be used as such. On the other hand, some methods are used in the teaching and assimilation period of motric skills and abilities, and others are more useful during the fixing and consolidating of knowledge period (practice, for example). In consequence, the coach decides the methodology according to the activity, training elements, contents, the organization forms of training, the used means, etc.

***The development of the formative character of methods**

Sportive training has an important role in building the athletes' personalities, in their training for competitions where self-training and self-improving have to be significant attributes for each individual. The one who finishes (obtains) a training degree is not a finished product but he continuously adjusts for competition. Thus, nowadays, the athlete is not only the trained one (receiver of didactic messages) but he engages in auto-telic actions which sends him into the values hierarchy.

***Elements which lead to the maximizing the performance capacity**

In literature (Dragnea, A., Teodorescu, M., Serbanoiu, S., Dragomir, P., Bompa, T., Popescu, S., Colibaba, D, etc.) the following factors or elements which participate in the maximizing the performance capacities are mentioned:

- **initial guidance and selection** – to promote a qualitative "human material"
- **selection and training on formative phases**; each formative phase has a certain degree of difficulty and specific requirements
- **the increase of the training volume-** during the skills, abilities and knowledge acquisition phases
- **the effort intensity increase** – in the pre-competitive and competitive phases
- **connecting the competition training and training through competition** (competitions)
- **the acceleration of recovery the effort capacity**
- **the technologies transfer from other activity areas**
- **the management of training and participation to competitions** by a technical team (team work)
- **evaluating the performance behavior of the athlete**
- **promoting thinking through reference models**
- **the development of basic training on didactic projects able to be applied to the "well-done work" principle. This statement materializes by promoting the so-called praxiologic circuit O-C-S-E** (objectives-contents-strategies-evaluation) which always insures the quality and the efficiency of the training process.

Conclusions: The role of the didactic technology and strategy is to create a training context of situations so that the one who learns/is trained to be engaged to actively participate to the achievement of the teaching objectives This statement implies that stimulation is the instrument through which a method involves the athlete in the training/improving process more or less. The educational sciences researchers analyzed the formative and stimulating potential of the main methods of training.

BIBLIOGRAPHY

***Encyclopedic Dictionary*, 2003,** Bucuresti, Cartier Publishing House, p.546

***Dictionary of Pedagogy*, 1989,** Bucuresti , EDP, p.296,450

COLIBABA-EVULEŢ, D., 2007, *Praxiologie şi proiectare curriculară în educaţie fizică şi sport*, Craiova, Edit.Universitaria, p.38, 138,167,196

COLIBABA–EVULET. D., BOTA, I., 1998, *Jocuri sportive. Teorie şi metodică*, Edit. Aldin, Bucureşti,p.72

IONESCU M., RADU I., 2001, Cluj-Napoca *Modern Didactics*, Dacia Publishing House, p.123

NEACSU, I., 1990, Bucuresti, *Training and Learning*, Stiintifica Publishing House, p.221

NICOLA, J., 2002, Bucuresti, *School Pedagogy Handbook*, Dramis Publishing House, p.470

SCHAUB M., ZENEKE, K., 2001, *Dictionary of Pedagogy*, Iasi, Polirom Publishing Hose, p.278

ZAMFIR, C., VLASCEANU, L., 1993, Bucuresti, *Dictionary of Sociology*, Babel Publishing House.

INFLUENCE OF FITNESS TRAINING ON THE COEFFICIENT OF APPLICATION RATE OF BODY

Cecilia Gevat[1], Alin Larion[1], Elena Sabau[2], Monica Gevat[3]
[1]Ovidius University of Constanta, ROMANIA,
[2]Spiru Haret University, Bucharest, ROMANIA
[3]Regina Maria College, Constanta, ROMANIA
Email: cecilia_gevat@yahoo.com 04.02.2010 / 18.02.2010

Abstract

Aim: Any physical activity that involved larges muscle groups and is sustained for prolonged periods of time has the potential increase cardiorespiratory fitness. The purpose of this study was to investigate the effects of 8-week training physical fitness over application rate of body for athletes' children girls, 12 years old age that practice athletics for 6 months.

