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Original article

## COMPARATIVE STUDY REGARDING THE APPRAISAL OF PHYSICAL TRAINING LEVEL AMONG ATHLETES AGED 11 – 13, TRACK AND FIELD PRACTITIONERS

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### Abstract

Physical training plays a key and leading position, in sports training. Track and field events create an excellent environment allowing the children to develop harmoniously and to interact among them. The fast development of science and technology has had great effects upon bringing the need of the reconstruction of education and teaching activities on the agenda again.

*Objectives.* The purpose of this paper is to emphasise on several comparative aspects concerning the training level among students aged 11 – 13, practicing athletics. In this respect, three sports clubs in Moldova were concerned.

*Methods.* The sample comprised in the research was represented by 108 students (54 girls and 54 boys), aged between 11 – 13. The evaluation of the athletes involved the following tests: standing start speed run – 50 m, standing long jump, softball throw, resistance run - 600 m and 20 jumping steps.

*Results.* We interpreted the results using the analysis test Anova One-Way and the Turkey multiple comparison test. In case of the first four trials, results have indicated significant differences ( $p < 0.0001$ ), while concerning the last trial, the differences were not significant ( $p > 0.05$ ). At the first test, the most representative significant difference was between girls ( $t=0.2889$  to  $0.5278$ ). In what concerns the second, third and fourth trial, significant differences were found between boys and girls ( $t = -0.2483$  to  $-15.25$ ).

*Conclusions.* The multiple comparison test indicates significant differences in case of the first four trials, between both same-gender athletes (girls – girls, boys – boys), and athletes of different genders (girls – boys). The last trial has not recorded significant differences.

The effects of physical training upon students should be investigated with studies of different sample groups.

*Key words:* training level, physical development, track and field.

### Introduction

Numerous children are coerced into sports as children, by their parents, to get involved and find a passion or hobby in life. But should parents be encouraging their children into a life full of sports or are the effects of sports too negative to keep pursuing? (Grimit, 2014).

Student participation on school sports teams has been associated with improvement in students' grades, self-perception, social development, and feelings of connectedness to school. Often, though, these relationships were insignificant or had many possible explanations that investigators failed to explore. Participation in sports and academic results may be related in comprehensive ways that simple correlations or comparisons fail to explain. (Straub, 2016).

Track and field constitute the oldest sport known as sports competition and historically documented.

“The king of sports” because its specific means are used as means in the training of all the other motor sports; it also comprises a series of regulatory provisions (both technical and related to competition), which cannot be interpreted in any other way, while results may be measured correctly, from a qualitative and a quantitative perspective (Rață, 1997).

Exercise training can be seen as a systematic process of preparing for a certain physical goal. This goal used to be related to peak physical performance; however, exercise training is also used to attain targets for health fitness. As society evolves and becomes ever more sedentary, there is greater emphasis on usual exercising for reducing obesity, adult-onset diabetes, hypertension, and the risk of heart disease. In addition, there are specific guidelines already written for prescribing exercise for these diseases (Lambert, Wayne, Bosch, Pearce,

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Sayers, 2008).

According to Brain (2001), teaching is both an art and science. It allows a huge degree of freedom and it underlines the creativity of teachers. Actually, teaching is an art where, based on knowledge and experiences, the subject matter comes before the students in a meaningful way. This demonstrates that in Physical Education an effective teacher has to adjust and review tasks set considering the needs of students (Singobile, Simbarasch, Nhamol, 2017).

In sports training, physical training has an essential and leading position. If a high-performance athlete wants to obtain excellent results and get to the peak of world sports fitness, the first is to build a good foundation – of course, on physical fitness. Physical fitness is a primordial factor impairing an enhancement of the movement level, so we should appraise an athlete's physical training. The traditional athletics powers have given great importance to physical training, not only the development of systematic theory; practice experience is also highly important (Bin Xu, 2015; Lin, 2009; Quin, 2004; Chen, 2002).

Given that the training aim of young athletes is to set the base for the best possible performances when they become adults, the correct approach to training during their childhood and adolescence seems to be most important to obtain future success. More precisely, it is crucial that coaches are aware of the specifics of early specialisation, which inherently treats children as little adults (Schiffer, 2008). The athletes develop the first two stages during the preparatory phase, when they build a solid base.

