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STUDY ON THE DEVELOPMENT OF MOTOR AEROBIC ENDURANCE THROUGH SPECIFIC MEANS OF PLAYING FOOTBALL IN SECONDARY SCHOOL STUDENTS

GROSU Bogdan-Marius
Stefan cel Mare University of Suceava, Romania
Email address: grosu.bogdan@usm.ro

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Abstract:

The theoretical importance of the paper lies in the fact that it carries out a proper analysis of the theoretical concepts related to the motor quality endurance, the content of the school curriculum related to endurance and the specific training methods of football aimed at developing this motor quality.The practical importance of the work lies in the fact that it develops and verifies the effectiveness of a training model based on the specific training methods of the game of football, aimed at the development of the aerobic endurance quality in secondary school students.

Introduction

The development of motor skills is one of the most important tasks of the instructional-educational process, for which there are special provisions and indications in the school curricula and in the system of verification and evaluation of students in this subject. [1,3]

In practical terms, the development of motor skills is the backbone of the entire teaching process, which is addressed in all lessons, in varying proportions and with different priorities, depending on the age of the pupils, the possibility of developing certain skills at different ages and at a particular stage of the school year, the material resources available, the importance of the physical qualities concerned, etc. Motor skills are of broad use both in physical education and sport and in social work, and the pedagogical aim in their development is to achieve the highest possible quality indices in the associated development of at least two skills. It is almost impossible, for example, to develop speed without, to varying degrees, the development of lower-body strength or endurance, these domains being determined by the number of repetitions, distances covered, intensity of exercise, etc. [2,6]

Knowledge of these aspects of the process of motor skills development leads to the activity of preparing lessons in which those means that can lead to the achievement of the proposed goal must be carefully selected and dosed. According to the specialized method, the development of physical skills is achieved in varying proportions throughout the lessons, with speed and skill being programmed in the third to fourth links, and strength and endurance in the sixth. [2,10]

Knowing the fact that the development of motor skills is achieved in many situations in an associated way and in other variants than those presented above such

as: speed-force, speed-resistance, etc., then their development process no longer remains strictly localized in the above-mentioned links, their development being programmed in the other links of the lesson if the appropriate organizational-material conditions are created to ensure the real development of 1-2 skills concomitantly with the improvement of some motor skills, the practice being carried out with the dominant and priorities set by the teacher. [3,4,5]

Matherial and method

As a general guideline, the following training parameters are significant for the development of aerobic endurance:

- training intensity should be below 70% of maximum speed; intensity can be measured by performance time over a given distance, speed in meters per second, or heart rate (training stimuli that do not increase heart rate above 130 beats per minute do not significantly develop aerobic capacity);
- the duration of an isolated stimulus (one repetition) should be of several different sizes ranging from 60-90 seconds to 3-10 minutes;
- rest breaks should be calculated in such a way that the next stimulus occurs during the period of favorable changes caused by the previous work (between 45-90 sec.); for aerobic endurance the rest interval should not exceed 3-4 minutes (usually the work can start when the heart rate drops to 120 bpm.);
- normally, the activity during the rest break is of reduced intensity to stimulate biological recovery. [6,7]

Most anaerobic endurance development is cyclic and high intensity. The parameters of anaerobic endurance training are:

- the intensity can range from submaximal to maximal; even if in training the intensity is varied, for the development of anaerobic endurance, intensities of 90-95% should predominate;
- duration should be between 5 and 120 seconds, depending on the type of intensity used by the athletes;
- the rest break after intense activity should be long enough to compensate for oxygen debt; this can be 2-10 minutes; it is recommended to divide the total number of repetitions into several sets of 4-6 repetitions each with the longest interval between sets in order to oxidize lactic acid
- activity during the break should be active, light and relaxing;
- the number of repetitions should be low to medium.[4,5]

This work is of experimental type, with the participation of students of classes VIII A and B of Burla Secondary School. The period of conducting the experiment was from 11.09.2023 to 17.05.2024.(approximately one school year).

The students will be tested in relation to the level of their endurance capacity, followed by the application of a program for the development of the endurance motor quality through the specific elements and procedures of the football game. At the end

of this program, the endurance capacity will be tested again, respecting all the material conditions for the administration of the samples and the level of development of the endurance motor quality.This group is composed of 9 male pupils, aged 14 years.

