

Conclusions

As can be seen in Table 2, the physical, technical and psychological components of training are factors present in any year. On the other hand, the tactical and theoretical components appear only in the third year of instruction, because the opponent appears in the training strategy only in the third year.

Another aspect that can be seen in Table 2 is that, from one year to another, in quantitative terms, all indicators are growing. Differences between the first two years are given only by the number of training sessions. In the following years, however, the differences are due to the increase in the number of training sessions, but also to their duration. Thus, if there were 2 weekly training sessions of 60 minutes in the first two years, in the third year there were 2 weekly training sessions of 75 minutes, so that in the fourth year there were 3 weekly training sessions of 90 Min, plus the training provided in the training camp.

Another characteristic of the first-stage training model is given by the content of the training and the way in which the technical elements, the tactical actions, the physical, the psychological and the theoretical training are introduced in the training. In Table 3 we find the gradation of training for the technical elements and procedures according to the training year. It is noted that certain technical elements and procedures disappear after a certain period from the table. This does not mean that they will disappear from the training but that they will be included in the training of other technical elements.

We proceeded in the same way for the tactical actions. Table 4 provides a gradation in the training of individual tactical actions. As we can see, basic tactical actions have been introduced in the training because, without them, mini-handball cannot be played.

Physical training was approached similarly, each motor capacity being programmed in training according to the characteristics of the children with whom we work. Table 5 shows the development of motor capacity by year of training.

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Assessment of Students Physical Fitness by Using the Eurofit Test Battery

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Abstract

The purpose of the present research is to determine the students' physical fitness level, using the Eurofit test battery. If we determine it, we will have a benchmark based on which decisions must be made regarding the physical activity program that they have to carry out in daily activities. In conclusion we can say that the most important effects of the program applied for 12 weeks were over: static strength of the upper limbs, dynamic strength of the upper body, segmentary speed of the arms, body balance. The limitation of the study is given by the number of participants, but it opens the way to further such studies involving more subjects, to be conducted on a longer and a palette of means more diverse to determine the influence that the components of fitness have in young people and students.

Keywords: physical fitness, students, assessment

1. Introduction

Young people practicing regular exercise influences positively the processes of their growth and development, health and level of fitness. No effects were observed on growth in height and biological indices of maturation, but an important role was noted in weight control (especially on body fat and bone mineral) and on the risk indicators of chronic diseases (Malina, Bouchard and Bar-Od, 2004, p. 392).

A study carried out on young Finnish population reveals a correlation between a higher physical fitness and health aspects related to quality of life, so fitness for health must become a constant in the daily activities of all persons ((Häkkinen, Rinne, Vasankari et al., 2010, pp. 2-9).

A research conducted on high school students demonstrated the positive effects of the physical education lessons combined with sports activities, which have led to improved cardiovascular fitness. It was also noted that physical education lessons are sufficient as duration, but not in terms of intensity to improve aerobic fitness, so that subjects who participated in both activities had a final better level of cardiovascular fitness (Beets and Pitetti, 2005, pp. 25-30).

Another study conducted on youth from Denmark indicates that a large proportion of young people do not practice enough exercise and increasing the duration of these activities alienating habits harmful and lead to improved health status and self-perception as a physically active person (Verkooijen, Nielsen and Kremers, 2008, pp. 157-163).

2. Material - method

If we determine students' physical fitness level, we will have a benchmark based on which decisions must be made regarding physical activity program that they have to carry out in daily activities.

The research aims to determine students' physical fitness level using Eurofit test battery.

Research subjects are 8 students (female) at the Faculty of Physical Education and Sport, "Stefan cel Mare" University of Suceava, the study programme of Physical Education and Sports.

The research was conducted in the university sports facilities, which include: sports games hall, gym, swimming pool and outdoor artificial pitch.

The research period was: February to June 2016.

The applied tests to the subjects are from the Eurofit battery: 20 m endurance shuttle run, handgrip test, standing long jump, bent arm hang, sit ups in 30 seconds, sit and reach, plate tapping, 10 x 5 meter shuttle run, Flamingo balance test.

The applied work-out methodology was in accordance with the age particularities of the subjects and adapted to the university sports facilities being applied means from collective sports, bodybuilding, sport aerobic, motion games, swimming. In addition to activities carried out within the discipline Fitness, subjects were included in the academic programme another 7 hours of physical activity weekly.

