terms of functional and motor dimensions. Statistically significant differences with regard to the weight, body mass index, adipose tissue percentage and muscular tissue percentage are found. With regard to the vital capacity, workload, main muscular group strengths and spine flexibility, the students present close values, such results arising new research hypotheses. A limit of this survey is represented by the number of subjects, taking into consideration the magnitude of the overweight and obesity phenomenon among the young people. Also, selection of female subjects is only a warning on the alarming number of female individuals having weight difficulties. Our option is sustained by other studies, as the research belonging to Rus (2012) that demonstretes the positive effects of the physical exercises on female's biological, psychological and motor potential, investigating 66 overweight young women. With regard to the adipose tissue percentage representing a somatic index, we used an overall evaluation by applying the five fat folds formula of calculation, while a more detailed statistical analyze, based on each distinct set of data corresponding to each fat fold could reveal other interesting aspects. Bota A., Buzescu, Urzeală (2009) show that there are significant statistical differences between two normal and overweight groups of young females (23 subjects), regarding the BMI, measured through the five fat folds formula, when practicing aerobics. The investigation of the functional dimensions can be deemed insufficient because of the few tests carried out, but in the future, we consider out collaboration with a specialized laboratory, provided we can obtain the subjects' approval and the required financial resources. The overview on the motor features can be supplemented by the results of the tests intended to evaluate the other motor qualities, but the high amount of data makes us to limit only to strength and flexibility. A continuation of this survey could be carried out to identify the same parameters in case of students following another professional education programme, as well as the differences compared to other social-professional categories.

Conclusions

The significant statistical correlations between somatic indexes, like weight and muscular tissue and a

motor index, like strength, emphasizes the fact that physical exercises induce benefits on reshaping the individual's body. From this point of view, the working out programs for overweight female students will have as main goal to reduce the body weight by diminishing the fat tissue and developing the muscular mass.

It is found that insufficient participation of normal and overweight students in motor activities have an adverse effect on the general development level of the main muscular group strengths and spine flexibility, students being poorly involved in physical exercise programmes other than those executed during the physical education classes. As showed by the questionnaire, more than half of the survey subjects consist of individuals preferring to spend their leisure-time in front of a PC, with their families and friends, practicing physical exercises being only an occasional or quite absent activity. The mandatory sport and physical education class remains the organizational physical exercise form with highest effects on shaping the individual's habit to practice motor activities during the leisure-time, its content ensuring the premises for an active life style from somatic, functional and motor standpoint. This emphasizes the responsibility of the sport and physical education teacher fin shaping some motor behaviors and adequate conducts, whose expression and quality directly influence the participation in physical exercise programmes and indirectly influence the wellbeing of the individual. Pursuant these steps, an objective diagnosis of the subjects' development level was carried out, enabling proper selection of contents for physical education classes, selection of most suitable educational means and establishing the workload parameters, aspects to be concretized in preparing exercise programmes intended to normal weight female students different than those intended to overweight female students.

References

Bota, A., 2006, Exercitii fizice pentru viată activă. Activităti motore de timp liber. Editura Cartea Universitară, Bucureşti, p. 63-68.

Bota, A., Buzescu, A., Urzeală, C., 2009, Aspects regarding the BMI (body mass index) in subjects practicing aerobic gymnastics. Volumul Conferinţei Internaţionale a FEFS - Universitatea Ovidius, Constaţa, suport electronic ISBN 978-973-614-501-8.

Cerin, E., Leslie, E., Sugiyama, T., Owen, N., 2010, Perceived barriers to leisure time physical activity in adults: an ecological perspective. Journal of Physical Activity and Health, volume 7, no. 4, p. 451-459.

Davidson, L. E., Tucker, L., Peterson, T., 2010, Physical activity changes Predict abdominal Fat change in midlife women. Journal of Physical Activity and Health, volume 7, no. 3, p. 316-322.

Lartey, G. K., Mishra, S., Odonwodo, D. E., Chitalu, C., Chafatelli, A., Factors Influencing the Health Behaviors of International Students at a University [Internet]. International Journal of Health Research, June 2009; 2(2):131-138 (e224p27-34). Available from: http://www.ijhr.org/vol2_no2/ijhr_2009_2_2_3_Lartey.pdf. Last message received on 04.04.2013 at 22:28

Leonard, W. R., 2010, Size counts: evolutionary perspectives on physical activity and body size from early homidis to modern humans. Journal of Physical Activity and Health, volume 7, supplement 3, p. 284-298.

Popa, M., 2008, Statistică pentru psihologie. Teorie şi aplicaţii SPSS, ediţia a II-a, revăzută şi adăugită, Edit. Polirom, Iaşi, p. 51-61, 63-72, 117-128.

Rus, R.V., 2012, Strategii de optimizare a calităţii vieţii femeii prin reducerea efectelor stresului utilizând activităţi sportiv-recreative. Teză de doctorat, UNEFS, Bucureşti, p. 241-246.

Shores, K. A., WEST, S. T., 2010, Pursuing leisure during leisure time physical activity. Journal of Physical Activity and Health, volume 7, no. 5, p. 685-694.

Vasile, L. A., 2008, Sport for all and permanent education in the 21st century. International Scientific Conference Creativity and competition, European attributes of scientific and sporting manifestation , Galati, p. 497.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 564-570

CONTRIBUTIONS REGARDING THE DEVELOPMENT OF THE MOTIONAL ABILITY ENDURANCE AND ITS CORRELATION WITH OTHER MOTIONAL ABILITIES AT THE AGE OF 15/16 – 17/18 YEARS

VAIDA MARIUS[1]

Abstract
This study is a completion of some previous researches and aims to stress the importance of the development of the motional ability i.e. the endurance at the age of 15/16 – 17/18 years when the subjects attend the high-school courses. This age is characterized by numerous changes which occur not only at the psihomotric level, but also at the functional and somatic level. As it is already known, one of the main aims of the syllabi is represented by the development of the motional abilities, out of which endurance is one of the qualities which can be improved quite easily, as it does not require any special devices or equipments.
Subjects and Applied Methods. This research was carried out during the school year comprised between 2011-2012 using a sample of 80 students. It took place at Colegiul Tehnic „Lazar Edeleanu" from Ploiesti. The experiment involved 40 boys and 40 girls who were divided into experiment groups and monitored groups, the trainings of these groups being different one from another. The experiment groups were taught a superior number of lessons which regarded the development of the endurance skills. The trials which were considered were as follows: the 1000 metres endurance running (boys), the 800 metres endurance running (girls), the long jump, the 50 m sprint and the commuting.
Results. After presenting this statistical data in this paper, it can be observed a more or less significant improvement of the performance of the experiment groups regarding the motional ability i.e. the endurance together with the improvement of the values of the other variables featured by this experiment such as the running speed and the explosive force.
Conclusions. Analysing the data provided by this experiment, it can be asserted that, at this age, the improvement of the motional ability i.e. endurance is likely to be achieved to a fairly great extent too, due to its feature of being perfected until at a relatively adult age, as it does not require any special equipments. Its evolution depends on the bio-psiho-motric features of every individual and the perseverance, the continuity and the methods used by the teacher. It was also observed that the development of the endurance abilities has an indirect influence on the other motional abilities, in genere, and chiefly on the running speed and the explosive force.
Keywords: endurance, motional abilities, correlation.

Introduction

The topic of the development of the motional skill named resistance (endurance) is a topic many studies have been written about, this study being a completion of some previous researches and aims at highliting the importance of the development of the motional ability named resistance at the age 15/16 - 17/18 years , age at which subjects attend high-school courses and which is characterized by numerous changes encountered at both psychomotric, functional and somatic level.Bota (2000,) considers resistance as "the ability to endure physical and mental fatigue during a long-term physical performance." Also, Manno (1992) defines resistance as "the motional ability that enables man to deal with fatigue in long-term effort".Consulting specialised literature, it can be said that the definition varies very little according to the opinions of specialists, resistance being conceived as "psychophysical ability of the performer's body to cope with fatigue specific to the his actual performance" (Dragnea and Mate-Teodorescu, 2002, page 381).

As it is already known, one of the main objectives of the curriculum is to develop motional skills, resistance being one of these qualities that can be improved relatively easily because it requires no special equipment and installations.

Experts in the field consider that resistance is one of the motional capacities which can be easily perfected, but only being based on systematic and continuous performance of the specific means, the values obtained can be thus kept for a quite long time.Mitra and Mogoş (1977) consider that "ensuring a high level of aerobic activity of the body depends largely on the degree of preparation of the respiratory system,on the execution of correct breathing both at rest and during effort. It is well known that the respiratory system develops morphofunctionally under the influence of special exercises. Together with this development, an improvement of the neural processes which adjust

[1]The Department of Motional Activities and Academic Sport, Petroleum-Gas University from Ploiesti, Romania
E-mail: vaidamarius@yahoo.com

breathing to the intensity of the physical activity takes place".Development of resistance is very important due to increased efficiency and exercise capacity of students, by delaying the occurrence of the phenomenon of fatigue (physical, mental, nervous system, etc.). Developing this capacity according to a well-established schedule which is adapted to the peculiarities of the students has positive effects on the body systems, especially the cardiovascular and respiratory systems.

Dragnea (2002) believes that the development of resistance is reflected in the increased functional capacity of the respiratory, nervous, cardiovascular system, of the metabolism, and also in the ability to coordinate the rest of the systems and apparati that are found in the human body.The main factors that condition the development of resistance are intermuscular and intramuscular coordination, energy resources, and hormonal mechanisms regulating enzyme activity, psychological factors (volitional processes, endeavour, perseverance, etc.), caplillarisation and peripheral adjustment, the muscle fibre type involved in the activity (slow fibres, "red" with increased oxidative metabolic potential compared to "white" or fast fibres), aerobic capacity, anaerobic capacity, blood components (red blood cells - which serve to transport oxygen), high stability neural processes , fundamental neural processes (excitation and inhibition) by maintaining an optimal state of cortical arousal, so by maintaining an approximately constant ratio in which excitation and pulmonary and cardiovascular capacity prevail (maxim VO2, systolic flow, cardiac output).Contrary to the belief which has persisted among specialists, until recently, according to which the development of resistance is contraindicated in children, recent data and studies in the field, based on well-documented scientific evidence shows that there is no danger of developing resistance in children if attention is paid to the process, knowing that the relative resistance in children is comparable to that of adults, significant differences may be observed in absolute values. A specific issue of developing resistance skills at school age is stimulating the development of the subjects' motivation.It is also recommended that the development of resistance skills at school age should be realised using simple means and with great efficiency, making possible the training during longer time periods, the duration of running gradually increasing.Studying specialised literature, it can be said that the development of resistance can be realised at almost any age (taking into account the somato-functional and mental peculiarities of every subject), with data showing great availability in the development of this quality even at low ages.The education of the conditional motional capacity (quality) named resistance can be carried out not only by running, but also by other specific means. Resistance can be scheduled at any time of the year, during the physical education lesson and it is recommended that it should address the last part of the lesson avoiding thus the association with the motional quality named force. It was found out that complete maturation of resistance ability is achieved during puberty.Generally speaking, the main features underlying the development of resistance skills are: a well-appropriated structure of exercises , breaks which not ensure full recovery of the body and of the exercise capacity,the volume of exercises should result in the appearance of fatigue (large volumes and average volumes), moderate tempo of execution, (2/4) and the possibility to work on sets or continuously (Dragomir andBarta, 1998, page 121).In physical and sport education, the primary means used to develop resistance skills is running, highlighting the necessity of the ability to breathe properly.