The following tests were used:

1. Endurance running: 1000 m
2. Long jump from the spot; (explosive hold - lower limbs strength)
3. Abdominal strength test - 30" against stopwatch: (strength)
4. Combined varied running 4x (30 meters x 4)

The method of developing physical capacities in accordance with the specifics of the game effort

Effort in football is characterized by the following specific notes:

- ✓ unequal durations of engagement in effort;
- ✓ unequal durations of relative recovery;
- ✓ acyclic alternations of endurance, speed and strength efforts;
- ✓ acyclic alternations of maximal, medium and low efforts.

The method of developing game-like effort structures consists in using the means of training in such a sequence and alternation of demands that the characteristics of game efforts are realized. [8,9,10]

Methodical indications:

- ✓ the duration of the exercises will be variable, similar to those occurring in the game: 1-30 sec. maximum effort, 1-200 sec. medium effort, 1-5 min. reduced effort, all performed continuously;
- ✓ breaks will have an unequal duration and an indifferent order cuprise between 1-30-40 sec;
- ✓ the moments of exercise should, as far as possible, demand the motor skills in an indifferent sequence;

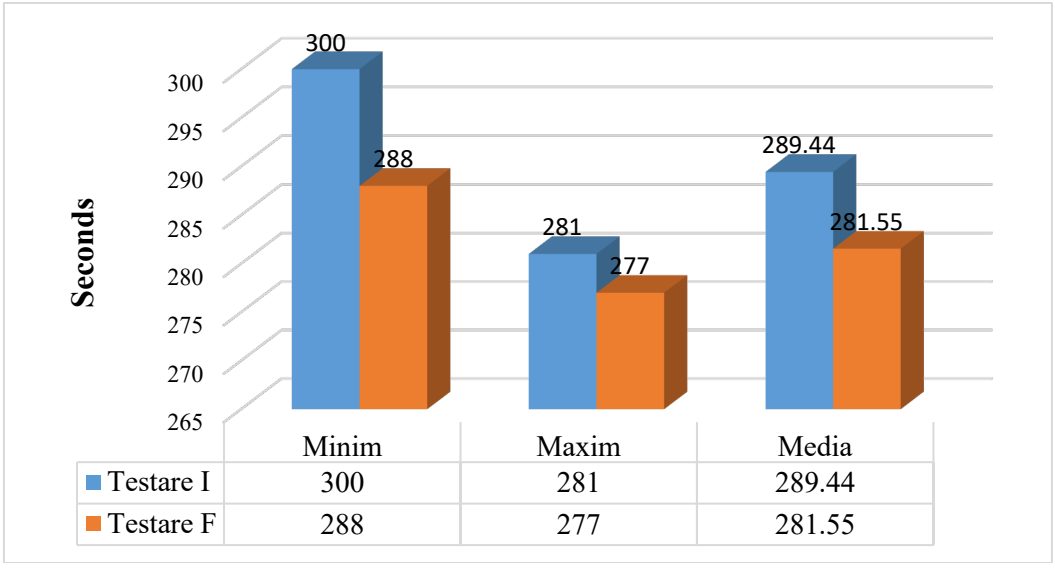
Example of interval training specific to football:

1. passes in 3 from free movement from 60-70 m. from goal with completion; 5-6 repetitions; tempo 2/4- 4/4; pause between repetitions 50-60 sec; pause after series 5-6 min;
2. 3vs2 with finish from 60-70 m. from goal; 6-7 repetitions; time 3/4; pause 60-80 sec.; series break 5-6 min.;
3. action-game 2vs4 from 60-70 m. from the goal; 7-8 repetitions; timing 2/4-4/4, pause between repetitions 90-120 sec.; series break 5-6 min;

