

# EXPERIMENTAL RESEARCH ON THE CORRELATION BETWEEN THE EVOLUTION OF THE GENERAL MOTOR SKILLS AND THE PHYSICAL DEVELOPMENT INDICATORS IN 14-15 YEAR OLD STUDENTS

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## Abstract

Physical education and sports act concentrically on the individual for his formation, education, shaping and social integration, with a maximum efficiency, as well as in terms of permanent education.

*Keywords: physical education, motor ability, physical development, effort capacity;*

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## 1. Introduction

Physical education and sports, through their various forms of organisation and, mostly, through heuristic methodology, are appealing due to their emotional character, the special contribution they bring to the development of the creative capacity of the performers, of the spirit of self-assertion, "improvement" or "self-improvement".

According to Gh. Cârstea, physical education is the human activity of systematically practising physical exercises under the form of a bilateral instructive-educative process for reaching clearly delineated goals, among which the following ones are of primary significance: improvement of the performers' physical development and improvement of the performers' motor skills.

In the work "Terminologia educației fizice și sportului" (*The Terminology of Physical Education and Sports*), the motor ability is defined as "the range of innate and acquired motor possibilities which allow us to make efforts which are varied in terms of structure and dosing".

Along with other forms of education and, given the proper social conditions, physical education may acquire the significance of one of the basic factors of the multilateral development of the individual.

This will lead to an increase in the efficiency of the Physical Education class in middle education, both quantitatively (acquiring a great volume of movements in a shorter period of time), as well as qualitatively (the accuracy of the exercises and the durability thereof), taking into account the particularities of this activity in middle education.

Eugeniu Scarlat says that motor skills "are innate characteristics of the human body and their level of initial manifestation depends on the hereditary genetic fund".

People are born with certain indicators of the motor qualities. These indicators evolve ontogenetically, due to life, up to a certain age, then they begin to decrease in differentiated rhythms determined by many variables. By practising physical exercises as bilateral processes or as an independent activity, the development of the motor ability indicators may accelerate, phenomenon known as "the education of motor abilities".

Motor ability is defined as the range of innate and acquired motor possibilities which allow us to make efforts which are varied in terms of structure and dosing.

Synthesising the perspectives of several specialists (Epuran M., Fleshman, Hebeliuk, Matheus), Gh. Cârstea defines it as a "dynamic (progressive or regressive) human potential given by the dialectic unity between the motor qualities, abilities and skills".

Motor qualities condition the acquisition of motor skills. At the same time, they favour the exploitation of motor skills in specific competition conditions.

The effort capacity of the body has favourable influences not only in performance sports, but on the mental activity as well, which, as it is known, holds 70% of the work time.

## Working hypothesis

The paper herewith studies the correlation between two basic goals of physical education and sports, namely the development of the general motor capacity and the improvement of the physical development indicators in 14-15-year old students.

The initial testing was held at the beginning of October and the final one in May, recording both physical development and motor capacity data in a group of 53 students.

## 2. Research methods and techniques

### *Bibliographic documentation*

We used as documentation sources various works such as: the theory and methodology of physical education, psychology, pedagogy, mathematical statistics, the methodology of research, sports management.

*The study of school documents:* For this paper, we have studied the following school documents: curriculum, year and semester schedules, Physical Education teacher's book, with the records, state of health, results obtained in tests and evaluation.

*The method of observation.* This method allowed us to monitor the factors involved in the dynamics of the studied phenomenon, the execution of drive systems, the students' receptiveness and interest in their physical development and the influence of effort in lessons.

*The method of measurements* is very necessary and efficient for recording the results of the indicators of physical development and general motor capacity, using metric techniques and measurement instruments such as the height meter, the scales, the measuring tape, the chronometer.

*The method of the experiment* – it helps us verify a previously formulated hypothesis.

*Statistical techniques*, used for measuring by counting (recording), classifying and comparing the results of the research.

*The graphical method* has been used for visualising and presenting the data in a more relevant and suggestive manner.

### **The used testing system**

- movement speed – 50-meter sprint with standing start, in straight line and on level ground. It was organised as a contest, the students running two by two;
- for abdominal strength – bringing one's torso to the vertical position from the supine position. Bringing one's torso to the vertical (the torso must form a  $90^0$  angle with the lower limbs) holding the hands to the back of the head, from the supine position, straightened knees, feet held down on the ground at the level of the ankles by a colleague, time – 30 seconds. It was done once;
- for medium-term or mixed resistance, 1000-meter run. Upon arrival, they were informed of their respective times. The test was carried out once.

