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ABSTRACT
DOCTORAL THESIS

**IMPROVEMENT OF BIO-MOTOR POTENTIAL
OF CHILDREN AGED 6 TO 9 BY MEANS OF
ATHLETICS**

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Key words: bio-motor potential, athletics, motor qualities, early training, pre-puberty age

The mutations produced in the paradigms of knowledge, the appearance of new cultural stimuli, the diversification and continuous specialization of cognitive fields, as well as the rapid changes of the social needs, require an attentive and complex proportioning of the educational content.

In the current context that provides various areas of interest, the athletics must have a basic place within the range of preoccupations of the people of all ages, for the improvement of the indices of physical endurance of the body, all the more so the present range of preoccupations lead to sedentariness and implicitly, to obesity – which virtually represents a warning signal. Physical activity must remain a permanent activity in order to keep the balance of human personality.

The actuality of the theme is justified by the fact that a tendency in the decrease of the selection age is globally observed for most sports branches, which determined a new perspective for athletics, in relation to the beginning of the selection and the training. A living proof of this tendency is that, starting with the year 2011, FRA (The Romanian Athletic Federation) implemented municipal, regional and national competitions for a new age category, namely the category for 8-9 years old children. Thus, the coach is bound to put down the selection age to 6-8 years of age.

Even in 2009, when choosing the subject of this work, I somehow guessed these changes substantiated by organization of international competitions for an age segment lower than the initial one (example: World Children's Championship that took place in Ankara, 2011).

The main reason for choosing this subject is the lack of studies referring to the role of athletic means used under the form of the game to the improvement of the bio-motor potential at school age under discussion, as well as the highlighting of the possible differences between the control and experiment groups, a situation that deprives the specialists of a system of references absolutely necessary for the training process.

My interest for this theme and for this age stage comes from a very pleasant experience that I had at the beginning of my professional activity when I noticed the joy, the enthusiasm, and I would even say the total involvement of the children in the sports activity, not found in other age stages.

Knowing the interest of the children for physical activity, game and sportive activities, we have the duty to make the most out of it, by adequately channelizing the effects of physical exercise, so that, along with the strengthening of the body, the child's personality should be positively affected morally, emotionally and intellectually.

All these considerations, as well as the fact that I wanted to capitalize my experience of work with the young students as well, led to the fact that I chose this subject and I started this experimental demarche in the direction of the investigation of the bio-motor potential of the 6 to 9 years old age stage.

The first part represents the theoretical foundation, where I treated the conceptual delimitations referring to physical education that is a subject of the National Curriculum. The theoretical foundation mainly targeted the highlighting of the bio-psycho-motor particularities of the children before puberty age, the importance of physical education and sports for shaping the child's personality, the early athletic training, modern directions and orientations concerning the athletic training of the primary school students.

The second part of the work represents the preliminary research concerning the possibilities to improve the biomotor potential by athletic means with emulative-ludic characteristics for pre-puberty children of ages between 6 and 9, by which we check the statistics hypothesis (null).

The third part illustrates the personal research concerning the improvement and optimization of the biomotor potential of the 6 to 9 years old children by athletic means.

The experiment took place during the *athletic sports classes*, both in the *sports room and on the stadium* belonging to Elementary School no. 190, Bucharest city, during 2012-2013 school year. The initial test was carried out during the first two weeks of September 2012. The final test was carried out in the end of 2012-2013 school year, during the week 10-23 June 2013. *The athletic classes took place twice a week and each lesson lasted for 90 minutes.*

The experiment group consisted of 31 subjects, students of 1st and 2nd vocational classes, with *athletic sports specialization, belonging to* Elementary School no. 190, Bucharest city. The control group represented a sample of 30 students of ages between 6 and 9, of the Elementary School no. 190, who participated in the physical education and sports classes within Elementary School no. 190, while the second control group was a group of 20 children of the same age who regularly train in athletics on the stadium “Viitorul”.

Research premises

1. The pre-puberty age requires a multilateral athletic training, starting from the consideration that the play and implicitly the emulation are features specific to the age category under study in our research.
2. The optimization of the expression of the motor potential requires an active and conscious participation of the child, an essential aspect for the efficiency of any type of activity.
3. The constant application of the diversified means concerning the development of the motor level leads in time to the development of those necessary abilities that can be subsequently accessed by the future athletes in their competitive evolution.