Method: 15 active athletes girls from experimental group (age = 12.2 ± 0.32 years, body height = 1.48 ± 0.08, body weight 338.2 ± 2.02 kg) volunteered to participate in this study and was trained three times a week for the period

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of 8 weeks and ***control group (n=15) with*** age =12.4 ± 0.4 years, body height=1.45±0.07m and body weight 39.06± 1.15kg was trained three times a week for the period of 4 weeks. Measurements were conducted twice before and after training. Main test was *coefficient of application rate of body*: (heart rate differential/ target heart rate)x100

Results: There was significant difference in dominant *application rate of body* between experiment group and control group before and after training t = 1,81, p >0,05pretest, and posttest t=2,32, p<0,025.Between pre-test and post - test for experiment group t=3,87, p<0,005 and for control group t=3,83, p<0.005.

Conclusion: Fitness training has a higher influence over the body coefficient request *application rate of body* in the training period is bigger. If value of the coefficient of application rate of body is smaller, the athlete's training capacity will be better.

Key words: training fitness, girls, coefficient of application rate of body.

Introduction

Cardiorespiratory Fitness is ability to deliver and use the oxygen under the demans of intensive, prolonged exercise or work. Central cardiovascular adaptations is adaptations that occur in the heart and contribute to an increased ability to deliver oxigen. Cross training is the development or maintenance of cardiovascular fitness by alternating between or concurrently training in two or more modalities. (A.S. Plowman, D.L. Smiths, 2002.) Orriginally, the term *cross training* referred to the development or maintenance of muscle functionin the limb by exercising the contralateral limb or upper limbs as opossed to lower limbs (D.J. Housh and T.J. Housh, 1993, D.D. Kilmer et al 1994). Theoretical , there is merit to the application of specificity and cross training to a training program. Any form aerobic andurance exercise will affect both central and peripheral cardiorespiratory functioning. The cemtral cardiovascular system is comprised of heart and oxygen delivery components. Although jogging or running maybe the most time-efficient way to achieve cardiorespiratory fitness, these activities are not enjoyable for many individuals and they have a relatively high incidence of overuse injuries. Therefore, other options should be available in fitness programs. Although many different modalities can improve cardiovascular function, the greatest improvements in performance occur in the modality that was used for training-that is, there is *modality specificity*.

Material and Methods

Table no.1.Subjects experimental and control groups

Variables	Experimental group (n = 15) M ± SD	Control group (n = 15) M ± SD
Age (year)	12.2 ± 0.3	12.4 ± 0.4
Body height (m)	1.48 ± 0.08	1.45 ± 0.07
Weight (kg)	38.2 ± 2.02	39.06± 1.15

Procedures

The main test are coefficient of application rate of body and 300m running 100% intensity. Mode of administration, measurement and data processing by (t-test Student) is added.

Plan preparation

It concerns only the experiment group, the duration of 8 wk. x3 trainings. / wk = 24 trainings: a standard warming-up is settled for all training sessions; control group 4 wks x 3 trainings/week

- administration of breaks, between repetitions only walk

Table no.2 Plan preparatoire

Monday	Wednesday	Friday
50 steps run, 40 steps walk,	50 steps run, 40 steps walk,	50 steps run, 40 steps walk,
50 steps run, 20 steps walk	75 steps run, 10 steps walk,	50 steps run, 20 steps walk
50 steps run, 30 steps walk	100 steps run, 10 steps walk	50 steps run, 30 steps walk
50 steps run, 10 steps walk	15'slowly run	50 steps run, 10 steps walk
75 steps run, 10m steps walk		75 steps run, 10m steps walk
10' slowly run		5'slowly run

Hypothesis of this study is**:**cardiopulmonary fitness factor contributing to improving the Coefficient of application rate of body and values of time in running 300m event.