The third phase is particular to the competitive stage, when the main objective is to maintain what they managed to attain and improving the necessary qualities. Over time, while the training improves, the level of general physical training has to attain high standards, too. At the end of the preparatory phase, level of general physical training reduces, in favour of specific physical training (Mojoiu, 2017).

Literature suggests that a child should be 6-8 years old, nonetheless, physical, cognitive, and social maturity should be considered when designing a training program, the child should also have the chance to follow directions, have adequate balance and proprioception. The National Strength and Conditioning association (NSCA) and Dahab and McCambridge have determined the age this is reached being 7-8, the Australian Strength and Conditioning Position Stand mentions the youngest a

child should begin training at the age of 6, not sooner. Effects of strength training have been demonstrated among children as young as 5. The training must be appropriate for the age of the child or teenager, entailing a proper warm-up, cool-down, and accurate choice of exercises (Duhig, 2014).

Participation may lower the time available for studying and learning. On the other hand, it has been argued that sports participation enhances students' motivation and teaches teamwork and self-discipline, thus leading to positive academic results. Studies have actually shown that high school athletes get better grades, have higher educational and occupational aspirations, spend more time on homework, and have a more positive attitude towards school compared to non-athletes. Nonetheless, these associations may simply be a reflection of unobservable aspects associated with both sports participation and the outcome under study compared to causal in nature (Reesa, Sabia, 2010).

Sports Science experts argue that athletes who, in childhood, followed great preparatory plans, are capable generally of the best performance. Coaches without any patience rush the children to get quick results, but they know failures and frequently the young athletes quit the sport before reaching sport maturity. "Children are not simply small adults; they have complex and distinct physiological characteristics, which should be given attention" (Rață, 2013).

Consequently, it may be assessed that systematic exercising at this age has a formative and educative role on students. They become a character tool, of the spirit of observation, of the rapid and anticipative decision-making, of the personality in general. (Ursanu, Ursanu., Budevici, 2008).

### Methods

The purpose of this paper is to emphasise on several comparative aspects concerning the training level among students aged 11 – 13, practicing athletics. In this respect, three sports clubs in Moldova were concerned.

The sample comprised in the research was represented by 108 students (54 girls and 54 boys), aged between 11 – 13. The evaluation of the athletes involved the following tests: standing start speed run – 50 m, standing long jump, softball throw, resistance run - 600 m and 20 jumping steps.

### Results

Tables 1, 2, 3 and Figures 1 - 5 show the results obtained after the tests undertaken by the students within our research sample.

**Table 1.** Descriptive statistics of the characteristics analysed (Club 1)

	F_C1_50 m (s)	F_C1_Stan ding l.j. (cm)	F_C1_Softb all throw (m)	F_C1_60 0 m (min)	F_C1_2 0 steps (s)	B_C1_50 m (s)	B_C1_Stan ding l.j. (cm)	B_C1_Softb all throw (m)	B_C1_60 0 m (min)	B_C1_2 0 steps (s)
Number of values	18	18	18	18	18	18	18	18	18	18
Minimum	7.600	165.0	27.00	2.120	32.70	7.600	160.0	24.50	1.540	32.50
Maximum	8.600	200.0	40.00	2.380	41.30	8.500	210.0	44.50	2.150	41.30
Mean	8.139	180.8	33.83	2.218	35.91	7.900	179.4	34.33	1.991	36.59
Sum	146.5	3255	609.0	39.93	646.4	142.2	3230	618.0	35.84	658.6

In club 1, the athletes recorded the following values: girls: in running speed  $8.19 \pm 0.27$  s, in long jump,  $180.8 \pm 9.73$  cm, throwing the ball  $33.83 \pm 4.08$  m, running resistance  $2.21 \pm 0.07$  s and tests 20 steps

jump  $35.91 \pm 2.37$  s. Boys: in running  $7.90 \pm 0.24$  s, at the long jump,  $179.4 \pm 15.33$  cm, the throw of the sheep ball  $34.33 \pm 4.93$  m, the endurance run  $1.91 \pm 0.20$  s and at the test 20 steps jump  $36.59 \pm 2.74$  s.

