Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIX, ISSUE 1, 2019, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

Science, Movement and Health, Vol. XIX, ISSUE 1, 2019
January 2019, 19 (1): 44 - 50
Original article

THE SPORTS GAME- A MEAN FOR DEVELOPING MOTOR SKILLS FOR THE SECONDARY SCHOOL LEVEL (A RESEARCH FOR SPEED AND AGILITY)

TALAGHIR LAURENŢIU-GABRIEL[1], ICONOMESCU TEODORA-MIHAELA[1], STOICA LEONARD[1]

Abstract

*Aim.*The present research has taken into consideration the mean for improving the motor skills by applying throughout the learning unities dedicated to the specific means of the sports game (handball). In the following paper, there are presented the results regarding the speed and agilityskills.

*Methods.*The experiment took place in the 2017-2018 school yearand were involved 79 students from the seventh grade of a secondary level from two rural schools. The training with means specific for developing the speed and agility motor skills was replaced with means specific for the handball game. There were selected for this 10 movement games that include elements from handball for each motor skill (speed/handiness). For the speed motor skill were assigned 14 lessons (6 lessons on the first semester and 8 lessons on the second semester) and for the agility motor skill were assigned 12 lessons (6 for each semester). For developing the speed motor skill, were used two types of exercises during one lesson which were reused in the second lesson of the same week. For the evaluation were used 2 tests included in the National System of Evaluation for Physical Education available for the secondary school level. The data were collected through the SPSS23 statisticsapplication.

*Results.*The "Speed running 50 m (sec.)" the experimental group's result (7.94 sec) is not significant ($p>0, 05$) in regard to the witness group's result (8.0 sec). The experimental group of boys obtained a progress considered significant ($p<0.05$) for the "Technical structure" trial with an average value of the performances of 12.09sec. After analyzing the results for the group of boys, it can be said that using means specific for the sport game led to the improving of the motor skills speed and agility at a moderate level. The results showed significant results after applying the selected means of learning.

*Conclusions.*The conducted research allows us to draw more conclusions regarding the use of the specific mean of the sport game (handball) regarding the manifestation index of the motor skills speed and agility. From the point of view of the registered results, for the experimental classes we can observe that using he specific means for the sport game were efficient.

Keywords: physical education, secondary school level, sports game, handball, motor skills, speed, agility.

Introduction

The Physical Education is a component of the global education. From the point of view of the education system in Romania, the Physical Education and the Sports are a part from the curricular area Physical education, sports and health.(MEN 2017). In the documents that underlie its status and its importance (GOV 2000; MEN 2011; O.M.E.C.T.S. nr. 3462/2012) it is mentioned that The Physical Education and Sports subject is a school activity with a national interest.

According to the European Commission Eurydice (2013) almost half from the analyzed educational systems adopt national strategies for promoting and developing the physical education and physical activities in schools. Therefore, many of these strategies refer to the role of the physical education and sports in promoting health and a healthy lifestyle and also to a bigger contribution that these have for the physical, personal and social development. The diversification of the activities proposed to the students is a permanent preoccupation for the research in the domain. The organizing manners represent another direction in which the research is conducted on a pedagogical plan (Martinez, 2005; Mahar et al. 2011; Mesquita et al. 2012; Bădău,

Received 18.10.2018 / Accepted 6.12. 2018

2017). The innovative modern didactic strategies or the usage of helping equipment and materials contribute to increasing the amenity for the practical lessons (Mocanu, 2015, Zurita-Ortega et al. 2018). The theoretical component comes to help the practical component. As a result of its cognitive role or of its specialized communication, this component has the role to diversify the students' performing level and to increase their degree of knowledge, socialization and evaluation (Rus, 2013; Neagu 2017; Giggs, 2018).