Materials and methods

This study was carried out at the Technical College "Lazar Edeleanu" in Ploiesti, in 2011-2012 school year and it was based on a total of 80 students. The experiment included 40 boys and 40 girls, divided into experimental and control groups (with 20 boys and 20 girls for each age group), the study being performed in different training conditions between the two groups. The experiment groups benefitted from a higher number of lessons which targeted the development of the resistance skills.

The tests which were targeted are as follows: the 1000 metres resistance running (boys), the 800 metres endurance running (girls), the long jump, the 50 m sprint and the commuting.

The values of the running resistance test are expressed in minutes, the values of the long jump are rendered in meters and the values of the running speed are expressed in seconds.

The commuting test consists in drawing two parallel lines on the ground at a distance of 15 m. for boys and 10 m. for girls. Behind one of the lines there are positioned 6 small cubes for boys and 4 small cubes for girls. From the top starting position, behind the starting line, at a sound signal, a full speed running is performed to the second line (behind which there are the small cubes), they pick up a small cube, run up to the starting line and place the small cube behind it, then run to the line behind which there are small cubes and bring another small cube. The test continues until all the 4 (6) small cubes are brought back. They are not allowed to throw the small cubes from great distance, the necessary time for bringing them back being rendered in seconds.

The main methods used in carrying out this study are: the method of bibliographic study, experimental method, method of measurements and records,

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

statistical and mathematical method and graphical method.
Also, statistical indicators on which data processing and interpretation were performed are: arithmetic average, median, upper limit, lower limit, quartiles, range, standard deviation and coefficient of variability.

Results

The study is rendered as statistical data in tables 1-8, the interpretation of results is based on the mentioned tables in which the statistical and mathematical values of experimental and control groups obtained in the 1000 metres endurance running test (boys), the 800 metres endurance running test (girls),the long jump test, the 50 m. sprint test, and the commuting test are shown, both in the initial and final tests for both boys and girls.

Table 1. Statistical values obtained in the experimental group boys, 15-16 years

	1000 metres endurance running		50 m. sprint		Long jump		Commuting 15 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	3.58	3.41	7.92	7,21	1,85	2,04	33,22	30,90
Minimum	3.48	3.29	7.5	7,1	1,78	1,87	32,5	30,1
Maximum	4.12	3.58	8.3	7,8	2,19	2,25	33,9	32,4
Range	0.24	0.29	0.8	0,7	0,47	0,38	1,4	2,3
Median	3.57	3.39	7.7	7,2	1,86	1,99	33,4	30,6
Lawer quartile	3.52	3.36	7.7	7,1	1,81	1,95	32,8	30,2
Upper quartile	4.1	3.51	7.9	7,3	1,9	2,12	33,5	31,2
Standard deviation	10.73	12.01	0.30	0,29	0,05	0,15	0,56	0,94
Coefficient of variability	4.48	5.40	3.88	3,99	2,91	7,36	1,69	3,05

Table 2. Statistical values obtained in the control group boys, 15-16 years

	1000 metres endurance running		50 m. sprint		Long jump		Commuting 15 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	3,56	3,44	7,88	7,48	1,91	2,03	34,80	33,85
Minimum	3,4	3,25	7,6	7,1	1,79	1,84	32,9	32,6
Maximum	4,17	4	8,4	8,1	2,21	2,26	35,8	35
Range	0,37	0,35	0,8	1	0,42	0,42	2,8	2,4
Median	3,54	3,45	7,8	7,45	1,855	1,99	35,2	33,65
Lawer quartile	3,48	3,39	7,7	7,15	1,8	1,96	34,42	33,52
Upper quartile	4,06	3,49	7,97	7,6	1,94	2,07	35,37	34,45
Standard deviation	12,85	12,00	0,29	0,42	0,16	0,14	1,03	0,87
Coefficient of variability	36,93	34,88	3,71	5,57	8,47	7,02	2,96	2,58

Table 3. Statistical values obtained in the experimental group girls, 15-16 years

	800 metres endurance running		50 m. sprint		Long jump		Commuting 10 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	4,08	3,47	8,67	8,05	1,73	1,82	24,22	23,13
Minimum	3,29	3,24	7,8	7,6	1,58	1,64	22,6	21,5
Maximum	4,52	4,38	9,4	8,9	2	2,06	26	25,4
Range	1,23	1,14	1,6	1,3	0,42	0,42	3,4	3,9
Median	4,12	3,49	8,45	8,1	1,75	1,85	24,1	22,75
Lawer quartile	4,08	3,44	8,32	8,02	1,63	1,75	23,27	21,92
Upper quartile	4,16	3,53	9,02	8,1	1,79	1,89	25,15	24,25
Standard	20,72	19,37	0,50	0,14	0,11	0,11	1,34	1,59

deviation								
Coefficient of variability	8,35	8,47	5,82	1,71	6,61	6,18	5,52	6,87

Table 4. Statistical values obtained in the control group girls, 15-16 years

	800 metres endurance running		50 m. sprint		Long jump		Commuting 10 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	4,14	4,03	8,93	8,82	1,62	1,67	25,52	25,07
Minimum	3,44	3,31	7,9	7,7	1,31	1,33	23,8	23,6
Maximum	5,15	4,45	10,5	10,1	1,96	2,02	27,6	27,1
Range	1,31	1,14	2,6	2,4	0,65	0,70	3,80	3,5
Median	4,04	3,57	8,7	8,55	1,635	1,69	25,45	25,1
Lawer quartile	3,57	3,43	8,05	8,1	1,405	1,48	25,02	24,6
Upper quartile	4,25	4,18	9,65	9,45	1,805	1,86	26,1	25,75
Standard deviation	23,30	24,77	1,07	0,99	0,26	0,27	1,05	0,90
Coefficient of variability	56,28	61,43	11,97	11,19	16,22	16,37	4,11	3,58

Table 5. Statistical values obtained in the experimental group boys, 17-18 years

	1000 metres endurance running		50 m. sprint		Long jump		Commuting 15 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	3,53	3,38	7,24	6,97	2,19	2,32	34,03	31,45
Minimum	3,41	3,23	6,7	6,5	1,95	2,1	32,4	30,2
Maximum	4,17	4	7,5	7,4	2,42	2,48	38,1	33,8
Range	0,36	0,37	0,8	0,9	0,42	0,38	5,7	3,6
Median	3,49	3,31	7,3	7	2,17	2,35	32,8	30,9
Lawer quartile	3,43	3,23	7,15	6,75	2,07	2,26	32,4	30,65
Upper quartile	3,59	3,54	7,45	7,2	2,29	2,41	34,42	31,7
Standard deviation	13,91	17,70	0,28	0,33	0,18	0,16	2,74	1,60
Coefficient of variability	5,96	8,12	3,89	4,74	8,36	6,98	8,06	5,10

Table 6. Statistical values obtained in the control group boys, 17-18 years

	1000 metres endurance running		50 m. sprint		Long jump		Commuting 15 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	3,56	3,46	7,34	7,28	2,16	2,21	34,19	33,09
Minimum	3,4	3,29	7	6,6	1,89	2	32,2	30,5
Maximum	4,15	4,08	7,7	7,7	2,33	2,40	36,9	34,9
Range	0,35	0,34	0,7	1,1	0,44	0,45	4,7	4,4
Median	3,58	3,45	7,4	7,3	2,2	2,22	33,5	33,4
Lawer quartile	3,49	3,36	7,2	7,1	2,02	2,07	32,7	32
Upper quartile	4,03	3,58	7,4	7,7	2,32	2,28	35,65	34,27
Standard deviation	12,17	13,46	0,26	0,46	0,19	0,17	1,85	1,54
Coefficient of variability	5,14	5,94	3,55	6,32	8,78	7,68	5,42	4,66

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 7. Statistical values obtained in the experimental group girls, 17-18 years

	800 metres endurance running		50 m. sprint		Long jump		Commuting 10 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	4,05	3,54	8,43	7,98	1,76	1,81	24,53	23,78
Minimum	3,36	3,26	7,8	7,7	1,61	1,59	22,9	22,4
Maximum	4,28	4,21	9,2	8,9	2,1	2,2	25,4	25,2
Range	0,52	0,49	1,4	1,2	0,49	0,61	2,5	2,8
Median	4,08	3,52	8,4	7,85	1,7	1,76	24,9	23,85
Lawer quartile	3,56	3,45	8,05	7,7	1,68	1,65	24,35	23,3
Upper quartile	4,15	4	8,75	8,02	1,82	1,92	25,12	24,27
Standard deviation	17,72	16,33	0,50	0,40	0,16	0,21	0,99	1,00
Coefficient of variability	7,23	6,96	5,94	5,05	9,20	11,84	4,05	4,21

Table 8. Statistical values obtained in the control group girls, 17-18 years

	800 metres endurance running		50 m. sprint		Long jump		Commuting 10 m.	
	Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*	*Initial*	*Final*
Average	4,09	4,02	8,24	8,14	1,74	1,77	24,60	24,31
Minimum	3,35	3,31	7,6	7,6	1,55	1,62	23,2	23
Maximum	4,35	4,33	9	8,9	2	2,12	25,1	25,1
Range	1	1,02	1,4	1,3	0,45	0,5	1,9	2,1
Median	4,15	3,57	8,35	8,1	1,71	1,71	24,75	24,4
Lawer quartile	3,48	3,47	7,85	7,8	1,63	1,68	24,57	24,05
Upper quartile	4,28	4,20	8,5	8,3	1,85	1,79	24,92	24,7
Standard deviation	23,35	21,57	0,47	0,43	0,15	0,17	0,60	0,67
Coefficient of variability	9,38	8,91	5,73	5,33	8,85	9,53	2,44	2,76

Discussions

Analysing the results recorded in 15-16 year-old boys in the 1000 m. test (tables 1 and 2), the experimental group shows values of 3.58 min. in the initial testing and 3.41 min. in the final testing, the difference is 17 seconds compared to the control group whose average is 3.56 min. in the first test and 3.44 min. in the second, a difference of only 12 seconds. The 50 m. speed run test of the experimental group of boys evinces an initial average value of 7.92 sec. and a final average value of 7.21 sec., the increase being 0.71 sec., comparatively with the achievement of the control group which was only 0.40 sec., its values being 7.88 sec. in the former test and 7.48 sec. in the latter. Although the values of the initial long jump test are superior within the control group (as well as the values of the resistance running test and the values of the 50 m. speed running test), this test is characterized by a higher progress of the experiment group (19 cm.) compared to the control group (12 cm.) The values of the experimental group were 1.85 m. in the initial test and 2.04 m. in the final test, which can be compared with the control group who obtained 1.91 m. in the initial test and 2.03 m. in the final test. In the commuting test on a distance of 15 m., superior results can be observed both in the initial testing and in the final testing of the experimental group. The values are 33.22 sec. in the initial testing and 30.90 sec. in the final testing, which can be compared with the control group whose values are 34.8 sec. in the first testing and respectively 33.85 sec. in the second testing, a progress of 2.32 sec. within the experimental group and 0.95 sec. within the control group, as can be seen in table 1 and table 2.These results correspond with Monea et al.(2006) and Vaida, Finichiu (2003) results.