3. Results and discussions

Table 1 presents data obtained by processing statistical and mathematical results obtained at the Eurofit battery tests by the subjects in the two tests carried out.

Table 1 Results at Eurofit battery tests of the subjects (female)

Statistical parameter	<u>Plate tapping</u> (s)		<u>10 x 5 meter shuttle run</u> (s)		Standing long jump (m)		<u>Bent arm hang</u> (s)		<u>Sit-ups in 30 seconds</u> (no. reps)		<u>Sit-and-reach</u> (cm)		<u>Handgrip test</u> (kg force)				<u>Flamingo balance test</u> (no. imbalances)		<u>20 m endurance shuttle-run</u> (m)	
	IT	FT	IT	FT	IT	FT	IT	FT	IT	FT	IT	FT	IT		FT		IT	FT	IT	FT
														D	A	D	A			
x	9.01	8.37	14.54	13.98	1.79	1.83	40.43	41.86	23.50	25.75	34.50	32.50	36.00	32.38	40.63	35.63	0.50	0.00	755.00	732.50
min	8	7.5	13.6	13.05	1.43	1.65	20	20	17	18	23	23	27	20	28	26	0	0	440	320
max	9.9	9.14	15.8	15.44	2.15	2.15	64	77	31	30	41	42	52	40	48	43	3	0	1460	1080
S	0.69	0.74	0.76	0.79	0.23	0.18	15.06	18.37	4.11	3.92	6.12	6.61	7.62	7.54	7.58	5.93	1.07	0.00	365.16	272.12
CV	7.67	8.83	5.22	5.62	13.08	9.97	37.26	43.89	17.47	15.22	17.73	20.34	21.15	23.29	18.65	16.64	213.81	0.00	48.37	37.15
t		1.80		1.46		0.387		0.159		1.12		0.628		0.957		1.47		1.32		0.140

p	>0.05	<0.05	<0.05	>0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Progress / regress	0.64	0.56	0.04	1.43	2.25	-2	4.63	3.25	0.5	-22.5
Progress / regress %	7.10	3.85	2.23	3.54	9.57	-5.80	12.86	10.04	100.00	-2.98

At plate tapping was obtained progress of 0.64 seconds (from 9.01s to 8.37s). At the initial testing, the individual values ranged between 8 and 9.9 seconds and at the final testing between 7.5 and 9.14 seconds. By applying the one-sided Student's test was obtained for t a value of 1.80, significant at $p > 0.05$ (figure 1).

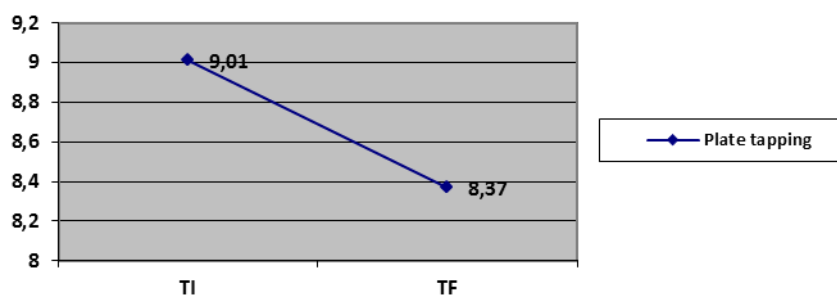


Figure 1 Evolution of the results at plate tapping (female)

At 5x10m shuttle run test, the progress of the group was 0.56 seconds (3.85%), from 14.54 seconds to 13.98 seconds. The homogeneity of the group was high (5.22%, 5.62%), but, by applying Student test, a not very significant value for threshold was obtained (0.05) (Figure 2).

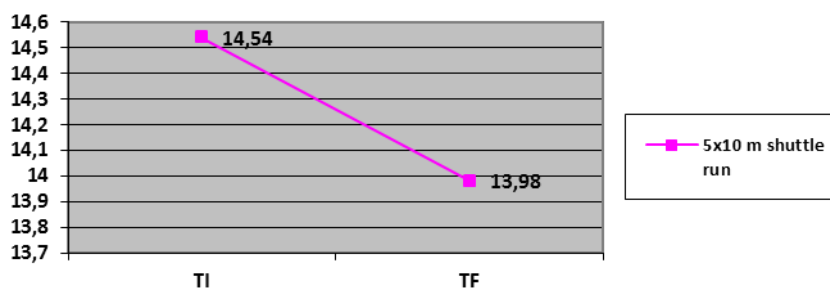


Figure 2 Evolution of the results at 5x10 m shuttle run (female)

The progress at the standing long jump test was 4 cm or 2.23% (IT = 1.79m; FT = 1.83m) and homogeneity between the two test group improved from medium (13.08 %) to high (9.97%) (figure 3).