Nowadays, as a response for the social conditions and the huge wave of technological progress, the physical and sports activities have an important role not only for the physical development but also for maintaining an active and healthy lifestyle. They are becoming an interpersonal way of knowledge, increasing the group integration, the feeling of belonging to a community, the team work, generally, what we call social integration (Rus, 2014; Burns et al. 2015; Mîndrescu, 2018). The process of the practical activities is oriented towards forming general motor skills which can be applied specially or utilitarian. Also, the process of improving the index of manifestation of the general motor skills (Mayer & Alexander, 2017)and the general motor abilities is permanently under surveillance (Ungureanu-Dobre et al. 2014).

The physical education improves the students' confidence, their concentration and their communication skills allowing them to become active citizens, healthy and responsible (Tindall, 2017).

During the team games when the speed and the agility are under observation and can be developed and also then, appears the lightness.

Sheppard & Young (2006) have offered a strongdefinition of the agility "the quick movement of stopping the whole body while changing the speed or the direction as a response to a certain stimulus". In the context of using certain means that belong to the sports game, in our case handball, the agility includes not only the change of the orientation skills but also the perception and taking decisions (Gamble, 2011).

The motor skills are features of the human body which gives the man the possibility to perform different motor acts, connected to the daily activity but also to the physical activity. In the learning process, an important place among the teacher's preoccupation is finding and using while training the most efficient methods and means that ensure the development of these qualities.

From all the motor skills, the speed is the least improvable, first of all, being conditioned by the born nervous systems. This skill must be developed at the same time with strength and resistance which are improvable and with the dynamic stereotypes that are continually appearing and renewing. (Cojocaru, 2001).

The specialists in the domain define agility as being a complex of predominant psycho-motor skills, which imply the ability to learn quick movements, the quick adaptation and efficiency to different environments, specific for different types of activities, having at the base the existent motor background. (Dragnea et all, 2006).

About the possibility of improving the manifestation index of the motor skills, there are many studies. These skills are useful in daily activitiesin physical education activities and also in sport and performance activities.

The present paper presents the equal contribution of the authors.

Methods and procedure

Subjects. In the present research, there were involved 79 students from the seventh grade of two rural schools and took place during the school year 2017-2018. The experiment class had 38 students (20 girls and 18 boys) from the Secondary School „LascărCatargiu", Schela Village. The witness class had 38 students (21 girls and 20 boys) from the Secondary School „Prof. Emil Panaitescu", Cudalbi Village. Both schools are from Galati County.

Procedure. During the research the learning unities were modified in order to develop the motor skills. The modification consisted in applying some methods specific for the handball game that were considered to have a good influence in developing the speed and agility. The means considered traditional were replaced and developing these motor skills was the primary goal. The activity took place according the learning unities planning approved at the school level. According to those, for speed were allocated 14 lessons (6 lessons on the first semester and 8 lessons on the second semester) for the agility motor skill were assigned 12 lessons (6 lessons for each semester).For each motor skill (speed and agility) were assigned 10 means specific for the handball game. These were coded in order to be easier to identify and use. During the lesson when the speed improvement was observed, the specific means for the handball game were 2 for each lesson. These were reused in the second lesson of the same week and for the last 4 lessons were selected 3 means for each. The working time for performing a certain mean/ exercise was 6-8 minutes. For the agility motor skill were used 2 means specific for the handball game used during the lesson and reused in the following lesson and for the last two lessons were selected 3 means each. The

allocated time for each mean/ exercise was of 10-12 minutes.

The means used during the experiment and proposed by us are presented in the following pages as a result of the working procedure.

Games for speed

V1. The students are gathered on the centre line of the handball field in two groups. At a loud signal, each student runs at full speed towards the 7m line, a group for each semicircle and pace himself in the strict order of the arrival.

V2. The students are divided into groups of 3 on the 7 m semicircle; the one in the middle throws the ball towards the centre line and the other two run towards the ball when this touches the ground; the first who arrives to the ball takes the place of the one who tosses the ball.

V3. The students are divided into pairs, one of them having the ball; at the loud sign dribbling is performed with observing the partner who moves freely with an accelerated speed, the role shifts after 30 sec.

V4. The students, in groups of two or three at the 6m semicircle; at the loud signal, two passes are performed by two or by three, running, the ball being launched until the other semicircle.