The results are presented in tables and summary tables and within text they are extracted from summary tables. Results are analyzed in order from: Characterization of the subjects by age, weight, size (Table no 1). Plan preparation table no2, values of heart rate for experimental and control groups for pre test and post testt table no3, t - test student for pre test and post-test in table no 4 and independent t - test student for pre test and post-test in table no5. Table no.6 is for Independent t - test student for pre test and post-test for 300m running 100% intensity.

Subjects of the experiment group achieved superior results, compared with subjects in the control group, in both tests, the initial testing (see results below). Coefficient of application rate of body was calculate after American College of Sport Medicine cited by D. Marza, 2005.

$\frac{HRD}{HRT}$x100

HRD=heart rate diferential

HRD=heart rate target

HRD= HR post physical effort – HR before physical effort

HRT= 70-85% from MHR maximum heart rate

MHR=220-age

Results

The increase of age, at the end of the experiment, resulted in minor changes on the weight and height of subjects, a process which could not influence the results of control samples in the final phase.

Table no. 3.Values of heart rate for experimental and control groups for pre- test and post- test

Variables	Experiment group		Control group	
	Pre-test	Post- test	Pre-test	Post- test
Heart rate before effort	123.7±6.87	118,8±6.17	126.3±9.76	122±7.53
	CV%=5.55	CV%=5.44	CV%=7.72	CV%=6.17
Heart rate post effort	181.9±11.60	161.8±8.27	183.2±12.13	173,4±10.4
	CV%=6.37	CV%=5.11	CV%=6.62	CV%=5.99
Coefficient of application rate of body	214±28.5	188±16.2	231±22.5	211±19.3
	CV%=13.3	CV%=8.61	CV%9.74	CV%9.14

Table no. 4 t - test student for pre- test and post-test

		Experiment group		Control group	
	Parameters	Pre-test	Post- test	Pre-test	Post- test
Application rate of body	M±S	214±28.5	188±16.2	231±22.5	231±22.5
	t-test(N-1)		3.87		3.83
	p		<0.005*		<0.005*

*significant p<0.005

Table no.5 Independent t - test student for pre- test and post-test

Application rate of body	Exp group	Control group	t-test(N-2)	p
Pre test	214±28.5	231±22.5	1.81	>0.05*
Post test	188±16.2	231±22.5	2.32	<0.025**

*unsignificant p>0.05, **significant p<0.025

Table no.6 Independent t - test student for pre- test and post-test for 300m running 100% intensity

300m	Exp group	Control group	t-test(N-2)	p
Pre test	6.2±2.5	63.4±4.5	0.9	>0.05*
Post test	57,5±6.3	62.6±2.5	2.91	<0.01**

*unsignificant p>0.05, **significant p<0.01

In table no3 are shown the best results achieved by athletes females before and after 8weeks of training for experimental group and 4 weeks for control groups at Coefficient of application rate of body. Between both goups are difference of 9,26% The result is better for experimental group. For pre–test the results are unsignificant p>0,05.(table no 5) At post-test the result is significant for t- test (N-2) 2.32, p<0,025 (table no5) and Coefficient of application rate of body is smoller than values of pre-test.(12.15% for experimental group and 8.66% is smoller for control group.) For both groups are significant progress from pre-test to post-test (table no 4) p<0.005, t-test =3.87for experimental group and t-test 3.83 for control group.

Discussions

It is known that at sportsmen, especially at sports of endurance type, the heart adjusts to great physical exercises (efforts) so that it behaves in a little

bit different way in comparison to the heart of untrained. Children who are untrained have a smaller heart. At children and youth, the size of heart, circulation of blood and breathing are constantly subject to changes due to the growth and training. With the growth, the indicators of cardio-circulatory system are changed: artery pressure is increased, pulse is made less frequent, stroke and minute volume of heart are increased which improves efficiency of heart work, from the point of energetic needs. Pulse, stroke and minute volume of heart at children and very small children (average results). (T. Okičić, 1999). Ability to adapt of effort of body is increased by decreasing coefficient value obtained in Application rate of body. The result of 300m improved by 4.5 to t-test= 2.91 being significant difference post-test for $p < 0.05$.