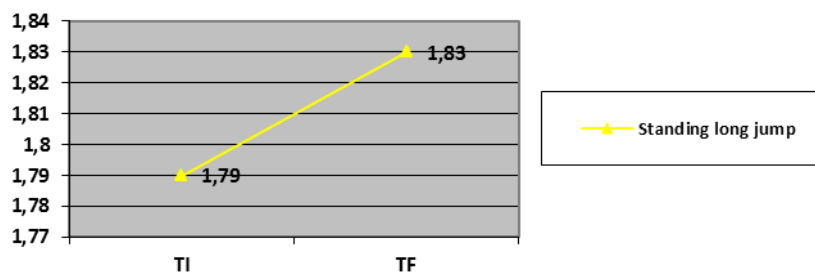


Figure 3 Evolution of the results at standing long jump (female)

In order to determine the strength of upper limbs was applied bent arm hang test, in which the individual values were in the range 20-64 seconds at the initial testing and between 20 and 77 seconds at the final testing; the progress was 1.43 seconds (from 40.43 to 41.86 seconds). The homogeneity of the group was medium (15.06%, 18.37%) (Figure 4).

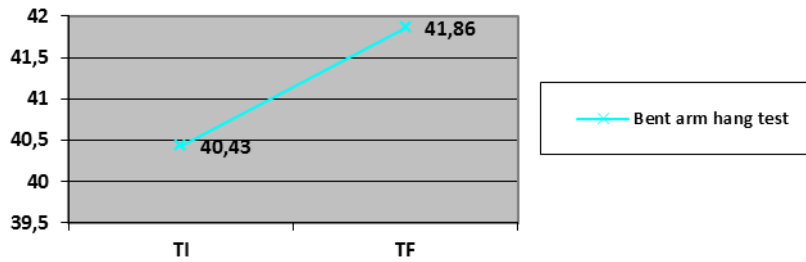


Figure 4 Evolution of the results at bent arm hang test (female)

At sit ups in 30 seconds was starts with an average of 23.50 repetitions and at the final the average result was 25.75 repetitions, the progress being 2.25 repetitions (9.57%). Regarding the homogeneity, this was high (4.11%, 3.92%) (Figure 5).

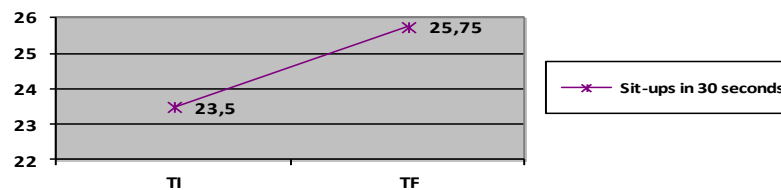


Figure 5 Evolution of the results at Sit-ups in 30 seconds (female)

To assess mobility, the sit and reach test was applied in which subjects were in decline with 2cm (-5.80%) (TI = 34.50cm; TF = 32.50cm). Individual values have a wide range of spread: 23-41 cm in initial testing and 23-42 cm at final testing (Figure 6).

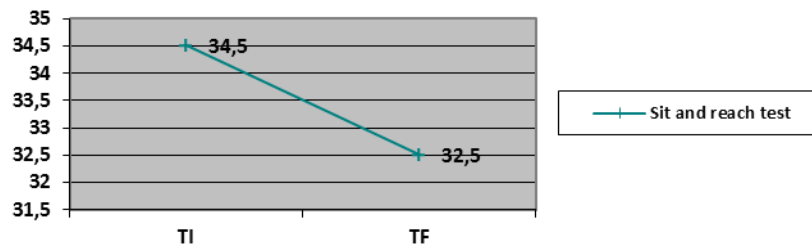


Figure 6 Evolution of the results at Sit and reach test (female)

At the handgrip test, the progress for dexterous arm was 4.63kgf (12.86%) and for awkward arm 3.25kgf (10.04%). In this case too, is the same trend: dexterous arm strength is superior as about 10% of that awkwardly arm. Variations of the individual caused that at the initial testing the homogeneity to be low (21.15%, 23.29%), and medium at the final average (18.65%; 16.64%) (Figure 7).