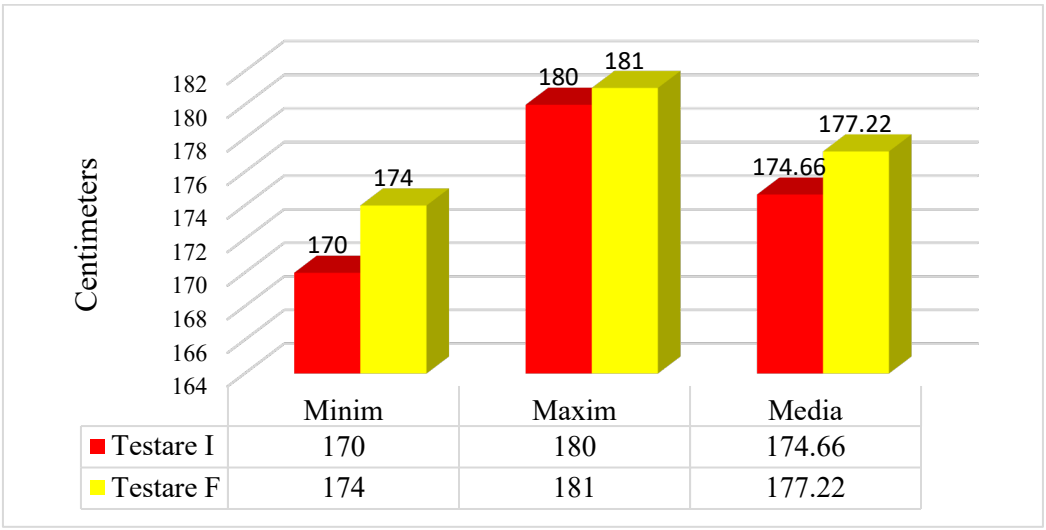
Table nr.1 - Comparing test results

Nr.crt.	First and last name	Endurance running 1000 m (sec)	Long jump from the spot (cm)	Abdominal crunches in 30 seconds (number of repetitions)	Combined running 4x(4x30m) (sec)

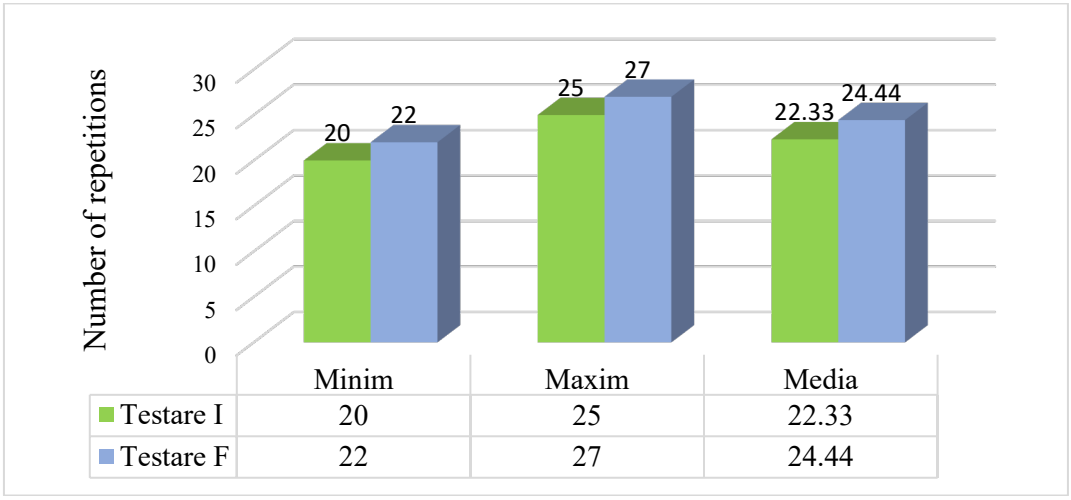
		T.I	T.F	T.I	T.F	T.I	T.F	T.I	T.F
1.	**A.C.**	**300**	**288**	**171**	**176**	**22**	**24**	**35,45**	**32,05**
2.	**B.F.**	**297**	**286**	**170**	**175**	**23**	**25**	**34,42**	**30,32**
3.	**B.K.**	**295**	**281**	**172**	**177**	**24**	**26**	**33,39**	**30,19**
4.	**C.D.**	**290**	**283**	**173**	**174**	**21**	**23**	**31,27**	**28,27**
5.	**C.R.**	**285**	**279**	**175**	**176**	**20**	**24**	**32,19**	**29,09**
6.	**F.R**	**282**	**277**	**179**	**180**	**25**	**27**	**30,22**	**28,42**
7.	**G.B.**	**281**	**278**	**180**	**181**	**22**	**24**	**34,30**	**30,37**
8.	**M.N.**	**286**	**280**	**178**	**179**	**23**	**25**	**31,34**	**27,54**
9.	**R.N.**	**289**	**282**	**174**	**177**	**21**	**22**	**34,55**	**31,35**
Arithmetic average		**289,44**	**281,55**	**174,66**	**177,22**	**22,33**	**24,44**	**33,01**	**29,73**
S.T.D.E.V.		**6,69**	**3,64**	**3,60**	**2,33**	**1,58**	**1,50**	**1,81**	**1,50**
C.V.		**2,31**	**1,29**	**2,06**	**1,31**	**7,07**	**6,13**	**5,48**	**5,04**