### *For motor skills:*

- long jump - two attempts out of which we recorded the best result;
- ball throw test - two attempts out of which we recorded the best result. The result was expressed in meters.

For determining the physical development, we made the following measurements in the school surgery:

- height (T) – it is measured using the height meter and it is expressed in centimetres;
- body weight (G) – it is measured using the scales and it is expressed in kilograms and grams.

## 3. Processing and interpreting the results

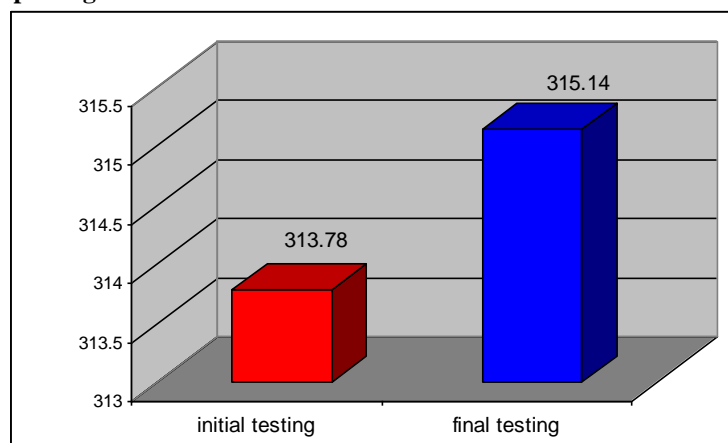


Figure 1. Arithmetic mean – Quetelet indicator – boys

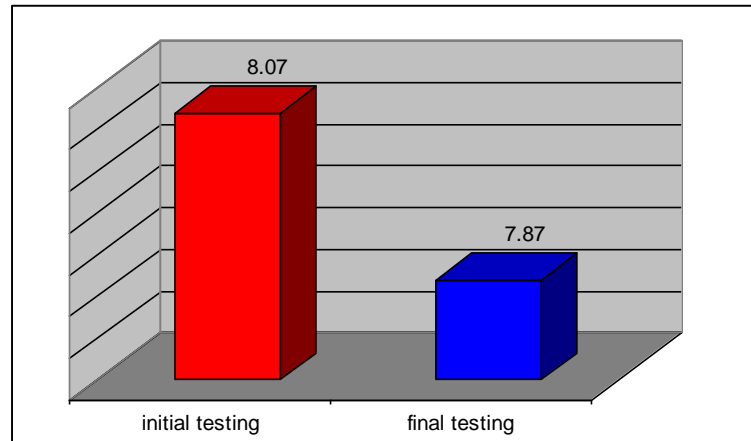


Figure 2. Arithmetic mean – movement speed – boys

The correlation between the Quetelet physical development indicator and the movement speed recorded a -0.08 value in the initial testing, which represents an almost insignificant negative correlation and in the final testing the correlation indicator measured -0.05, a negative correlation also, but tending towards a positive one. (fig.1, 2).

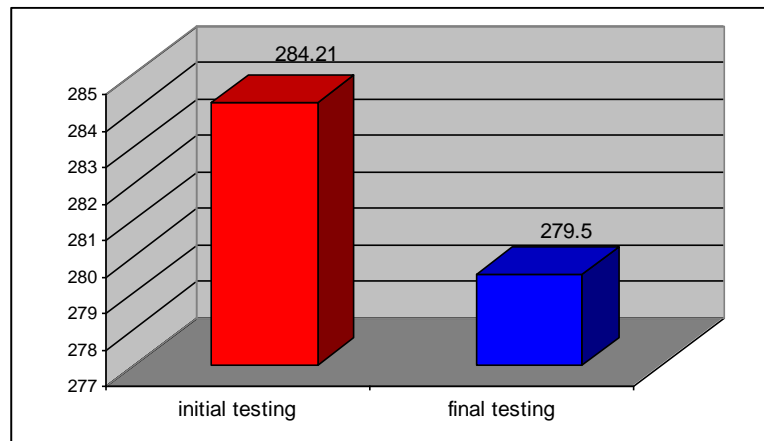


Figure 3. Arithmetic mean – mixed resistance – boys

The correlation indicator between the physical development and the medium-term or mixed resistance had a 0.53 value in the initial testing, thus indicating a moderate positive correlation and in the final testing the indicator decreased down to 0.50, indicating a moderate positive correlation. In conclusion, for pubescent boys, the correlation between the physical development and medium-term resistance is positive and moderate. (fig.3)