The results obtained by 15-16 year old girls (tables 3 and 4) in the 800 m. running resistance test emphasize the obvious progress of the experimental group compared with the control group, the improvement of the former being 21 sec. (4.08 min. in the initial testing and 3.47 min. the final testing) and 11 sec. of the latter (4.14 min. in the initial testing and 4.03 min. in the final testing). Also, in the 50 m. speed running test, it can be observed the same trend of high progress

within the experimental group (0.62 sec.),which can be compared with the control group (0.11 sec.), their values being 8.67 sec. in the first test and 8.05 sec. in the second test within the experimental group and 8.93 sec. in the initial testing and 8.82 sec. in the final testing within the control group. Regarding the long jump, one can see a relative improvement in both groups, the difference is not very large, the progress of the experimental group being 9 cm. (1.73 m. in the initial testing and 1.82 m. in the final testing), while the control group had an improvement of 5 cm. (1.62 m. in the initial testing and 1.67 m. in the final testing). Both initial and final values are significantly higher within the experimental group. Superior results can be observed in the commuting test on a distance of 10 m. both in the initial testing and in the final testing within the experimental group whose progress was 1.08 sec., the values were 24.22 sec. in the initial testing and 23.13 sec. in the final testing, which can be compared with the control group who had an average of 25.52 sec. in the first testing and 25.07 in the second, the progress being of only 0.45 sec, as can be seen in tables 3 and 4.

Analysing the data from 17-18 year old boys reflected in the statistical values which are presented above (tables 5 and 6), one can find higher values of the experimental group both in initial tests and in final tests, the 1000 m. resistance running being characterized by an improvement of 15 sec. within the experimental group compared to 10 sec. within the control group, the average values of the experimental group were 3.53 min. in the initial testing and 3.38 min. in the final testing , while those of the control group were 3.56 minutes. in the initial testing and 3.46 min. the final testing.

The 50m speed running evinces better values within the experimental group - 7.24 sec. in the initial testing and 6.97 sec.in the second testing, with a progress of 0.27 sec. in comparison with the results of the control group who had average value of 7.34 sec. in the initial testing and 7.28 sec. in the final testing, the progress is just 0.06 sec.

At the same time, it can be observed that the initial values are relatively similar in both groups in the long jump test, the average values being 2.19 m. within the experimental group and 2.16 m. within the control group, the difference appeared in the final testings where the values are different, the experimental group with an average of 2.32 m. in comparison with the control group whose average was 2.21 m., the progress is 13 cm within the first group and only 5 cm. within the control group.

Also, the commuting test on a distance of 15 m. reflects the tendency of other tests, the progress being 2.58 sec. within the experimental group (34.03 sec.in the initial testing and 31.45 sec. in the final testing) which can be compared with the control group had an improvement of 1.1 sec. (34.19 sec.in the initial testing and 33.09 sec.in the final testing). By increasing the number of exercises specific to the resistance development also an increase of speed and the strength at the level of inferior limbs was noticed by Christou, et. al. (2006), Finichiu (2005), fact that confirms the study realized by me.

Analysis of the results obtained in 17-18 year old girls highlights a higher progress of the experimental group in all the tests (tables 7 and 8), even if the control group had a better average in the 50 m. speed running initial testing. The 800 m. running resistance test has a progress of 11 sec. within the experimental group (4.05 min. in the initial testing and 3.54 min. the final testing) and 7 sec. within the control group (4.09 min.in the initial testing and 4.02 min. the final testing).

Regarding the 50 m. speed running test, is can be noticed initial values of 8.43 sec. and final values of 7.98 sec. within the experimental group, the progress being 0.45 sec. which can be compared with the control group whose progress is only 0.10 sec., its values being 8.24 sec. in the former test and 8.14 sec. in the latter. Regarding the long jump, one can see a small improvement in both groups, the progress of the experimental group being 5 cm. (1.76 m. in the initial testing and 1.81 m. in the final testing) while the control group had an improvement of 3 cm. (1.74 m. in the initial testing and 1.77 m. in the final testing),as can be seen in tables 7 and 8.

Also, the commuting test on a distance of 10 m. is defined by an upper evolution of the experimental group, its progress being 0.75 sec. in comparison with the control group who had an improvement of 0.29 sec. The values of the experimental group are 24.53 sec.in the initial testing and 23.78 sec. the final testing, while those of the control group are 24.6 sec. in the initial testing and 24.31 sec. in the final testing.These results correspond with Finichiu (2003, 2005) results.

It should also be mentioned that there were cases in which both girls and boys abandoned the resistance running test, there were 4 girls and one boy.

After presenting statistical calculations in this study, an improvement more or less significant of the experimental groups can be observed regarding the motional named endurance together with the improvement of the values of other variables included in the experiment, i.e. the speed and explosive power.

Conclusions

The data presented above shows that, by increasing the number of hours that have as objective the development of resistance skills, a steady improvement of the 15-16 and 17-18 year old students's performance is achieved, this development also influencing other motional capabilities. A superior evolution can be observed at 15-16 year old students in

comparison with 16-17 year old students in the majority of the analysed items.

Also, by continuing the process of preparation of students in terms of the motional capacity named resistance, based on the continuous growth of distance or duration of the activity and on the variation of volume of the effort, one can achieve superior results, knowing that at this age, the capacity of adapting and performing this type of physical activity is very high.

By increasing the endurance capacity of the students, an improvement of other motional skills is also achieved, all these leading to the amelioration of their cardiovascular system.

Contrary to some opinions that say it is not advisable to use means of developing resistance skills for long periods, I believe that it should be paid a special attention to the development of resistance skills, its development not only improving the quality of life, but also other motional capabilities such as strength, moving speed, coordination and so on.

Analyzing the results obtained in this experiment we can say that at this age it is possible to improve the capacity of resistance in a quite considerable extent due to the characteristic of this capability of being perfected to a relatively mature age, its evolution depending, in addition to bio-psycho-motor features of each individual, on the perseverance, continuity and the types of methods used by the teacher.

References

Bota, C., 2000, Ergofiziologie, EdituraGlobus, Bucuresti.

Christou, M. et al, 2006,The effects of resistance training on the physical capacities of adolescent soccer players- Journal of Strength & Conditioning Research (Allen Press Publish), Vol. 20 Issue 4, p783

Dragnea, A., 1984, Masurarea si evaluarea in educatie fizica si sport, Editura Sport-Turism, Bucuresti.

Dragnea, A., Mate - Teodorescu, S.,2002,Teoria sportului, Editura Fest, Bucuresti.

Dragnea, A., şi colab., 2006, Educaţie fizică şi sport-Teorie şi didactică ,Editura Fest, Bucureşti.

Dragomir, Şt., Barta, A., 1998, Educatie fizică, Manual pentru clasa a IX-a, scoli normale, editura Didactică şi Pedagogică, Bucuresti.

Epuran, M., 1995, Metodologia cercetării activităţilor corporale, Universitatea Ecologică – reeditare, Vol. II, Bucureşti.

Finichiu, M., 2005, Calitatea motrică, rezistenţa şi particularităţile dezvoltăriiei la tinerii de 15 – 16 ani, A X-a Sesiune de ComunicăriŞtiinţifice a CadrelorDidactice ,,Modernizareaînvăţământului superior şirelansareaeconomicăîncontextulintegrăriiîn UniuneaEuropeană", UniversitateaRomâno–Americană, 26 – 27. 05. 2005, pag. 89, Bucureşti,.

Manno R., 1992, Bazele teoretice ale antrenamentului sportiv, Traducere 1996,C.C.P.S., SDP 371-374, Bucureşti.

Mitra, GH., Mogoş, AL., 1977, Dezvoltarea calităţilor motrice în activitatea de educaţie fizică si sport scolar, Editura Sport-Turism, Bucuresti.

Monea, D., Popovici, C., Monea, C., 2006 - Determinarearezistenţei la juniorii de 15-16 aniprintestespecifice,StudiaUniversitatisBabeş-Bolyai, StudiaEducatioArtisGymnasticae - Ediţia nr.1 din 2006, ClujNapoca.

Raţă, G., Raţă, B.C., 2006, Aptitudinile în activitatea motrică, Editura EduSoft, Bacău.

Şerbănoiu, S., 2004, Metodica educaţiei fizice şi sportului, Editura Cartea Universitară, Bucureşti.

Thomas, J., Nelson, J.,1996, Metodologia cercetării în activitatea fizică, Vol. I, C.C.P.S., SDP 375-377, Bucureşti.

Thomas, J., Nelson, J., 1997, Metodologia cercetării în activitatea fizică, Vol. II, C.C.P.S., SDP, 386-389, Bucureşti.

Tudor, V., 1999, Capacităţile condiţionale, coordinative şi intermediare – componente ale capacităţii motrice, Editura Rai, Bucureşti.

Vaida, M., Finichiu, M., 2003, Studiuprivinddezvoltareazistenţei la alergare la elevii din clasele a IX-a şi a XI-a din Liceulmilitar,,C. Brâncoveanu,, Ploieşti, A XIII-a SesiuneAnuală de Comunicări Ştiinţifice ,,Noi coordinate privind creşterea eficienţei educaţiei fizice şi sportului" UniversitateaEcologică, 10. 05. 2003, pag. 52, Bucureşti.

Vaida, M., Dulgheru, M., 2007, Educaţia fizică în învăţământul primar – teorie şi didactică, Editura Universitatii Petrol- Gaze din Ploiesti.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 571-576

THE EFFECT OF MOTOR ACTIVITY ON ATTENTION

VINCENZO BIANCALANA[1], NATALUCCI VALENTINA[1], NART ALESSANDRA[1]

Abstract
Purpose: influence of motor activity, based on the reduction and control of muscular tone, on scholastic attention.
Methods: in the method adopted, children were subject to a session of proprioceptive exercises prior to undergoing a dictation test. The number of errors made during the dictation test was analyzed to see whether the children made fewer errors than in dictation tests not preceded by a session of psychomotor exercises.
Results: the final results firmly demonstrate that motor activity conducted shortly before an attention test is capable of modifying the results of the test itself.
Conclusion:a T-Test further demonstrated that the effect of motor activity on performance is independent of sex. After having established this factor, sequence of administration and effect of time were also taking into consideration. It was determined that the effect of motor activity on a child's performance is independent of both.
Key words: proprioception, motor activity, attention span,school.