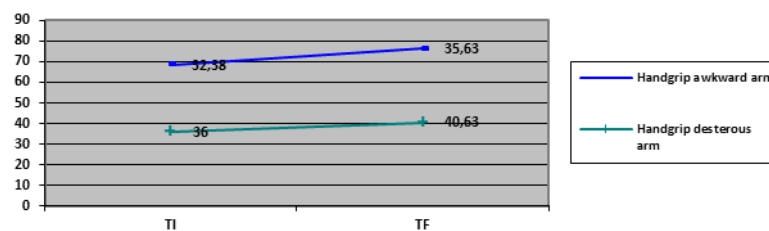


Figure 7 Evolution of the results at handgrip test (female)

On Flamingo balance test, was starts from an average of 0.5 imbalances, and the final result was 0 imbalances (Figure 8).

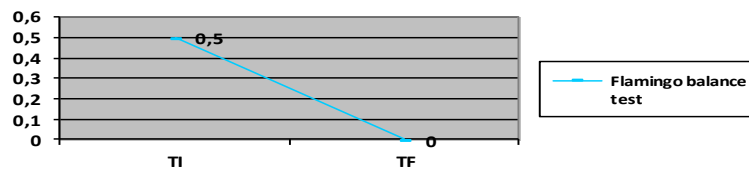


Figure 8 Evolution of the results at Flamingo balance test (female)

At the 20m shuttle run test, the results were in decline with 22.5m (2.98%) from 755m to 732.5m. Individual results were between 440 and 1460m at the initial testing, and between 320 and 1080m at the final testing; these results have made that the coefficient of variation had the highest value (48.37%, 37.15%) and homogeneity of the group to be small. By applying the Student test was obtained the lowest value ($t = 0.14$) (Figure 9).

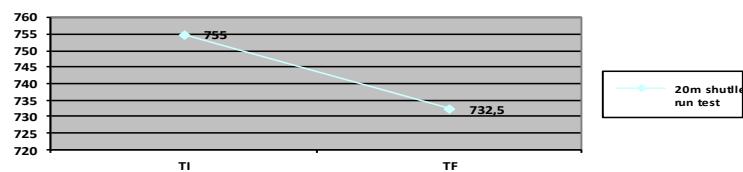


Figure 9 Evolution of the results at 20m shuttle run test (female)

4. Conclusions

Although the program was applied weekly and the subjects were in the program further 7 hours of practical activities were and evidence that there have been regresses: sit and reach (-2cm) and 20m shuttle run (-22.5m).

Statistical significance for threshold of 0.05 at the Student's test was obtained at plate tapping.

Through the program applied during the 12 weeks it was observed that not all fitness components have been improved in the same way. Progress over 5% was obtained for: balance (Flamingo balance test), static muscle strength (handgrip), dynamic force (sit up in 30 seconds), segmentary speed (plate tapping).

A highlight of the fitness components that were developed by the programme applied is shown in Table 2.

Table 2 Identification of the fitness components on which the program took effect

Fitness components	Eurofit tests	Progresses higher than 5%	Progresses less than 5% or regresses
Cardio-respiratory endurance	<u>20 m endurance shuttle-run</u>		↓
Static strength	<u>handgrip test</u>	↑	
Explosive strength	<u>standing long jump</u>		↓
Endurance strength	<u>bent arm hang</u>		↓
Dynamic strength	<u>sit-ups in 30 seconds</u>	↑	
Flexibility	<u>sit and reach</u>		↓
Segmentary speed	<u>plate tapping</u>	↑	
Speed movements	<u>10 x 5 meter shuttle run</u>		↓
Body balance	<u>Flamingo balance test</u>	↑	

The study points out that 50% of Greek and Cypriot teenagers meet the requirements for performance of physical activity and their involvement in sport specific clubs profile at least 2 times a week has the effect of improving the physical condition because it increases the time granted for practicing physical activities (Constantinos, Loucaides, Jago Russell, Theophanous, 2011, pp. 1-11).

In conclusion we can say that the most important effects of the program applied for 12 weeks were over: static strength of the upper limbs, dynamic strength of the upper body, segmentary speed of the arms, body balance.

The limitation of the study is given by the number of participants (8), but opens the way to further such studies involving more subjects, to be conducted on a longer and a palette of means more diverse to determine the influence that have the components of fitness in young people and students.

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