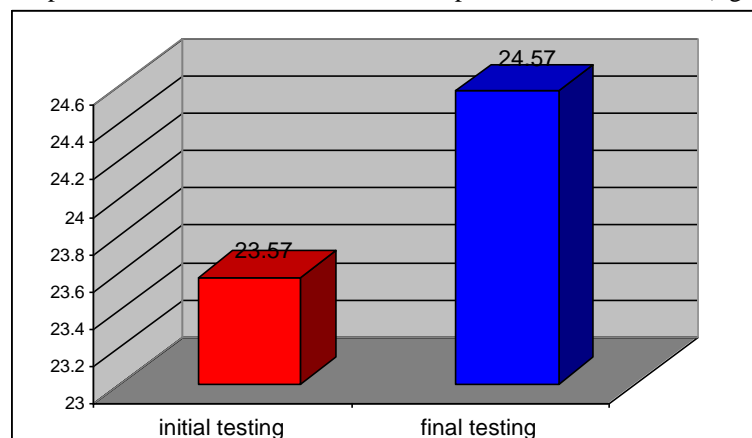


Figure 4. Arithmetic mean – abdominal strength – boys

The correlation indicator for the abdominal strength had the following results: in the initial testing a value of -0.32 which indicates a negative and weak correlation and in the final testing a value of -0.15, therefore, still negative, but insignificant. (fig.4).

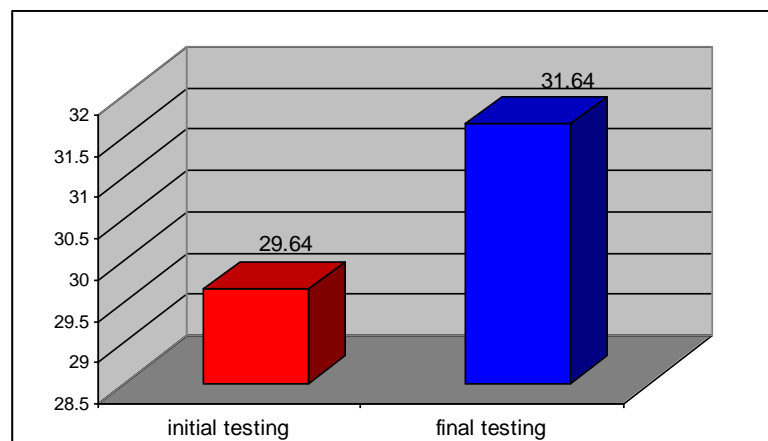


Figure 5. Arithmetic mean – ball throw – boys

The correlation indicator between the physical development and the ball throw had a value of -0.25 in the initial testing, which represents a moderate negative correlation, and a value of 0.14 in the final testing, therefore, the correlation became positive, but it is weak. In conclusion, it is very important that the correlation indicator became positive. (fig.5)

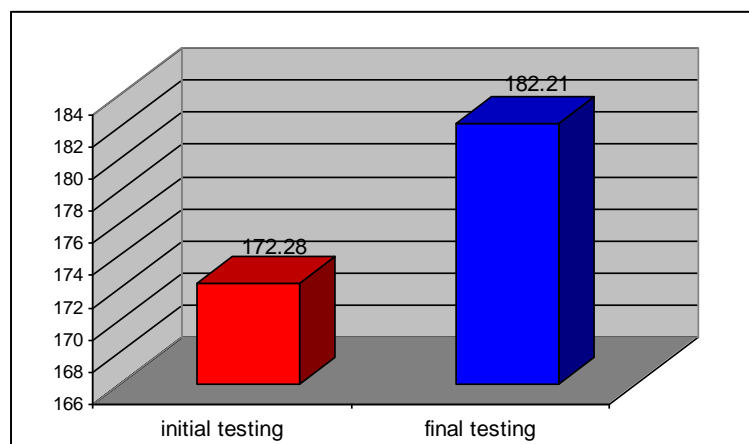


Figure 6. Arithmetic mean – long jump – boys

Concerning the correlation between the physical development and the long jump, the value in the initial testing was 0.03, which indicates a positive, but weak correlation, and in the final testing the correlation became negative, the value being 0.01. (fig.6)