Introduction

By now the scientific community agrees that the human body is the fundamental element through which children learn about the world and develop their psychophysical identity. As underlined by Piaget, Wallon, Erikson (Weiner), and more recently by Brignola et al., there is a direct relationship between motor development and cognitive development, especially in children of elementary school age. This does not however mean that children without access to adequate physical development are incapable of attaining an adequate cognitive integrity (Biancalana 2007). As emphasized by Edelman's theory of neural Darwinism, the sensorimotor experience is the foundation of knowledge of self and of the world. According to Vayer, a well-structured body scheme is also the basis of social communication, considering that communication is nothing more than language of the body. Le Boulch instead believes that bodily awareness is the fundamental condition to acquiring certain behaviors, such as perceptual organization and motor learning as well as all interpersonal and emotional activities.

The goal of the experiment was to verify the possible positive influence that motor activity, based on the reduction of muscular tone and body awareness, has on attention, one of the necessary requirements for children during school hours.

The study was carried out on a total of 79 children ranging in age from 7 to 8 years old from four classes at the F. Trillini Comprehensive School in Osimo, Italy. The research was carried out from April 2012 to June 2012.

Methods

In order to evaluate the effects that our proposed motor activity was capable of producing on attention span, "instrument" *dictation*, in which a number of potential errors was inserted, was used. Said potential errors were agreed upon, together with the teachers, after the initial level of each class was determined. During the dictation test, the children sat in their usual seats. The evaluation was scheduled once a week on a predetermined day and was preferably carried out at the same time: 9:00-10:00 and 10:00-11:00. All of the classes were subjected to two situations: 1. *Dictation only; 2. Motor training followed by dictation.*

On the days when the classes had to carry out both motor training and dictation, the dictation test was always administered immediately after motor training at a minimum time gap of 3 minutes and a maximum time gap of 8 minutes.

The proposed motor activity was based on respiration, muscular relaxation and awareness of the body and the outside environment. Each class underwent a total of five evaluations structured as follows: a lesson in which the level of the class was determined, two lessons in which only the dictation test was given and two lessons of motor training followed by the administration of a dictation test.

The dictation tests were developed together with the teachers in order to ensure that they were actually suitable for the participating students. The dictation tests were standardized to include a number of potential errors (30) including double letters, accents and apostrophes, as well as specific phenomena of the Italian language like "*gn, gl, sc*".

The aim was to verify whether dictation tests preceded by motor training produced fewer errors

[1]Department Of Biomolecular Sciences – School Of Phisical Education – University Of Urbino "Carlo Bo", ITALIA
Email: vincenzo.biancalana@uniurb.it, alenart@alice.it, valevale39@hotmail.it

with respect to dictation tests not preceded by motor training.

Results

Through this experiment we tried to confirm that motor activity conducted prior to a dictation test is capable of modifying the results of the dictation test itself. For this reason, the variable studied was the number of errors made per dictation test. (Table 1.1)

Four classes with an overall cross-section of 79 subjects were used for the experiment. The classes were divided as follows: 22 in the first class, 23 in the second class, 19 in the third class and 15 in the fourth class. This can be seen in the second column from the left of table 1.2 (N° of students per class).

The third column from the left of table 1.2 indicates the initial average of errors per class, that is, respectively: 12,7 – 6,9 – 11,6 – 8,6, thus demonstrating, from the beginning, an incongruity among the four classes. Despite such incongruity, the children within each class were also very diverse. This can be seen in the column of table 1.2 titled standard deviation, whose values are respectively: 11,7 – 6,4 – 10,3 – 6,8. The fact that that these values are comparable to the initial averages signifies that, while some children do not make any errors, others make more than 23. In order to determine whether the classes were significantly different in principle, which would have invalidated the experimental design, an ANOVA test was used to verify whether there was a difference between the averages of the four classes (Table 1.3). The ANOVA Test compared the averages of the four classes and showed a statistical significance of more than 0,05, as indicated in table 1.3, in the first column from the right. A statistical significance of 0,147 means that, while the four classes were inconsistent, they were not significantly different.

Once it was determined that there was not a substantial and significant difference among the four classes, we evaluated whether sex has an effect on competency since it is well-known that at certain ages, females may have certain scholastic advantages over males. (Table 1.4)

Taking into consideration the four classes together, with a total of 48 males and 31 females, we found that the averages were respectively 9,8 with a standard deviation of 8,4 for the males and 10,1 with a standard deviation of 10,7 for the females.

We compared the two cross-sections by carrying out a T-Test, whose results are contained in table 1.5. From the T-Test we obtained a statistical significance of 0,88, which is extremely far from 0,05. We can therefore confirm that differential competency does not exist between males and females.

At this point we will proceed in introducing the experimental design. Each class was visited four times. Table 1.6 summarizes the treatment of each of the classes during the different evaluations: a 1 indicates that the class was subjected to motor training, while a 2 indicates that there was no motor training. In both cases, the standardized dictation test was administered.

The first class, as indicated in the aforementioned table, was subjected to the series 1212, and thus motor training-dictation, dictation only, motor training-dictation, dictation only. On the same or subsequent days, the second class was subjected to the series 1221, and thus motor training-dictation, dictation only, dictation only, motor training-dictation. The third class was subjected to the series 2112, and thus dictation only, motor training-dictation, motor training-dictation, dictation only. Finally, the fourth class was subjected to the series 2121, and thus dictation only, motor training-dictation, dictation only, motor training-dictation. The first column from the right (table 1.6), whose sum is always the same, shows the number of subjects undergoing these four treatments.

We used another Test called repeated measures ANOVA in order to evaluate whether or not time and sex influence the improvement of the children. That is to say, the time factor indicated with 1 was evaluated to see if it was statistically significant in the four trends taken into consideration (1,2,3,4); if factor 1, time, is statistically significant, that is, if there is a trend in the series of the four measurements, then the children improve or worsen systematically in relation to time. In this case, the analysis carried out took into consideration the following variables: sex, time and treatment order, as indicated in table 1.6. The questions asked were: is sex important in the improvements? Is the amount of time passed important? Is the order of administration of the treatments important (1212,1221,2112,2121)? There were not one, but four dependent variables in this case since they were repeated measurements, meaning that the number of errors made by each child was evaluated four times. (Table 1.7)

Is factor 1, time, significant? That is to say, does the number of errors, independent of sex and treatment type, increase or decrease? The result obtained demonstrates that time is not significant because the value is always higher than 0,05, as indicated in the first column from the right (Table 1.7). If instead time is organized by treatment order and, therefore, by test (motor training) or by control (no motor training), is it significant? Yes, in this case it is. In the multivariate, the result does not depend on the amount of time passed but, instead, on whether the class was subjected to treatment or not since the value is always lower than 0,0001, as indicated in the first column from the factor 1 line * treatment_order (Table 1.7). Therefore, this data is extremely significant, thus revealing that there is an indicative association, independent of the amount of time passed, between the performance of the children - intended as the number of errors made - and

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

whether physical activity was carried out or not before the administration of the dictation test. However, does the effect of time differ from one sex to the other? That is, do males and females mature in different ways? Probably yes in the long run, but in the extremely short range of time considered, from April to June, the effect is not significant. This is indicated in table 1.7 in the line titled factor 1*sexM0F1.

The significance of treatment order was also evaluated to see whether its effect differs between the sexes. That is, does the fact that both sexes undergo motor activity provide a different improvement in males and females? These results were also not significant, meaning that the improvement obtained when motor activity was carried out does not have a greater or lesser effect in relation to the sexes. That is to say, males and females do not improve one with respect to the other.

Table 1.1 N° errors

Factor 1	Dependent Variable
1	N° ERRORS 1
2	N° ERRORS 2
3	N° ERRORS 3
4	N° ERRORS 4

Table 1.2 Partitioning of the students/classes

Initial ERR

	N° students per class	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	22	12,7	11,7	2,49843	7,577	17,9685	1	48
2	23	6,9	6,4	1,33945	4,1352	9,6909	0	26
3	19	11,6	10,3	2,36471	6,6635	16,5997	0	41
4	15	8,6	6,8	1,76419	4,8162	12,3838	1	19
Total	79	10	9,3	1,0525	7,9046	12,0954	0	48

Table 1.3 ANOVA Test

TEST ANOVA
Initial ERR

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	468,289	3	156,096	1,841	0,147
Within Groups	6.357,71	75	84,769		
Total	6.826,00	78			

Table Scholastic Level in relation to sex

Group Statistics

	SEX (M=0/F=1)	N	Mean	Std. Deviation	Std. Error Mean
Initial ERR	0	48	9,8	8,4	1,22207
	1	31	10,1	10,7	1,9274

Table 1.5 Significance between sexes

Independent Samples Test						
		Levene's Test for Equality of Variances		T-Test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Initial ERR	Equal variances assumed	1,568	0,214	-0,147	77	0,88
	Equal variances not assumed			-0,14	53,46	0,89

Table 1.6 Sex, time, and treatment order variables

		N
Treat._Order	1212	19
	1221	20
	2112	13
	2121	14
SEX (M=0/F=1)	0	40
	1	26

Table 1.7 Dependent variable with respect to the 4 administrations

Measure: time						
Source		Type III Sum of Squares	Std. Error	Mean Square	F	Sig.
factor1	Sphericity Assumed	12,714		4,238	0,293	0,83
	Greenhouse-Geisser	12,714	2,028	5,079	0,293	0,794
	Huynh-Feldt	12,714	2,076	4,323	0,293	0,826
	Lower-bound	12,714	2,258	12,714	0,293	0,59
factor1 * Treat._ Order	Sphericity Assumed	1.211,37	2	134,596	9,319	0
	Greenhouse-Geisser	1.211,37	1,952	161,315	9,319	0
	Huynh-Feldt	1.211,37	1,998	137,305	9,319	0
	Lower-bound	1.211,37	2,173	403,789	9,319	0
factor1 * SEXM0F1	Sphericity Assumed	68,884	2	22,961	1,59	0,194
	Greenhouse-Geisser	68,884	2,622	27,519	1,59	0,201
	Huynh-Feldt	68,884	2,685	23,424	1,59	0,195
	Lower-bound	68,884	2,92	68,884	1,59	0,212

factor1 * Treat_Order * SEXM0F1	Sphericity Assumed	104,389	2	11,599	0,803	0,614
	Greenhouse-Geisser	104,389	2,582	13,901	0,803	0,594
	Huynh-Feldt	104,389	2,644	11,832	0,803	0,612
	Lower-bound	104,389	2,875	34,796	0,803	0,497
Error (factor1)	Sphericity Assumed	2.513,08	2	14,443		
	Greenhouse-Geisser	2.513,08	145,181	17,31		
	Huynh-Feldt	2.513,08	170,567	14,734		
	Lower-bound	2.513,08	58	43,329		

Discussion

The work has been compared with other studies which always support the benefits of physical exercise on mental task in classroom. Among these studies there's Hill, Williams, Aucott, Milne, Thomson, Greig, Munro, Mon-Williams M.'s work, "Exercising attention within the classroom"; it was performed in six primary schools with 1224 students participating with age between 8 and 11 years, where during a week physical exercise and phycometric have been proposed together: on the contrary during next week phycometric test has been carried out without physical exercise. The final results highlighted a significant impact of physical exercise on student performance. Another work is Hedges, Adolph, Amso, Bavelier, Fiez, Krubitzer, McAuley, Newcombe, Fitzpatrick, Ghajar J 's "Play, attention, and learning: How do play and timing shape the development of attention and influence classroom learning?"; with a series of questions it tried to reproduce the connection between play, attention and learning. This report must be study in deep yet in order to explore all the question about play, abilities, human activity and cognitive functions.