Age Pulse beat/min. Stroke volume of heart Minute volume of heart (T. Okičić, 1999)

13	80	35.7	2850
14	78	38.5	3000
15	76	41.4	3250

Exercise intensity can be expressed either as a percentage of maximal heart rate (%HRmax). Intensity in conjunction with duration is very important in improving VO_2max. The intensity of an exercise may be described in relation to heart rate, oxygen consumption, or rating of perceived exertion (RPE). Laboratory studies typically use VO_2, but heart rate and RPE are more practical for individuals anywhere. (H.A. Wenger and G.J. Bell, 1986). As C.L. Otis, 2001, the term "athlete's heart" describes a collection of changes that occur as you train. The two most common findings in trained athletes are bradycardia, or a slow pulse (less than 70 beats per minute), and phasic sinus arrhythmia, a pulse that speeds and slows with respiration.

There have been many validation studies of pulse oximetry during exercise over the last 20 years, with widely varying conclusions offered on the part of the authors. For example, S.K. Powers et al., 1989, tested three devices (two finger sensors and one ear sensor) and found standard error of estimates (SEE; numerically similar to precision) ranging from 1.43 to 1.97%, similar to values we found with the N-395/RS-10 forehead sensor. These authors concluded that the accuracy of pulse oximetry was sufficient for use during exercise testing. We wish to emphasize that our conclusions are strongly influenced by the setting in which the device was used. Clearly, pulse oximeters offer several advantages in the clinical setting. These devices are noninvasive, easy to use, and do not require significant analysis time or maintenance of other equipment to obtain data.

Because increased pulse pressure is recognized as a leading contributor to heart attack and stroke, the results of this experiment suggest that middle-aged or elderly persons, particularly those with pre-existing hypertension, should be careful not to "overdo" it when embarking on an exercise program. If they exercise too vigorously for an extended period of time, they could develop athlete's heart syndrome, or something close to it, which could lead to a dangerously widened pulse pressure.

Conclusion: Fitness training has an higher influence over the body coefficient request *application rate of body* in the training period is bigger. If value of the coefficient of application rate of body is smaller, the athlete's training capacity will be better.

References

HOUSH, D.J., HOUSH, T.J., 1993, *The effect of unilateral velocity-specific concentric strenght trainin,*. Journal of orthopaedic and Sport Physical therapy. 17 (5): 252-260.

KILMER, D.D. et al, 1994, *The effect of a high resistance exercise program in slowly progressive neuro muscular diseas.* Archives of Physical Medicine and Rehabilitation, 75(5): 560-563

MÂRZA, D., 2005, *Kinetoprofilaxie primară,* Edit. Tehnopress, Iaşi.

OKIČIĆ, T., 1999, *The influence of sports experience length on pulse frequency in state of resting and in exercise at sportsmen,* Physical Education Vol. 1, No 6, : 51 – 58.

OTIS, C.L., 2001, *Special Concerns for Female Athletes*, Kerlan Jobe Orthopedic Clinic 6801 Park Terrace Los Angeles CA

PLOWMAN, A.S., SMITH, D.L., 2002, *Exercise Physiology for health, fitness and Performance***,** second edition, Edit. Benjamin Cummings, 343-345

POWERS, S.K., DODD, S., FREEMAN, J., AYERS, G.D., SAMSON, H., MCKNIGHT, T., 1989, *Accuracy of pulse oximetry to estimate HbO2 fraction of total Hb during exercise.* J Appl Physiol 67: 300–304.

WENGER H.A and BELL, G.J., 1986, *The interactions of intensity, frequency and duration of exercise training in altering cardiorespiratoty fitness,* Sport Medicine, 3:346-356.