V5. The students dispersed on the whole surface of the field, each having a ball. A multiple dribbling is performed with direction changes at the loud signal given by the teacher.

V6. The students are divided into 2 or 3 groups: a dribbling is performed among the pegs after contest criteria.

V7. The students are dispersed by two, one in the corner of the field and the other with the ball between the semicircles of 6 and 9 m; at the loud signal, the one from the corner runs towards the centre, receives the ball from the other students and continues a multiple dribbling towards the 6 m semicircle; after each exercise the places are changed.

V8: sprint with receiving a long defence pass, dribbling by going around a peg three times and throwing the ball to the goal while running;

V9: The students are divided into 3 groups numerically equal; passes are given while walking around the whole field between the players of a team until this is intercepted; the team that catches up remains in the field;

V10: The students are divided in 2 or 3 teams; a theme game is performed: the elimination of the multiple dribbling or of the simple one at a loud signal; each game lasts 2 minutes.

Games for developing the agility

A1. The group is divided into pairs on the whole surface of the field; catching and passing the handball ball is performed from standing down and lifting the torso, with both hands;

A2. The group is divided into pairs on the whole surface of the field; moving passes are performed with both hands, keeping the constant distance of 3m;

A3. The group is divided into pairs on the whole surface of the field; passes are performed with the clumsy arm, the distance of 3-5m constantly modifying;

A4. The group is divided equally at the two goals, each having a ball; throwing to the goal is performed from a 6m distance with the clumsy hand, standing in one place, then from walking and running from 9m.

A5. The group is divided in teams of 3, on the whole length of the field, at a 3-5m distance, the ones standing on the exterior; with a ball; passes are performed by the students having a ball towards the one in the centre, changing places after 20 succeeded passes;

A6. The students are aligned on 3 lines at a 4 m distance and a 2 m interval; passing the ball is performed in jag, the middle row having the task to perform double passes; after each set the middle row is changed; the exercise can be performed on 4 rows too.

A7. The students are divided in two groups, found in a column on the 9m semicircle, each student having a ball. At the teacher's loud signal the ball in thrown having as a target the goal's space, from the central position; after each exercise, the throwing position is changed and after each set the distance becomes bigger with 2 m; wins the team which has more balls in the goal, before the line. Taking into consideration the distance, the throwing can be performed from one spot, having a 2-3 running steps as an advance.

A8. The students are arrange into squares and then in triangles , by 2; passes are performed in one way, the players moving after the ball or in a reverse direction with the ball;

A9. The students are dispersed into pairs on the whole surface of the field, one having a ball; this performs a multiple dribbling in speed after the other player, who moves among different pegs; the roles are switched after going around all the pegs in a certain order.

A10. The students are divided in 4 teams, two in defence and the others on the centre line; a theme game is performed on half of the field; passing the ball without dribbling and finalizing by throwing the ball to the goal; after each offence, the roles are changed; for the first 4 offences, the team will adopt a

semi-active behaviour, then active for the following 4; the teams can be switched after 2 offenses.

For the evaluation were used 2 tests which are taken from The National System of Evaluation for Physical Education available for the secondary age level (MEN 1999).

- *speed running on 50 m*, with a high start (determine the moving speed). It was performed in a straight line, on a flat field. The chronometer was used at the movement of the back leg. It was recorded the time in seconds and hundredths of seconds.
- *technical structure (determine the agility).*On the spot, passing the ball to a partner situated laterally, moving, re-receiving, dribbling among 5 pegs (the distance between the pegs being of 3m) and throwing to the goal from a central position between the 6 and 9 m semicircle. It is recorded the time in second and hundredths of seconds.

Results and discussions

After applying the tests from SNE (MEN 1999) there were registered results obtained by the students from the groups involved in the experiment. These data, collected at the final and initial tests, were statistically analyzed in order to offer a greater degree of scientific relevance to the present paper. The statistical analysis was conducted in two directions. One relied on the statistical analysis within the groups in order to see if by using different means of preparation the groups obtain favorable results in the training process. On the other hand, the statistical analysis was conducted between the witness group and the experiment one in order to observe if using the specific means in the handball game has helped improving the manifesting index of the motor skills, especially the speed and agility. The statistical data processing was made with the help of SPSS 23.0 program. This operation was made separately for the group of girls and for the group of boys in order to allow their further discussion. The results recorded by the group of girls are presented in Tables 1and 2.