Conclusion

Based on our analysis, we can conclude that the effect of motor activity is independent of class, sex, treatment order and time. This demonstrates that there is a strong effect for a short period following the execution of motor activity, independent of the type of class. In fact, the initial incongruity of the four classes, as well as the inconsistency of the children within each class, was evaluated. The results demonstrated that, even though the four classes were inconsistent, they were not significantly different initially. A T-test helped to demonstrate that the effect of motor activity on performance is also independent of sex, thus establishing the absence of a different preparation between males and females. Once this had been proven, the effect of treatment order and time was taken into consideration. Even in this case, it was demonstrated that the effect of motor activity on a child's performance was independent from both. In conclusion, based on the results obtained, one can confirm that the initial hypothesis was sufficiently upheld, thus demonstrating that motor activity carried out prior to an attention test is capable of modifying the result of the test itself.

Bibliography

Biancalana, V., 2007, A sound mind in a sound body, in Ananele Universitatii Ovidius Costanta Press, Romania.

Brignola. M. et al., 2012, Sviluppare i prerequisiti per la scuola primaria. Giochi e attività su attenzione, logica, linguaggio, pregrafismo, spazio e tempo. Ed. Centro Studi Erikson Trento.

Edelman, G.M., 1995, Darwinismo neurale. La teoria della selezione dei gruppi neuronali [1987]. Einaudi, Torino.

Wallon, H., 1945, (1989), Les origines de la pansée chez l'enfant. P.U.F. Parigi,

Le Boulch, J., 2000, (ristampa) Lo sviluppo psicomotorio dalla nascita a sei anni, Armando Editore. Bologna.

Piaget, J., 2001, La psicologia del bambino, in collaborazione con Bärbel Inhelder, Edizione italiana, Einaudi.

Vayer, P., 2000, Educazione psicomotoria nell'età scolastica, ristampa, Armando Editore. Bologna.

Weiner, M., B., (1979), "Caring for the elderly. Psychological aging: aspects of normal

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

personality and development in old age. Part II. Erik Erikson: resolutions of psychosocial tasks", *The Journal of nursing care* 12 (5): 27–8, 1979 May

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 576-581

EVALUATION OF TRAIT ANGER-ANGER EXPRESSION IN TEAM AND INDIVIDUAL SPORTS ACCORDING TO GENDER AND SPORT EXPERIENCE

ZEHRA CERTEL[1], ZIYA BAHADIR[2], EBRU OLCAY KARABULUT[3]

Abstract
The aim of this study was to determine the correlation of trait anger-anger expression styles of the athletes who played team sports and individual sports and to explore whether or not their trait anger-anger expression styles differed in terms of gender and sports experience. The sample of the study was consisted of a total of 354 athletes who were recruited using random sampling method, were aged 23 ($\overline{X}_{age=}$22.99±3.49) and played sports for averagely 9 years ($\overline{X}_{year}$=9.57±4.85). In the current study, The State-Trait Anger Scale (STAS) which was developed by Spielberger in 1983 in order to explore trait anger-anger expression styles and Turkish adaptation of which was performed by Özer (1994) was used. For the data analysis; descriptive statistics methods such as frequency (n), percentages (%), arithmetical means ($\overline{X}$) and standard deviation were used for the analysis of the personal information. In order to detect the differences; Mann-Whitney U test, Kruskall Wallis and Spearman correlation analysis of Non-Parametric tests were used because normal distribution and homogeneity conditions were not obtained in the variables of gender and sport experience. In light of the study-results; it was seen that trait anger, anger-in and anger-out levels of the athletes were at a moderate level while their anger control level was above moderate level. Trait anger-anger expression styles of the athletes did statistically not differ in terms of gender and sport experience ($p>.05$). On the other hand; there was statistically significant difference in the scores of anger control on behalf of athletes of team sports in terms of playing team sports or individual sports ($p<.05$). Also; there was a negative and significant correlation between anger control and trait anger-anger out ($p<.05$).
Key Words: Trait anger, anger-in, anger-out, anger control, team sports, individual sports.

Introduction

Anger is naturally one of the most intense emotions of human beings in the interpersonal relations. The leading anger causes are frustration, being neglected, being subject to humiliation, being subject to an arbitrary behavior and being subject to aggression (Atkinson et. al., 1996). Anger, one of the human emotions, is differently described. Kennedy (1992) describes anger as "an effective experience that takes place after an individual warns the other in face of a danger towards himself." (Kısaç 1997) describes anger as "one of the basic emotions experienced when an individual perceives a threat, injustice and inequity towards himself when his plans, wishes and needs are obstructed". Lerner (2004) describes anger as a message related to the fact that things go wrong, we are hurt, our rights are violated, and our wishes and needs are obstructed.

It is very important how anger is expressed. People express anger differently. These anger expressions are anger-in, anger-out and anger control (Özer, 1994; Lerner, 2004; Stanner and Peters, 2004; Tambağ and Öz, 2005; Sung et al., 2006; Bostancı et. al., 2006). Anger-in is restricting and hiding anger. Anger-out is the reflection of reactions towards people or objects. What is desirable and healthy about anger emotion is to control anger (Balkaya, 2001). Anger, universally experienced by many people in daily life, is differently manifested in each culture (Balkaya, 2001). Culture of the people plays a key role in expressing emotions and turning these emotions into behaviors. In the traditional families that possesses traditional characteristics of the society; expectations of the society and socially-determined behavior patterns govern one's behaviors. It is prevented to express anger verbally while behavior such as obedience, submission, not talking and repression are approved (Sala, 1997).

Today; sports help terminate aggression, decreases anger-bursts and stress but also sportive competitions –particularly football- are regarded as a setting in which aggressive and violent actions increase. Kiper (1984) argues that sportive setting is a natural place for the occurrence of aggressive

[1]School of Physical Education and Sports, Akdeniz University, Antalya, TURKEY
[2]School of Physical Education and Sports, Erciyes University, Kayseri, TURKEY
[3]School of Physical Education and Sports, Ahi Evran University, Kırşehir, TURKEY
Email: zcertel@akdeniz.edu.tr

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

behaviors and therefore is a suitable place for aggressive behaviors to be easily modeled and imitated because frustration, which is thought to cause anger and aggression, always exists in sports. Athletes of individual sports struggle against the opponent while athletes of team sports fight against the rival team. In this sense; the aim of this study was to determine the correlation of trait anger-anger expression styles of the athletes who played team sports and individual sports and to explore whether or not their trait anger-anger expression styles differed in terms of gender and sports experience.

Material and Method

The study was undertaken with 354 athletes who played team sports in different teams [basketball (n=53), handball (n=73), football (n=76)] and individual sports [badminton (n=88) and other individual sports (n=64)] during the 2010-2011 season. Sportive age of the athletes was ($\overline{X}_{year}$=9.57±4.85) and their age was ($\overline{X}_{year}$=22.99±3.49). 90% of the athletes studied at Ege University. Data about the athletes were presented in Table 1.

Table 1. Data about the athletes.

Variables		n	%
Gender	Female	150	42.4
	Male	204	57.6
Type of Sport	Basketball	76	21.5
	Handball	53	15.0
	Football	73	20.6
	Badminton	88	24.9
	Other individual sports	64	18.1
Age	18-20 years	61	17.2
	21-25 years	241	68.1
	26 ≥ years	52	14.7
Educational status	High School Degree	4	1.1
	University Student	318	89.8
	University School Degree	32	9.0
Living place	County	38	10.7
	City	72	20.3
	Metropolitan City	244	68.9
Sports experience	1-9 years	48	13.6
	10-14 years	108	30.5
	15-19 years	143	40.4
	20 ≥ years	55	15.5
Participation in National Team	Yes	118	33.3
	No	236	66.7
TOTAL		354	100

When Table 1 was analyzed; 150 of the participants were females (42.4%) and 204 were males (57.6%). 76 of the participants played football (15.0%), 53 of the participants played basketball (20.6%), 73 of the participants played handball (24.9%), 88 of the participants played badminton (18.1%) and 64 of the

participants played individual sports such as fitness, taekwondo (17.2%). 61 of the players were aged between 18 and 20 years (17.2%); 241 players between 21 and 25 years (68.1%) and 52 players over 26 years (14.7%). 4 of the participants had high school degree (1.1%), 318 of them were university students (89.8%) and 32 of the participants had university degree (9.0%). 38 of the participants lived in counties (10.7%), 72 lived in cities (20.3%) and 244 lived in metropolitan cities (68.9%). 48 of the participants had a sports experience of 1-9 years (13.9%), 108 had a sports experience of 10-14 years (30.5%), 143 had a sports experience of 15-19 years (40.4%) and 55 had a sports experience of 20 ≥ years (15.5%).

The State-Trait Anger Scale (STAS)

In the current study, The State-Trait Anger Scale (STAS) which was developed by Spielberger in 1983 in order to explore trait anger-anger expression styles and Turkish adaptation of which was performed by Özer (1994) was used. The scale is composed of 34 items and of four subscales and is used to determine trait anger-anger expression styles among adolescents and adults. The subscales of the scale are trait-anger (10 items), anger-in (8 items), anger-out (8 items) and anger control (8 items). Trait anger means that anger level is high, anger-in means that anger is restricted, anger-out means that anger is easily expressed and anger control means that anger can be controlled. Lower scores obtained from trait-anger, anger-in and anger-out are regarded positive while higher scores obtained from anger control are seen positive. Cronbach alpha values were separately calculated in the Turkish form and Cronbach alpha values were .79 for "trait anger", .84 for "anger control", .78 for "anger-out" and .62 for "anger-in" (Özer, 1994). In our study; Cronbach alpha values were .81 for "trait anger", .86 for "anger control", .74 for "anger-out" and .68 for "anger-in".