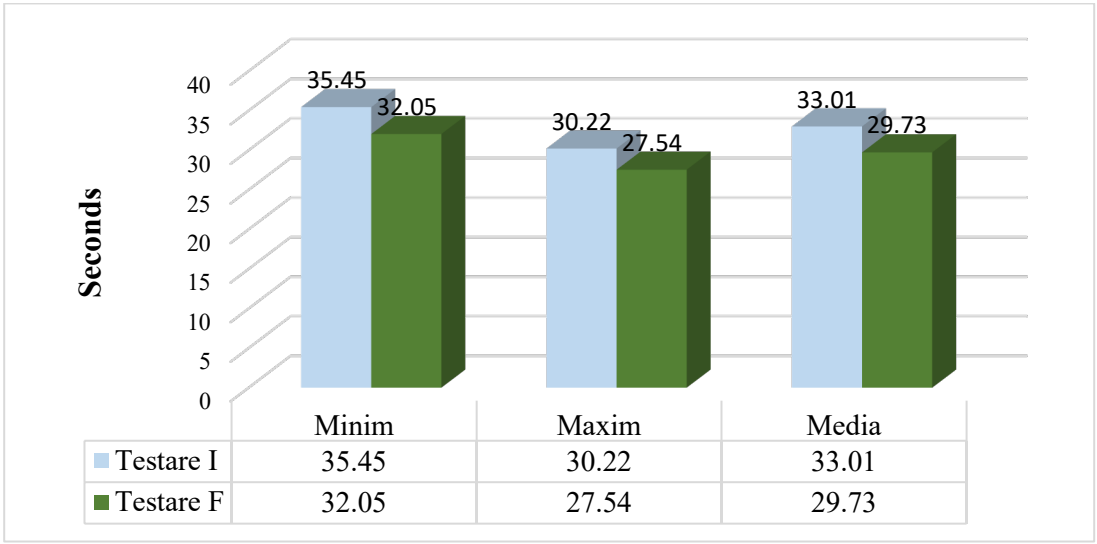
Grafic nr.1 - Endurance running 1000 m (sec)



Grafic nr.2 - Long jump from the spot (cm)



Grafic nr.3 - Abdominal crunches in 30 seconds (number of repetitions)



Grafic nr.4 - Combined running 4x(4x30m) (sec)

Conclusions

In graph no.1 we can easily conclude that we have a homogeneous group if we look at the coefficient of variability and standard deviation values. There is progress after the final test, the mean is 289.44 seconds, compared to 281.55 in the initial test. We note that there are lower values at the final test than at the initial test. S.T.D.D.E.V. at initial testing 6.69 and at final testing 3.64. C.V at initial testing was 2.31 and at final testing 1.29.

The long jump from the spot in graph no.2 shows that the students in the experimental group obtained a minimum score of 170 cm in the initial test and a minimum score of 180 cm in the final test, the average being 174.66 cm, which shows that progress has been made. In the final test the lowest jump was 174 cm and the longest was 181 cm, the average being 177.22 cm.

In graph no. 3 with the 30-second crunches test, we can also say that we can see a little progress, if we look over the average number of repetitions, from the initial test 22.33 and the final test 24.44. The number of repeats per pupil has increased.

Graph no.4 representing the combined running test 4 x(30 m x4) shows a progress from all the pupils tested, following the use of the methods and means of

training specific to the game of football. The average from the initial test was 33.01 seconds and from the final test 29.73 seconds.

The more frequent use of extracurricular activities (work with representative teams, hikes, excursions, competitions) which can supplement the need for movement in general and improve the quality of stamina in particular.

It has been found that it is not good to work only in slow and uniform tempos, but that efforts with varying and increasing intensities are also needed to ensure a multilateral development of resistance.

Special emphasis should be placed on keeping a uniform tempo, as students tend to change tempos constantly and perform any exercise with high intensity.

Endurance exercises are particularly important during this period in balancing the major functions, especially cardiorespiratory, but they also have a special role in maintaining mental balance.

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