As it can be observed in Table 1 both groups of girls obtained close values of the averages of the performances from the first trial. In the case of the "technical structure" trial, the experimental group obtained a better result at the initial tests but which is very close to the witness group one. At the final tests, the control group has registered good results in the both cases trials, superior to those registered at the initial ones. The same good evolution of the average values of the performances was reached by the experimental group.

Table 1. The statistical analysis within the girls' group

Groups	Girls					
	Control group (n=21)			Experimental group (n=18)		
Trials	T.I. x±S	T.F. x±S	t	T.I. x±S	T.F. x±S	t
Speed running 50 m (sec.)	9.11±.10	9.00±.09	10.80**	9.12±.11	9.00±.10	31.80**
Technical structure (sec.)	14.57±.63	14.37±.69	10.37**	14.54±.55	13.81±.53	29.59**

p>.05; *p<.05; **p<.001

After analyzing the data from a statistical point of view, it can be said that the progress registered by both groups were significant because the signification bar was p<0.001. Therefore, it can be said that, no matter the means used, the effect upon the students were favorable regarding the improving of the motor skills speed and agility.

Table 2. The statistical analysis between the girls' groups

Groups	Girls		
	Control group (n=21)	Experimental group (n=18)	
Trials	T.F. x±S	T.F. x±S	t
Speed running 50 m (sec.)	9.00±.09	9.00±.10	-.005
Technical structure (sec.)	14.37±.69	13.81±.53	2.73*

p>.05; *p<.05; **p<.001

The statistical analysis between groups wanted to compare the results registered by the groups of girls only at the final testing. As it can be observed from Table 2, the results were favorable for the experimental group in the case of the second trial. For "Speed running 50 m", the groups obtained close

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIX, ISSUE 1, 2019, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

values. The registered progress for this trial was therefore insignificant (p>0.005). In the "technical structure" case, the average values of the performances obtained by the experimental group (13,81sec) were superior to the results registered by the witness group (14,37sec). Therefore, the progress registered by the experimental group for this trial was significant p<0.05. The experimental group of girls has registered superior performances for this trial which tested the agility's level of development. The same type of statistical analysis was conducted for the boy's groups. The results obtained by these at the initial and final tests were presented in Table 3 and 4.

Table 3. The statistical analysis within groups of boys

Groups / Trials	Boys					
	Control group (n=20)			Experimental group (n=20)		
	T.I. x±S	T.F. x±S	t	T.I. x±S	T.F. x±S	t
Speed running 50 m (sec.)	8.11±.11	8.00±.10	8.90**	8.08±.10	7.94±.09	14.06**
Technical structure (sec.)	13.21±.57	12.62±.72	9.30**	13.28±.47	12.09±.52	32.01**
p>.05; *p<.05; **p<.001						

In Table 3, it can be observed that, at the initial tests the values of the averages of the performances obtained by the groups of boys, have close values. At the final tests, the values of the averages of the performances were superior to those from the initial tests, for both groups involved in the research. This fact shows that the instructive-educational process has reached its goals. The selected training methods, although, they were different, led to the increasing of the manifestation index for the motor skills speed and agility. For both groups, the results showed significant progress (p<0.001) for both trials used for the evaluation.

In Table 4, is presented the analysis regarding the averages of the performances obtained by the groups of boys in the final tests.It can be observed that the experimental group has registered superior results in relation to the witness group in the case of the two tested trials. Nevertheless, the obtained result does not mean that the experimental group has registered a significant difference even if they are favorable from the point of view of the averages.