Analysis of the Data

For the data analysis; descriptive statistics methods such as frequency (n), percentages (%), arithmetical means ($\overline{X}$) and standard deviation were used for the analysis of the personal information. In order to detect the differences; of Non-Parametric tests, Mann-Whitney U test was used because normal distribution and homogeneity conditions were not met in the variables of gender and sport experience. As for the analysis of the correlation between trait anger-anger expression styles; Spearman correlation analysis was used.

Results

Table 2 included Trait Anger-Anger Expression Styles in terms of gender.

Table 2. Comparison of the athletes' scores related to trait anger-anger expression styles in terms of gender

Scale	Gender	n	Mean	U	p
Trait anger	Female	150	181.30		
	Male	204	174.70	-.601	.548
Anger-in	Female	150	166.26		
	Male	204	185.77	-1.779	.075
Anger out	Female	150	172.61		
	Male	204	181.10	-.774	.489
Anger control	Female	150	167.19		
	Male	204	185.08	-1.629	.103

When Table 2 was analyzed in relation with gender, it was seen that there was no statistically significant difference among the scores of trait-anger (U = -.601, p=.548; p>.05), anger-in (U = -1.779, p=.075; p>.05), anger-out (U = -.774, p=.489; p>.05) and anger control (U = -1.629, p=.103; p>.05). Table 3 included the comparison of trait anger-anger expression styles of the athletes in terms of gender.

Table 3. Comparison of trait anger-anger expression styles of the athletes in terms of gender

Scale	Type of Sport	n	Median	$\chi 2$	p
Trait anger	Basketball	76	189.24		
	Handball	53	186.18		
	Football	73	181.45	3.799	.434
	Badminton	88	172.22		
	Other individual sports	64	159.14		
Anger-in	Basketball	76	175.26		
	Handball	53	175.30		
	Football	73	186.47	2.268	.687
	Badminton	88	183.88		
	Other individual sports	64	162.98		
Anger-out	Basketball	76	176.30		
	Handball	53	178.55		
	Football	73	169.52	.710	.950
	Badminton	88	182.07		
	Other individual sports	64	180.88		
Anger control	Basketball	76	189.02		
	Handball	53	191.83		
	Football	73	183.53	7.573	.109
	Badminton	88	152.48		
	Other individual sports	64	179.48		

When Table 3 was examined it was seen that there was no statistically significant difference between trait anger ($\chi 2$ = 3.799, p=.434; p>.05), anger-in ($\chi 2$ = 2.268, p=.687; p>.05), anger-out ($\chi 2$= .710, p=.950; p>.05) and anger control ($\chi 2$ = 7.573, p=.109; p>.05) in terms of type of sports. Table 4 included information about trait anger-anger expression styles in terms of playing individual sports or team sports.

When Table 4 was analyzed in relation with playing individual sports or team sports, it was seen that there was no statistically significant difference among the scores of trait-anger (U = -1.724, p=.085; p>.05), anger-in (U = -.387, p=.669; p>.05), anger-out (U= -.651, p=.515; p>.05) while a statistically significant difference existed in the score of anger control (U = -2.182, p=.029; p<.05). Table 5 included information about trait anger-anger expression styles in terms of sportive experience (Sportive Age).

Table 4. Comparison of the athletes' scores related to trait anger-anger expression styles in terms of playing individual sports or team sports

Scale	Sportive Branch	n	Mean	U	p
Trait anger	Team	202	185.62		
	Individual	152	166.71	-1.724	.085
Anger-in	Team	202	179.32		
	Individual	152	175.08	-.387	.699
Anger out	Team	202	174.44		
	Individual	152	181.57	-.651	.515
Anger control	Team	202	187.77		
	Individual	152	163.85	-2.182	.029*

*P<.05

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Table 5. Comparison of the athletes' scores related to trait anger-anger expression styles in terms of sportive experience (Sportive Age).

Scales	Sportive Experience (Sportive Age)	n	Mean	$\chi 2$	p
Trait anger	1-9 years	48	185.93		
	10-14 years	108	183.45	1.238	.744
	15-19 years	143	171.68		
	20 ≥ years	55	173.60		
Anger-in	1-9 years	48	183.38		
	10-14 years	108	175.50	.353	.950
	15-19 years	143	175.43		
	20 ≥ years	55	181.68		
Anger out	1-9 years	48	192.81		
	10-14 years	108	184.50	2.844	.416
	15-19 years	143	168.12		
	20 ≥ years	55	174.79		
Anger control	1-9 years	48	165.10		
	10-14 years	108	172.06	1.692	.639
	15-19 years	143	183.43		
	20 ≥ years	55	183.59		

When Table 5 was analyzed in relation with sportive experience (Sportive Age), it was found out that there was no statistically significant difference among the scores of trait-anger ($\chi 2$ = -1.238, p=.744; p>.05), anger-in ($\chi 2$ = .353, p=.950; p>.05), anger-out ($\chi 2$ = -2.844, p=.416; p>.05) and anger control ($\chi 2$ = 1.692, p=.639; p>.05). Spearman Correlation Test was performed in order to determine the correlation in trait anger-anger expression styles of athletes and (r) values were presented in Table 6.

Table 6. Correlation values of athletes between the scores of trait anger-anger expression styles

	Trait anger	Anger-in	Anger out	Anger control
Trait anger	1	r =.364** p =.000	r =.592** p =.000	r =-.358** p =.000
Anger-in		1	r =.353** p =.000	r =-.048 p =.367
Anger out			1	r =-.406** p =.000
Anger control				1

When Table 6 was analyzed, it was discovered that there was a positive correlation between trait anger, and anger-in (r=364; P=.000; P<.05) and anger-out (r=.592; P=.000; P<.05) while a negative correlation between trait anger and anger control (r=-.358; P=.000; P<.05). There was a statistically significant difference between anger-in and anger-out (r=.353; P=.000, P<.05) whereas no significant difference occurred in anger control (r=.048; P=.367; P>.05). Also, there was a negative and strong correlation between anger-out and anger-control (r=-.406; P=.000; P<.05).

Discussion

The aim of this study was to determine the correlation of trait anger-anger expression styles of the athletes who played team sports and individual sports and to explore whether or not their trait anger-anger expression styles differed in terms of gender and sports experience.

As a result of the study findings; there was no statistically significant difference between the scores of the trait anger-anger expression styles of the athletes and gender (p>.05). The study of Yerlisu Lapa et al. (2012) on taekwondo player reported that scores of anger-in, anger-out and anger control were higher among the male players. The study of Balkaya (2003), Olmuş (2001) and Baygöl (1997) on adolescents and university students indicated that gender did not play a role in trait anger-anger expression styles. In this sense; it may be concluded that athletes showed similar behaviors and attitudes because of the motivating factors such as their expectations of winning the competitions and their anger expression styles did not differ because they experienced similar processes. It was found out that no statistically significant difference existed between the scores of trait-anger, anger-in and anger-out in terms of playing team sports or individual

sports (p>0.05) whereas there was statistically significant difference in the scores of anger control on behalf of athletes of team sports (p<.05). The study of Certel and Bahadır (2012) on team players demonstrated that there was no statistical significant difference between trait-anger, anger-in, anger-out and anger control. When it is considered that behaviors of players may directly or indirectly affect the team, the athletes are aware that the team may be damaged when they react against frustrations. Therefore; it may be suggested that athletes of team players have higher anger-control and that is, they can control their anger. However, there was no statistically significant difference between trait-anger anger expression styles in terms of sportive experiences (p>.05). There was a positive and significant correlation between trait anger, and anger-in and anger-out while a negative and significant correlation between trait anger and anger control.

Conclusions

According to the results of the study; it may be said that gender and sportive age of the athletes did not affect trait anger-anger expression styles and athletes of team sports had higher anger controls as compared to those who played individual sports. The highest positive correlation was between trait-anger and anger-out and anger-out and trait-anger reduced as anger control increased. In this sense; seminars may be held in teams in order to help athletes control their angers and individual guidance may be provided. Also; studies on anger types may be conducted with different sample groups and different trainer types.

References

Atkinson, R., L., Smith, E., E., Bem, D., J., & NOLEN-Hoeksema, S., 1996, Hilgard's "Introduction to Psychology", New York, Harcourt Brace Company.

Balkaya, F., Şahin, N.,H., 2003, Multi-dimensional anger inventory. Turkish Psychiatry Journal, 14 (3): 192-202.

Balkaya, F., 2001, Development of Multi-dimensional anger inventory, Master thesis, Ankara, Ankara University.

Baygöl, E., 1997, Evaluation of anger reactions among the adolescents, Master thesis, Bursa, Uludağ University.

Bostanci, N., Çoban, Ş., Tekin, Z., Özen, A., 2006, Anger Expression Styles of University Students in terms of gender. Crisis Journal, 14 (3): 9-18.

Certel, Z., Bahadir, Z., 2012, Evaluation of the correlation between Self Esteem and trait anger-anger expression styles among the athletes who played team sports, Selçuk University, Journal of Physical Education and Sports, 14 (2): 157-164.

Kennedy, H.,G., 1992, Anger and Irritability. British Journal of Psychiatry, 161, 145- 153.

Kisaç, İ., 1997, Levels of trait anger-anger expression among the university students in terms of some variables,
Unpublished Doctorate Thesis, Hacettepe University, Social Sciences Institute, Ankara.

Kiper, İ., 1984, Correlation of Aggression Types with various Economic, social and academic variables, Master thesis, Ankara.

Lerner, H., 2004, Anger Dance, 5th edition, (Translation: Gül, S), Istanbul, Varlık Publication.

Olmuş, G., Ö., 2001, Evaluation of adolescents' trait anger-anger expression styles in terms of domestic psychological Patterns, Master Thesis, Marmara University, Istanbul.

Özer, A., K., 1994, Prestudy of trait anger-anger expression styles, Turkish Psychiatry Journal, 9/31: 26–35.

Sala, G., 1997, Evaluation of Anger Expression Types of the students who studied at Zonguldak Karaelmas
University, Master Thesis, Ankara, Hacettepe University.

Starner, T.M., Peters, R.M., 2004, Anger expression and blood pressure in adolescents. The Journal of School Nursing, 20 (6): 335-342.

Sung, K., M., Puskar, K., R., Sereika, S., 2006, Psychosocial Factors and coping strategies of the young. A Rural Pennsylvania Higher School. Public Health Nursing, 23 (6): 523-529.

Tambağ, H., Öz, F., 2005, Anger expression styles of the adolescents who lived with their families and who lived in
orphanages. Crisis Journal, 13 (1): 11-21.