The purpose of the research was the elaboration and implementation of certain models of athletic training for children of ages between 6 and 9, this purpose coming to help the specialists in the field who face a new tendency related to athletes training – early training – due to the changes of the national and international competition schedule that involve both national and international competitions such as **The World Children’s Championship - Ankara 2011, The Olympic Games from Singapore -2011, Nanjing – 2014, World Junior Championship**, while at the national level, City and National Competitions for Children were implemented for the 3rd category – a category for the 9 years old children (that also includes younger children).

Objectives:

-Pointing out several conceptual aspects concerning the collocation “physical education/sports in primary education”;

- Improvement of effort capacity of the pre-puberty students included in the research program, by athletic means;
- Preparation of the instructive and operational design of the research;
- Identification of the effects created as a result of the experimental approach of certain athletic training programs that play their stake on the ludic and emulative nature, on multilateral training, on the mixture of treated themes;
- Specific drawing of conclusions following the completion of the experimental research, revealing the existent interrelations between the research context and the content of the practical activity.

Tasks:

- Identification and study of the bibliographical multidisciplinary and cross-disciplinary references that represent the theoretical and methodical coordinates related to the theme;
- Delimitation of the research period and of the moments when the tests are carried out;
- Providing the necessary devices and means;
 - Establishing the target sample of the experimental design, as well as carrying out the bio-motor screening after the testing;
 - Establishing the reference values and the parameters under study, as well as the statistical indicators that are relevant for the research;
 - Drafting an athletic training program that describes the customized style for application of the contents of the educational curriculum for practical sports training, vocational branch, sports profile, ATHLETIC sports specialization;
 - Application of the conceived program on the selected subjects in order to improve their motor capacity;
 - Physiological screening of the children from the target sample as a result of the spirometric measurements and of the monitoring of heart rate of the subjects in a 600m race within the initial and final testing;
 - Statistic scanning following the statistical-mathematical processing of the data collected in various moments of the research;
 - Marking out the bio-motor differences between the 3 lots of subjects that took part in this research, after the drafting of the conclusions.

Hypotheses of the research

- The practice of a higher number of physical exercises with the special athletic classes provides the positive constant growth and development of all morphological-functional parameters, as well as of the basic motor qualities.
- The implementation of early athletic training of emulative-ludic nature may provide the efficiency of the instructive-educational process specific to the sports training, materialized in the improvement of the motor parameters.

The evaluation methodology consisted of the following measurements and motor ability trials:

A. Anthropometric measurements: waist, weight, Quetelet index

B. Selected motor ability trials:

- 1. 30m sprint
- 2. 50m sprint
- 3. Standing long jump
- 4. High jump
- 5. Throw of “oina” ball from standing position
- 6. Crunch from lying face-up position for 30 seconds.
- 7. “Naveta” test 4x10m
- 8. Bending forward from sitting-up position
- 9. Endurance running - 600m

C. Functional measurements:

1. Forced vital capacity
2. Forced expiratory volume

FINAL CONCLUSIONS OF THE RESEARCH

- The implementation of the proposed program also led to the conclusion of the relevance related to the importance of the trainers' didactic skill that speculate and capitalize the need of ludic and of physical activity specific to this age, turning them into real abilities and skills specific to the sportive life, and which determine desirable behaviour in a subsequent active life.

- The combination of pedagogical tactfulness with a diversity of methods and means used in the training programs implicitly generates an increase of the attachment to the trainer and of the group cohesion, an extremely important aspect even for the prevention of the ulterior abandoning of the sportive life.

- Statistically, at the experiment group, there were significant differences revealed for the somatic indicators and for the motor parameters.

From the evolution of the functional parameter – *heart rate*, during the trial of 600m endurance running, we can notice a tendency of heart rate increase in both tests to average values of 195-198 heart beats/min and at the same time, almost similar values measured in the two tests, starting from moment 1' 30". If at 30" the difference of the average values was approximately 10 heartbeats per minute, for the measurements taken at 2'30," the difference was approximately one heartbeat per minute.

- In what concerns the functional parameters – *vital capacity* and *maximum expiratory volume per second* no significant differences were found between the initial and the final tests.

Also, the hypothesis no. 1 has been confirmed.

- In what concerns the efficiency of the proposed program of athletic training, we can notice significant differences recorded for the following trials: **50m sprint and “Naveta” (physical activity game)**. Although the average values of the experimental group had sensitive differences for other motor parameters, we can state that our program has the advantage of preparing the adequate context for a specialized training during the following age stages.

Although it does not claim to have treated all problems concerning the optimization of the bio-motor potential of children, the work reveals the importance of the athletic means in the improvement of the bio-motor potential of the children of ages between 6 and 9.