Table 4. The statistical analysis between groups of boys

Groups / Trials	Boys		
	Control group (n=21)	Experimental group (n=18)	
	T.F. x±S	T.F. x±S	t
Speed running 50 m (sec.)	8.00±.10	7.94±.09	1.79
Technical structure (sec.)	12.62±.72	12.09±.52	2.63*
p>.05; *p<.05; **p<.001			

That is why, for the "Speed running 50 m (sec.)" the experimental group's result (7.94 sec) is not significant (p>0, 05) in regard to the witness group's result (8.0 sec). The experimental group of boys obtained a progress considered significant (p<0.05) for the "Technical structure" trial with an average value of the performances of 12.09sec. After analyzing the results for the group of boys, it can be said that using means specific for the sport game led to the improving of the motor skills speed and agility at a moderate level.

Conclusion

The conducted research allows us to draw more conclusions regarding the use of the specific mean of the sport game (handball) regarding the manifestation index of the motor skills speed and agility. From the point of view of the registered results, for the experimental classes we can observe that using he specific means for the sport game were efficient. The statistical analysis showed that the students registered superior index of manifestation of the motor skills speed and agility after using this type of means.

The achieve progress, used to compare the witness groups, allows us to tell that the means specific for

the sport game cannot be considered much more efficient. At the "Technical trial" both experimental groups registered average values of the performances which can be considered significant (p<.05). On the other hand, at the first trial, "speed running 50 m", both experimental groups registered average values of the performance which were not taken into significant consideration in relation with those of the witness groups (p>0.05). Using specific means for the handball game has developed within both experiment groups, the manifestation index of the agility, better than those for the speed.

In exchange, the development of the motor skill speed occurred also while using methods, instead of those considered to be traditional, without registering a noticeable difference from the point of view of the results obtained during testing.

At the involving and rivalry level during the chosen activities it was observed a better involvement for the effort of the students that took part in the research. Therefore, we can say that diversifying the methods used during the physical education lesson is an important fact, even decisive for acquiring the set general competences from the syllabus. Moreover, we can state the fact that, by using the methods considered traditional the influencing of the manifestation index of these motor skills(speed and agility) took place, and good results were obtained by the witness groups during the final tests.(p<0.001).

Using methods specific for the sport games represents a favorable premise for developing the motor skills speed and agility. The influences that a category of methods can have in improving these skills depend on multiple variables. The state of the base of the materials , the students' interest for a certain type of training , the accessibility of the methods used or the number of hours assigned for a learning unity can influence the results of improving the motor qualities.

Where the results were insignificant, we consider that this fact was generated by the insufficient number of hours assigned for improving the motor skills involved in the research. An important restraining factor is considered to be the short time assigned during the lesson for developing the motor skills.

After gathering all the data, we can say that using methods that are specific for the sport game can bring benefits for the instructive-educational process and is considered a viable alternative for diversifying the content during the class, regarding the methods chosen for developing the motor skills.

References

Badau D. 2017, *The educational impact of implementation the education through adventure discipline in physical education and sports academic curriculum. Physical education of students*, vol. 21, no.3 pp. 108–115

Burns R.D., Hannon J.C., Brusseau T.A., et al, 2015,*Cross-Validation of Aerobic Capacity Prediction Models in Adolescents,*PEDIATRIC EXERCISE SCIENCE, vol. 27 (3) pp. 404-411

Burns, R.D., Hannon, J.C., Brusseau, T.A.; et al,2015, *Cross-Validation of Aerobic Capacity Prediction Models in Adolescents,*PEDIATRIC EXERCISE SCIENCE, vol. 27 (3) pp. 404-411;

Cojocaru, V., (2001), Fotbal. Noţiunigenerale, Editura AXIS MUNDI, Bucureşti

Daniel Tindall, Jack Neylon, Melissa Parker, Parker Deborah, 2017, *Promoting Social Inclusion and Physical Activity for Students With Special Educational Needs Through Adventure Education*, In book: Inclusive Physical Activities: International PerspectivesChapter: 9, March

Dragnea, A., Bota, A., Stănescu, M., Teodorescu, S., Şerbănoiu, S., Tudor,V. 2006, Educaţiefizicăşi sport – TeorieşiDidactică, FEST, Bucureşti.