Yerlisu Lapa, T., Aksoy, D., Certel, Z., Çalişkan, E., Özçeli, KM., A., Çelik, G., 2012, Evaluation of Trait Anger-Anger Expression In Taekwondo Athletes According To Gender And Success, 3rd. World Conference. On learning, teaching & educational leadership. 25-28 October. Belgium.

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 582-587

EVALUATION OF LIFE SATISFACTION, SELF-ESTEEM IN DECISION-MAKING AND DECISION-MAKING STYLES OF WEIGHTLIFTING REFEREES

ZIYA BAHADIR[1], ZEHRA CERTEL[2]

Abstract
The aim of the study was to examine life satisfaction and self-esteem in decision making and decision making styles of weight-lifting referees in terms of gender, educational status and refereeing experience.
*Method.*The population of the study was composed of 80 referees who participated in the Seminar of Development of Weight-Lifting Referees organized by Turkish Weight Lifting Federation in Antalya between the 21st and 25th of December, 2011. Sample of the study was composed of 74 referees whose mean age was ($\overline{X}_{years}$=37.99±10.69) and whose mean length of refereeing experience was ($\overline{X}_{refereeing\ experience}$=10.42±8.86). In order to gather the data; "Satisfaction with Life Scale" developed by Diener et al. (1985) and adapted for Turkish by Köker (1991) and Yetim (1991), and "Melbourne Decision Making Questionnaire I-II" developed by Mann et al. (1998) and adapted for Turkish by Deniz (2004) were used. For the statistical analysis of the data; of descriptive methods; frequency (n), percentages (%), arithmetical means ($\overline{X}$) and standard deviation (Sd) were used to obtain personal information. In order to explore the differences; the non-parametric tests such as Mann-Whitney U and Spearman Correlation analysis were used because the data did not follow a normal distribution and homogeneity was not obtained in the variables of gender, educational status and refereeing experience.
Result. Life satisfaction and self-esteem in decision-making and decision-making styles of weight-lifting referees did not statistically differ in terms of gender and refereeing experience (p>.05). The referees who had high school degree used procrastination decision-making style more.
*Conclusion.*It was found out that there was a negatively and moderately significant correlation between life satisfaction and hyper-vigilance decision-making style of the referees (r=-.336, p=.003; p<.05).
Key Words: Life Satisfaction, self-esteem, weight lifting referee, vigilance, procrastination, hypervigilance, buck-passing

Introduction

One of the most important factors that affect sportive success is referee behavior. Referee serves as a bridge both between the spectators and players and between the opponent teams. On the other hand; referee assesses the game in line with the pre-determined rules (Orta, 2000). Referees, indispensible constituents of the sportive games, are supposed to make correct, precise and timely decisions. Otherwise; an error to be committed may lead to one side's victory or defeat. In this sense; it is important to know the factors that affect the decision-makings of the referees.

Generally speaking; decision-making is the selection-process among many ways to lead the individual to his objectives (Kuzgun 1988). One's ability to make correct and proper decisions requires understanding the options correctly and later making accurate relations among the options (Bakırcıoğlu, 2000). Sports referees are those who decide quickly, comment about what they see in a short time and conclude in line with the rules and above all, their decisions are irremeable. Orta (2000) mentions that referees should have experience, sufficiency and concentration and should be educated so that they can perform their tasks correctly. According to a study on elite referees, they should make at least 2-3 decisions in a minute. Under these circumstances, high motivation is needed for refereeing (Helsen and Bultynck, 2001).

Life satisfaction is defined as a positive evaluation about one's whole life in accordance with the criteria that he has defined (Diener et al., 1985; Veenhoven, 1996). Life satisfaction represents mental aspect of subjective wellness of human happiness. Subjective wellness is described as one's evaluation about his life made mentally and emotionally. This evaluation includes emotional reactions to the events and mental assessment of satisfaction (Diener, 1984). Therefore; life satisfaction areas may be jobs, family, free time, health, money and significant others. Onaran (1971) emphasizes that decision-making behaviors are affected by such psychological characteristics as perception, motivation, understanding and by interpersonal relations and interpersonal interactions. If

[1]Assistant Professor Doctor, School of Physical Education and Sports, Erciyes University, Kayseri, TURKEY
[2]Assistant Professor Doctor, School of Physical Education and Sports, Akdeniz University, Antalya, TURKEY
Email: ziyabahadir40@hotmail.com, zcertel@akdeniz.edu.tr

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

a referee gets less satisfaction from refereeing; there will be less motivation and effort in his actions; which will affect his decision-making behaviors. In this sense; the aim of the study was to examine life satisfaction and self-esteem in decision making and decision making styles of weight-lifting referees in terms of gender, educational status and refereeing experience.

Method

Participants. The study was relational screening model. The population of the study was composed of 80 referees who participated in the Seminar of Development of Weight-Lifting Referees organized by Turkish Weight Lifting Federation in Antalya between the 21st and 25th of December, 2011. Sample of the study was composed of 74 referees whose mean age was ($\overline{x}_{years}$=37.99±10.69) and whose mean length of refereeing experience was ($\overline{X}_{refereeing\ experience}$=10.42±8.86). 55 of the referees were males (74.3%) and 19 were females (25.7%).

Data Collection

In order to gather the data; "Satisfaction with Life Scale" developed by Diener et al. (1985) and adapted for Turkish by Köker (1991) and Yetim (1991), "Melbourne Decision Making Questionnaire I-II" developed by Mann et al. (1998) and adapted for Turkish by Deniz (2004), and descriptive information form designed by the researcher were used.

Satisfaction With Life Scale (SWLS): In the study; "Satisfaction with Life Scale" which was originally developed by Diener Emmons, Larsen and Griffin (1985) and was adapted for Turkish by Köker (1991) was used. SWLS is a five-point Likert type scale that assesses one's perception about his quality of life and determines his satisfaction with life using five questions. Köker (1991) determined test-retest consistency coefficient of the scale as 0.85. Each item is scored between 1 and 7. Higher scores indicate higher satisfaction with life. In the current study, internal consistency coefficient of the scale was found to be as 0.88.

Melbourne Decision Making Questionnaire (I-II): It was developed from the original form (Melbourne Decision Making Questionnaire) developed by Mann et al. (1998) and it was adapted by Deniz (2004) for Turkish and reliability and validity tests were administered to 154 university students. Melbourne Decision Making Questionnaire is consisted of two parts: the first part includes self-esteem in decision making (self-confidence, 6 items). The second part includes vigilance, procrastination, hypervigilance and buck-passing decision-making styles and is composed of 22 items (Deniz, 2004). Scoring of the items is made with 2 points "true", 1 point "sometimes true" and 0 point "not true". Higher scores indicate higher self-esteem in decision-making and higher decision-making style (Deniz, 2004).

1. **Vigilance decision-making style:** Vigilance involves a careful, unbiased, and thorough evaluation of alternatives and rational decision making.
2. **Buck-passing decision-making style:** Buck Passing involves leaving decisions to others and showing a tendency to avoid responsibility and thus trying to get rid of responsibility by leaving decisions to others.
3. **Procrastination decision-making style:** Procrastination involves delaying and postponing decisions with no acceptable reasons.
4. **Hypervigilance decision-making style:** Hypervigilance involves trying to get a solution by feeling under pressure with a hurried, anxious approach in case of a situation requiring making a decision (Deniz, 2004).

Upon the administration on 154 university students, internal consistency coefficients of the MDMQ I-II are as follows: self-esteem in decision making: .72; vigilance: .80; buck-passing: .78; procrastination: .65; and hypervigilance: .71. In this study; internal consistency coefficients of the MDMQ I-II are as follows: self-esteem in decision making: .54; vigilance: .71; buck-passing : .59; procrastination: .62 and hypervigilance: .55.

Analysis of the Data

For the statistical analysis of the data; of descriptive methods; frequency (n), percentages (%), arithmetical means ($\overline{x}$) and standard deviation (Sd) were used to obtain personal information. In order to test whether or not normal distribution and homogeneity conditions were established in the variables of gender, sportive branch and refereeing experience; Kolmogorow Smirnow test was employed. The non-parametric tests of Mann-Whitney U and Spearman Correlation analysis were used because the data did not follow a normal distribution and homogeneity was not obtained.

Findings

Means and standard deviations of the referees about satisfaction with life and self-esteem in decision making and decision-making styles were calculated and were presented in Table 1.

When Table 1 was examined; it was noted that mean score of referees' life satisfaction was ($\overline{X}$=23.41±5.95). It was seen that mean score of vigilance decision-making style of the referees was

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

high ($\overline{X}$=9.53±2.35) while mean scores of self-esteem in decision making was low ($\overline{X}$=6.43±1.19). The lowest mean scores were obtained from procrastination ($\overline{X}$=2.78±1.90), buck-passing ($\overline{X}$=2.85±1.91) and hypervigilance ($\overline{X}$=3.03±1.97) decision-making styles.

Table 1. Means and standard deviations of the referees about satisfaction with life and self-esteem in decision making and decision-making styles

Scales	n	$\overline{X}$	Sd	Min	Max
Satisfaction with life	74	23.41	5.95	7.00	35.00
Self-esteem in decision-making	74	6.43	1.19	4.00	10.00
Vigilance decision-making	74	9.53	2.35	2.00	12.00
Buck-passing decision-making	74	2.85	1.91	.00	9.00
Procrastination decision-making	74	2.78	1.90	.00	8.00
Hypervigilance decision-making	74	3.03	1.97	.00	7.00

Mann Whitney U test was employed in order to determine whether there was a difference between mean scores of life satisfaction and self-esteem in decision-making, decision-making styles of the referees in terms of gender and were presented in Table 2.

Table 2. Distribution of scores of life satisfaction and self-esteem in decision-making, decision-making styles in terms of gender

Scales	Gender	n	Median	U	p
Satisfaction with life	Male	55	36.28		
	Female	19	41.03	-.831	.406
Self-esteem in decision-making	Male	55	36.95		
	Female	19	39.11	-.393	.695
Vigilance decision-making	Male	55	35.55		
	Female	19	43.16	-1.351	.177
Buck-passing decision-making	Male	55	35.70		
	Female	19	42.71	-1.245	.213
Procrastination decision-making	Male	55	37.80		
	Female	19	36.63	-.207	.836
Hypervigilance decision-making	Male	15	37.95		
	Female	59	36.21	-.306	.759

When Table 2 was examined; it was seen that there was no statistically significant difference between life satisfaction scores of the referees in terms of gender (U=-.831, p=.406; p>.05). Also; no statistically significant difference was found between referees' gender and their self-esteem in decision-making (U=-.393, p=.695; p>.05), vigilance (U=-1.351, p=.177; p>.05), buck-passing (U=-1.245, p=.213; p>.05), procrastination (U=-207, p=.836; p>.05) and hypervigilance (U=-306, p=.759; p>.05) decision-making styles. Mann Whitney U test was employed in order to determine whether there was a difference between mean scores of life satisfaction and self-esteem in decision-making, decision-making styles of the referees in terms of educational status and the results were presented in Table 3.