**Table 2.** Descriptive statistics of the characteristics analysed (Club 2)

	F_C2_50 m (s)	F_C2_Stan ding l.j. (cm)	F_C2_Softb all throw (m)	F_C2_60 0 m (min)	F_C2_2 0 steps (s)	B_C2_50 m (s)	B_C2_Stan ding l.j. (cm)	B_C2_Softb all throw (m)	B_C2_60 0 m (min)	B_C2_2 0 steps (s)
Number of values	18	18	18	18	18	18	18	18	18	18
Minimum	8.100	155.0	27.00	2.150	30.20	7.800	170.0	33.00	1.590	29.70
Maximum	8,800	190.0	35.50	2.370	40.30	8.400	210.0	44.50	2.200	3528
Mean	8.428	170.3	31.94	2.234	34.98	8.111	184.4	36.72	2.092	226.5
Sum	151.7	3065	575.0	40.21	629.6	146.0	3320	661.0	37.65	4077

In club 2, the athletes recorded the following values: girls: in running speed  $8.42 \pm 0.16$  s, in long jump,  $170.3 \pm 8.48$  cm, throwing the ball  $31.94 \pm 3.04$  m, running resistance  $2.23 \pm 0.06$  s and test 20 steps jump  $34.98 \pm 2.68$  s. Boys: in running speed

$8.11 \pm 0.14$  s, in long jump,  $184.4 \pm 9.83$  cm, throwing the ball  $36.72 \pm 2.95$  m, endurance running  $2.09 \pm 0.13$  s and in the test 20 jump steps  $226.5 \pm 823.9$  s.

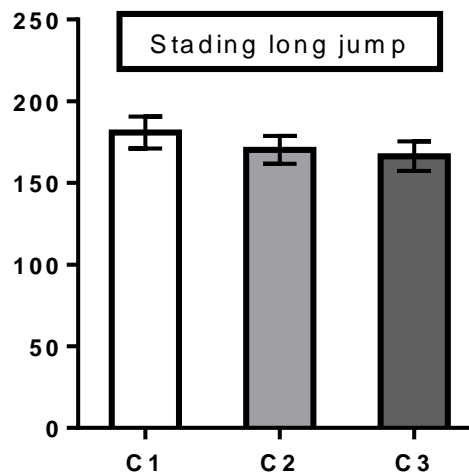
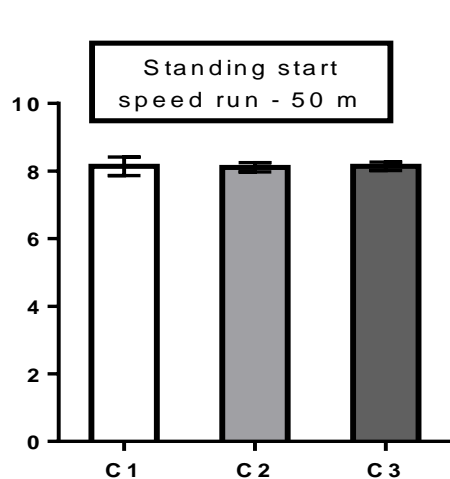
**Table 3.** Descriptive statistics of the characteristics analysed (Club 3)

	F_C3_50 m (s)	F_C3_Stan ding l.j. (cm)	F_C3_Softb all throw (m)	F_C3_60 0 m (min)	F_C3_2 0 steps (s)	B_C3_50 m (s)	B_C3_Stan ding l.j. (cm)	B_C3_Softb all throw (m)	B_C3_60 0 m (min)	B_C3_2 0 steps (s)
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Number of values	18	18	18	18	18	18	18	18	18	18
Minimum	8.100	150.0	25.50	2.150	30.10	7.900	175.0	33.50	1.580	29.38
Maximum	8.900	180.0	36.50	2.380	39.30	8.300	205.0	42.50	2.220	35.28
Mean	8.428	166.4	32.33	2.239	34.88	8.144	185.6	37.36	2.108	31.04
Sum	151.7	2995	582.0	40.31	627.9	146.6	3340	672.5	37.94	558.6

In club 3, the athletes registered the following values: girls: in speed running  $8.42 \pm 0.20$  s, in long jump,  $166.4 \pm 9.04$  cm, throwing the ball  $32.33 \pm 2.69$  m, endurance running  $2.23 \pm 0.06$  s and in test 20 jump steps  $34.88 \pm 2.52$  s. Boys: in running speed  $8.14 \pm 0.12$  s, in long jump,  $185.6 \pm 8.20$  cm, throwing the ball  $37.36 \pm 2.26$  m, endurance running  $2.10 \pm 0.14$  s and in the test 20 jump steps  $31.04 \pm 1.53$  s.