#### 4. Conclusions:

Based on this study, we have arrived at the following conclusions regarding 14-15-year old students:

- there is a negative correlation between movement speed and physical development in boys;
- there is a positive correlation between mixed resistance and physical development;
- there is a negative correlation between abdominal strength and physical development, the conclusion being that this test is not correlated with the physical development of 14-15-year old students, probably because no steps have been taken for developing the force of the abdominal muscles;
- there is a positive correlation between ball throw, a tossing type of throw, and physical development, for the students who have acquired this skills correctly;
- there is a negative correlation between long jump and physical development at this level – based on our remarks, we can say that they have not acquired this skill correctly.

#### Proposals

- a special attention should be paid to the development of dynamic force at the level of the upper and lower limbs and of the scapular arch by using the basic motor skills and the motor skills specific to the various branches or sports tests;
- we should act for the prevention and correction of any physical deficiencies, in particular related to the spine, by developing the muscles of the back and abdomen.

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## ANALYSIS OF THE CORRELATION BETWEEN THE GENERAL MOTOR SKILLS AND THE PHYSICAL DEVELOPMENT INDICATORS IN 14-15 YEAR OLD FEMALE STUDENTS

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### Abstract

Physical development ranks among the primary concerns of education and it is an action aimed at influencing the correct and harmonious growth of the human body, concretised in morphological (somatic) and functional qualitative indicators as close as possible to the values assigned to a healthy body at various ages.

*Keywords: motor education, physical development, motor capacity, multilateral development;*

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### 1. Introduction

Physical education in nowadays' society contributes to the multilateral development of the individual and of the personality.

Physical education has an important role as a special factor for the rational regulation of man's physical development in line with the requirements imposed by the society. It is on physical education that depend directly the tendencies consciously imprinted on physical development, orientation, the level thereof, as well as which motor aptitudes, skills and habits are formed and accomplished during one's life.

At school, students must be given the knowledge, skills and habits which they can valorise for independently practising physical exercises during their spare time, for increasing work capacity, for a harmonious physical development and for compensating and preventing the appearance of physical deficiencies.

The formative aspect of physical education is of a primary importance for the rational use of man's motor skills in practical activities. Another equally important aspect of physical education is the influence it exerts over the range of natural characteristics of the human body, part of the man's physical traits: stimulation and regulation of the development thereof through normalized functional efforts related to the motor activity (physical exercises), as well as the optimisation of the individual lifestyle and rational use of the natural environmental conditions. This aspect of physical education is known as the education of motor qualities or, in other words, physical education in a narrow sense.

Furthermore, the optimisation of physical development aims at obtaining higher and higher indicators of physical training. The notion of "physical perfection" generalises the representations of the optimal harmonious physical development and the level of man's multilateral physical training. In fact, it is implied that this measure optimally corresponds to the requirements of his work and other type of activity, it expresses a high level of the individual's physical development and answers to the laws of maintaining a good health for many years.

Physical education and sports are not limited to the biological aspect, but comprise the entire range of education, the multilateral formation and development of the personality. Physical education and sports act concentrically on the individual for his formation, education, shaping and social integration, with a maximum efficiency, as well as in terms of permanent education.

Along with other forms of education and in the proper social conditions, physical education may become one of the basic factors of the individual's multilateral development.

Therefore, physical education and sports represent a social phenomenon which appears at the same time with the society and evolves in keeping with the laws of the individual's multilateral development.

In "Teoria Educației Fizice și Sportului" (*The Theory of Physical Education and Sports*), Toma Badiu defines physical education as the activity which systematically valorises the range of physical exercises for improving man's biological potential in keeping with social requirements.

In the work "Terminologia educației fizice și sportului" (*The Terminology of Physical Education and Sports*) physical development is defined as the "result, as well as action, aimed at influencing the adequate and harmonious growth of the human body, concretised in morphological and functional, qualitative and proportional indicators as close as possible to the values assigned to a healthy body at various ages".

The motor capacity is a fundamental notion in "Teoria și metodica educației fizice și sportului" (*The theory and methodology of physical education and sports*), even if there is no unanimously accepted definition. In the work