Table 3. Distribution of Mean Scores of Life Satisfaction and Self-Esteem in Decision-Making and Decision-Making Styles in Terms of Educational Status

Scales	Educational Status	n	Median	U	p
Satisfaction with life	High school	15	29.83		
	University	59	39.45	-1.550	.121
Self-esteem in decision-making	High school	15	43.73		
	University	59	35.92	-1.308	.191
Vigilance decision-making	High school	15	29.47		
	University	59	39.54	-1.646	.100

Buck-passing decision-making	High school	15	40.93		
	University	59	36.63	-.704	.482
Procrastination decision-making	High school	15	48.77		
	University	59	34.64	-2.305	.021*
Hypervigilance decision-making	High school	15	43.47		
	University	59	35.98	-1.216	.224

*P<.05

When Table 3 was analyzed; there was no statistically significant difference between means scores of life satisfaction (U=-1.550, p=.121; p>.05) and self-esteem in decision-making (U=-1.308, p=.191; p>.05), vigilance (U=-1.646, p=.100; p>.05), buck-passing (U=-.704, p=.482; p>.05) and hypervigilance (U=-1.216, p=.224; p>.05) decision-making styles of the referees in terms of educational status while a statistically significant difference existed in mean scores of procrastination decision-making style (U=-2.305, p=.021; p<.05). According to these results; the referees who held a university degree used procrastination decision-making styles less as compared with those who had high school degree. Mann Whitney U test was employed in order to determine whether there was a difference between mean scores of life satisfaction and self-esteem in decision-making, decision-making styles of the referees in terms of refereeing experience and the results were presented in Table 4.

Table 4. Distribution Of Mean Scores Of Life Satisfaction And Self-Esteem In Decision-Making, Decision-Making Styles In Terms Of Refereeing Experience

Scales	Refereeing Experience	n	Median	U	p
Satisfaction with life	1-9 Years	46	39.34		
	10 ≥ Years	28	34.48	-.944	.345
Self-esteem in decision-making	1-9 Years	46	38.15		
	10 ≥ Years	28	36.43	-.348	.728
Vigilance decision-making	1-9 Years	46	39.27		
	10 ≥ Years	28	34.59	-.923	.356
Buck-passing decision-making	1-9 Years	46	35.86		
	10 ≥ Years	28	40.20	-.855	.393
Procrastination decision-making	1-9 Years	46	36.76		
	10 ≥ Years	28	38.71	-.384	.701
Hypervigilance decision-making	1-9 Years	46	35.21		
	10 ≥ Years	28	41.27	1.188	.235

When Table 4 was analyzed; there was no statistically significant difference between means scores of life satisfaction (U=-.944, p=.345; p>.05), self-esteem in decision-making(U=-.348, p=.728; p>.05), vigilance (U=-.923, p=.356; p>.05), buck-passing (U=-.855, p=.393; p>.05), procrastination (U=-.384, p=.701; p>.05), and hypervigilance (U=1.188, p=.235; p>.05), decision-making styles of the referees in terms of refereeing experience.

Spearman correlation test was used in order to determine the correlation between life satisfaction and self-esteem in decision-making, decision-making styles and the results were presented in Table 5.

Table 5. Correlation Coefficients Among Life Satisfaction And Self-Esteem In Decision-Making, Decision-Making Styles Of The Referees.

		Self-esteem in decision-making	Vigilance decision-making	Buck-passing decision-making	Procrastination decision-making	Hypervigilance decision-making
Life Satisfaction	**r**	-.039	.146	.057	-.187	-.336**
	p	.739	.214	.629	.111	.003

When Table 5 was examined; there was a negative and moderate correlation between life satisfaction and hypervigilance decision-making style of the referees (r=-.336, p=.003; p<.05). No statistically significant correlation was found between life satisfaction and self-esteem in decision-making (r=-.039, p=.739; p>.05), vigilance (r=.146, p=.214; p>.05)., buck-passing (r=-.057, p=.629; p>.05). and procrastination (r=-.187, p=.111; p>.05).

Discussion

The following results were obtained in the study which aimed to examine life satisfaction and self-esteem in decision making and decision making styles of weight-lifting referees in terms of gender, educational status and refereeing experience:

When the scores obtained by the referees from the satisfaction with life scale were analyzed, it may be argued that life satisfaction of the referees was at a moderate level. Life satisfaction was found to be at a moderate level among the studies on teachers, university students and athletes (Toros, 2002; Avşaroğlu at al., 2005; Yaman, 2009; Gündoğar at al., 2007). It was understood that scores of self-esteem in decision-making of referees were at a moderate level and they used vigilance decision-making style most while procrastination least. It may be argued that the referees made meticulous decisions after assessing the options carefully and did not postpone their decisions. It was found out in our study that life satisfaction of the referees did not change in terms of gender. In most of the studies on different age groups, it was pointed out that there was no significant correlation between life satisfaction and gender (Hintikka, 2001; Chow 2005; Gündoğar et al. 2007). Self-esteem in decision-making and decision-making styles of the referees did not change in terms of gender. Many studies conducted obtained similar results (Deniz, 2002; Avşaroğlu, 2007; Çetin, 2009). The results of these studies concurred with ours.

In the current study; life satisfaction, self-esteem in decision-making, vigilance, buck-passing and hypervigilance decision-making styles of the referees did not differ in terms of educational status. It was seen that referees who had high school degree used procrastination decision-making style more as compared with those who had university degree. In light of this result; it may be suggested that referees show buck passing behaviors and are inclined to keep away from taking responsibility as their educational level decreases. Likewise; Orta (2000) emphasizes that educational level is important in performing correct refereeing behaviors. In our study; refereeing experience did not affect their life satisfaction and decision-making behaviors. However; Aktaş et al., (2011) and Orta (2000) mentioned that refereeing experience was among the factors that affected decision-making. In our study, too, mean scores of self-esteem and vigilance decision-making style of the experienced referees were higher while their mean scores of buck-passing and hypervigilance decision-making styles were lower but the difference was not statistically significant. We were of the opinion that the results would have been affected if the study had been conducted with a bigger sample group. There was a negative and moderate correlation between life satisfaction and hypervigilance decision making style of the referees. According to this result; it may be argued that tendency for hypervigilance decision making style decreases as life satisfaction increases.

Conclusion

As a conclusion, life satisfaction and self-esteem in decision-making and decision-making styles of the referees did not differ statistically and significantly in terms of gender and refereeing experience. Referees who had high school degree used procrastination decision-making style more. There was negatively and moderately significant correlation between life satisfaction and hypervigilance decision-making style of the referees. As recommendation; it may be advised that development seminars with simulation programs may be organized so that referees can show more confident and correct attitudes and can make more accurate decisions. Also; refereeing profession may become more popularized in order to increase motivation of the referees and to affect their decision-making behaviors positively. The study should be conducted with the referees of different sportive branches and with broader samples.

Reference

Aktaş, Z., Zekioğlu, A., Yazicilar, I., Er, N., 2011, Evaluation of Perception of Basketball Referees about the factors affecting their decisions. Academic Social Sciences Journal with International Referees. Number: 2, Volume 1. 251-259.

Avşaroğlu, S., Deniz, M., E., Kahraman, A., 2005, Evaluation of Life Satisfaction, Job

Satisfaction and Professional Burnout among the technical Teachers. Seljuk University Social Sciences Institute Journal, 14,125-129.

Avşaroğlu, S., 2007, Evaluation of self-esteem in decision making, decision making styles and Stress Coping Styles in terms of Self-esteem and some variables. Unpublished Doctorate Dissertation. Seljuk University Social Sciences Institute, Konya.

Bakircioğlu, R., 2000, Guidance and Psychological Counseling in primary education, high education and higher education, Anı Publication, 5th Edition, Ankara.

Chow, H., P., H., 2005, Life satisfaction among university students in a Canadian prairie city: a multivariate analysis. Soc Indic Res, 70: 139-150.

Çetin, M., Ç., 2009, Comparative evaluation of decision making styles, Social Skill Levels and Stress Coping Styles in terms of some variables among the students of School of Physical Education and Sports. Unpublished Doctorate Dissertation. Gazi University, Education Sciences Institute, Ankara.

Deniz, M., E., 2004, Investigation of the Relation between Decision Making Self-Esteem, Decision
Making Style and Problem Solving Skills of University Students, Eurasian Journal of Educational Research. Vol: 15. 23-35.
Diener, E., 1984, Subjective well-being. Psychological Bulletin, 95, 542-575.
Diener, E., Emmons, R., L., Griffin, S., 1985, Satisfaction with life scale. J Pers Assess, 49:
71-75.
Deniz, M., E., 2004, Investigation of the Relation between Decision Making Self-Esteem, Decision
Making Style and Problem Solving Skills of University Students, Eurasian Journal of Educational Research. Vol: 15. 23-35.
Deniz, M., E., 2002, Comparative evaluation of Decision-making styles and social skill level in terms of Ta-dominant ego states and personal qualities among the university students. Unpublished Doctorate Dissertation. Seljuk University, Social Sciences Institute, Konya.
Helsen, W., Bultynck J., 2001, The Road to Excellence Fitness Training for Top Referees, Catholiek niversity Luven, Department of Kinesiology, Belgium.
Hintikka, J., 2001, Religious attendance and life satisfaction in the Finnish general population. Journal of ychology and Theology, 29 (2), 158.
Gündoğar, D., Gül, S., S., Uskun, E., Demirci, S., KEÇECİ, D., 2007, Evaluation of the predictive factors of life satisfaction among the university students. Clinic Psychiatry. 10:14-2.
Köker, S., 1991, Comparison of Life Satisfaction among normal and problematic Adolescents. Unpublished Master Dissertation. Ankara University Social Sciences Institute, Ankara.
Kuzgun, Y., 1988, Guidance and Psychological Guidance, ÖSYM Publication, Ankara.
Mann, L., Radford, M., Burnett, P., Ford, S., Bond, M., Leung, K., et al., 1998, Cross-Cultural Differences in Self-Reported Decision-Making Style and Confidence, International Journal of Psychology.
Onaran, O., 1971, Decision-making among the organizations, Ankara University Political Sciences Faculty Publication, Ankara.
Orta, L., 2000, Seminar on the birth and growth of football refereeing in the world and Turkiye, On sekiz Mart University, School of Physical Education and Sports, Çanakkale.
Toros, T., 2002, Goal-oriented Motivational Climate and life satisfaction among the elite and non-elite male basketball players, Sports Sciences Journal, Hacettepe J of Sport Science 13(3), 24,36.
Veenhoven, R., 1996, Is happiness relative? Social Indicators Research, 24, 1-34.
Yaman, Ç., 2009, Job Satisfaction Levels of formatter Physical Education teachers . International Human Sciences Journal. 6 (1). 683-711