We interpreted the results using the analysis test Anova One-Way and the Turkey multiple comparison test. In case of the first four trials, results have indicated significant differences ( $p < 0.0001$ ), while concerning the last trial, the differences were not significant ( $p > 0.05$ ). At the first test, the most representative significant difference was between girls ( $t=0.2889$  to  $0.5278$ ). In what concerns the second, third and fourth trial, significant differences were found between boys and girls ( $t = -0.2483$  to  $-15.25$ ).



**Fig. 1.** Results for „Standing start speed run – 50 m” **Fig. 2.** Results for „Standing long jump”

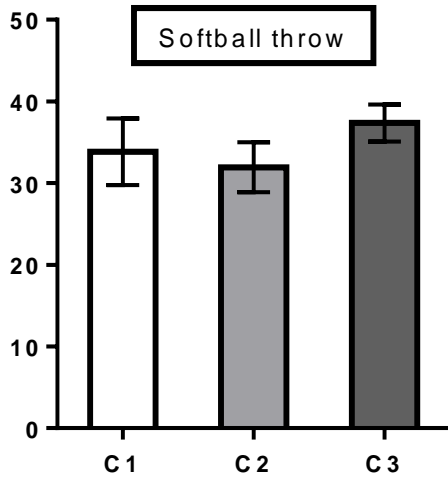


Fig. 3. Results for „Softball throw”

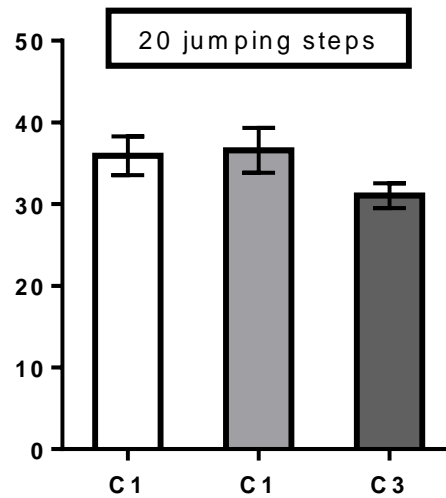


Fig. 5. Results for „20 jumping steps”

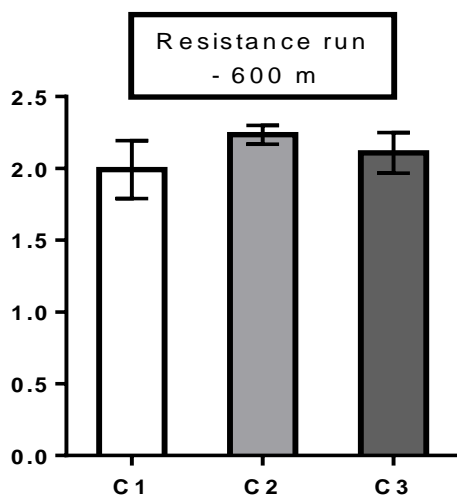


Fig. 4. Results for „Resistance run – 600 m”

### Discussion

Sports training includes physical, skill, tactics, psychology, as well as intelligence ability training. Physical training is a significant part of sport training. Physical condition influences directly the athletes' performance level. It is essential to assess the physical training of the athletes, and emphasise on the role of physical training throughout the game; it is also important to highlight the existing problems of the development of physical training and several related measures and suggestions (Bin, 2015).

A study has provided a general image of the physiological, biomechanical, and psychologic elements underpinning motor skill acquisition. Recent neurophysiological discoveries have demonstrated that skill acquisition can be recorded at any stage of the life cycle, rather than only when athletes are young. Concerning the coach, the main aspect is to get a better insight into the processes at the base of motor learning and motor control, and to create the optimal setting for improving and maintaining the athlete's technical skill foundation. The areas of motor learning, skill acquisition, and motor control are very comprehensive and challenging, in a continual expanding. Findings of future studies may provide coaches with more information allowing them to plan training practices more effectively and improve the skill level of their athletes, irrespective of chronological or training age (Lambert, 2008).

### Conclusions

Upon interpreting the results, we emphasise on the following aspects:

The multiple comparison test indicates significant differences in case of the first four trials, between both same-gender athletes (girls – girls, boys – boys), and athletes of different genders (girls – boys). The last trial has not recorded significant differences.

The effects of physical training upon students should be investigated with studies of different sample groups.

Physical training is one of the most important factors in athletic training in order to achieve great performance.

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