European Commission / EACEA / Eurydice, 2013, Physical Education and Sport at School in Europe, Raport Eurydice, Luxemburg: Oficiulpentrupublicaţii al UniuniiEuropene

Gamble, P., 2011, Technical Aspects of Acceleration and Straight-Line Speed Development. In: *Training for Sports Speed and Agility – An Evidence-Based Approach*, Abington, UK: Routledge.

Glassman G., 2011, CrossFit level 1 training guide, *CrossFit Journal*, from http://journal.crossfit.com/2010/05/crossfit-level-1-training-guide.tpl;

Griggs G. (Ed.), 2012,*An Introduction to Primary Physical education*, Publisher: Routdlege, 151-161;

Mahar M.T., Guerieri A.M., Hanna M.S., et al., 2011,*Estimation of Aerobic Fitness from 20-m Multistage Shuttle Run Test Performance*, AMERICAN JOURNAL OF PREVENTIVE MEDICINE, 41 (4) supp 2, pp. S117-S123,

Martínez J.M.V., 2005,*Unidadesdidácticas para Secundaria: Juegos y Deportes: Acrosport, UnidadesDidacticasSecundaria*, EDITORIAL WANCEULEN, S.L., P 118

Mayer R., Alexander P.A., 2017, *Handbook of Research on Learning and Instruction*, Second edition, Routledge: New York, pp. 212

Mesquita I., Farias C., Hastie P., 2012,*The impact of a hybrid Sport Education–Invasion Games Competence Model soccer unit on students' decision making, skill execution and overall game performance*, European Physical Education Review, Vol 18, Issue 2, pp. 205 – 219

Mindrescu V., 2018, The Formative Role of Dance Sport in the Extracurricular Activities in Gymnasium, New Approaches in Social and Humanistic Sciences, Iasi, Romania, LUMEN Proceedings, pp. 283-293

Mocanu G.D., 2015, The Didactics of Physical Education and Sport. Galați: The "Dunărea de Jos" University Foundation,

Neagu N., 2017,The Physical Education and Sport Textbook. From Eclecticism and Empiricism to Proficiency and Rationalism, *The 3rd International Conference Transdisciplinary Research in Physical Therapy, Physical Activities and Sports Nutrition*, TîrguMureș, oral presentation

Rus C.M., Radu LE, 2014,The Implications of Physical Education and Sport in the Moral Education of High School Students. *The Research and Social Intervention Magazine*, pp. 45-55

Rus CM., 2013,*Communication characteristics during teaching physical education and sport*, Sport Science 6 (2), 82-84.

Sheppard, J.M., & Young, W.B., 2006, Agility Literature Review: Classifications, Training and Testing. *Journal of Sports Sciences*, *24*(9), pp.919-32.

The Government of Romania, 2000,The Law of Physical Education and Sport no. 69.

The Government of Romania, 2011,The Law of Physical Education and Sport, no. 1.

The Ministry of Education, Research, Youth and Sport. (2012). Order 3462 regarding the approval of *The methodology of organizing and conducting physical education and sports activities in pre-university education*, The Official Gazette of Romania.

The Ministry of National Education, 2017, School Curricula for Physical Education and Sport, 5th to 8th grades, București

Ungureanu-Dobre A., Rus C.M., Mihailescu L., BocoșMușata, 2014,*The development of motor capabilities of pupils in the 4th grade through movement games*, Literature, Discourse and Multicultural Dialogue, vol. 2, pp. 88-95

Wyndham L.D., Doug R.,Comper P., Hutchison MG., 2018, *Earlier time to aerobic exercise is associated with faster recovery following acute sport concussion*, PLOS ONE, 13 (4);

Zurita-Ortega F., Salvador-Perez F. , Knox E., Gamiz-Sanchez VM., Chacon-Cuberos R., Rodriguez-Fernandez S., Muros JJ., 2018,*Physical activity and health-related quality of life in schoolchildren: structural equations analysis*, Anales de Psicologia, Volume: 34 (2), pp 385-390