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ABSTRACT OF THE DOCTORAL THESIS

**RESEARCH ON THE EFFICIENCY OF THE
STRENGTH DEVELOPMENT PROCEDURES FOR
THE HIGHSCHOOL STUDENTS (17-18 YEARS OLD)
IN RELATION WITH THE SOMATIC TYPE**

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The subject of this research work analyses the efficiency of certain development procedures of the physical strength in 17-18 years old students, through the use of the physical exercises with weights, in relation with each somatic type.

Starting from the fact that for finding efficient procedures of body strength development is necessary a long period of time, period in which stress, the desire to abandon, disillusion can accumulate; one would consider is necessary to discover certain procedures/methods to develop the strength of each somatic type.

The influence of the environment upon the individual in modern society, strongly marked by technology, industrialization, computerization etc., can modify the physical and psychical components genetically inherited, in a negative sense. The direct effect that it has on the person is the limitation or the lack of movement.

The contemporary alimentation, with modifications in the producing and processing of food and also the apparition of new genetic modified food tends to bring unwanted changes, entering in conflict with human programming, build for other parameters.

In this way the lack of movement and an incorrect food can be nociv and affect health.

An optimal health, seen ontogenetically is a desiderate that combines a few essential factors as: physical exercise and psychical determined by the genetic inheritance and personal ideals, correct alimentation in relation with physical and psychical exercise submitted and rest consistent with the other factors. All the listed factors are to be applied on the human organism seen as a unitary whole.

Exercise (understood as activity, action or motric act) has a decisive character and is the initiator and even the secret of a healthy, long-lasting life, in full harmony with the surrounding environment and own person.

The lack of physical exercise tends to manifest increasingly during the adolescence. Sadly this lack of physical exercise tends to manifest even in children.

If once sedentariness was the attribute of the grownups, now it manifests at small ages and determines metabolic, physiologic, psychic changes that transform themselves in habits and wrong choices.

The normal state of health is imbalanced due to the maximum reduction of the physical and psychical activity, and also because of the alimentation that does not respect any rule, being chaotic, hyper caloric, poor in nutrients, respecting only the personal preferences and personal taste and due to the incomplete resting period, that is not full due to the computer and the media devices. If we add stress, hurry or lack of time, any kind of excesses, in this case the sentence: “healthy behavior” becomes a chimera for adolescences.

Physical exercise is extremely important at all the stages of existence and relates quantitatively and qualitatively to the period of the age and sex of the person.

In conclusion the picture of the society in which we live in tends towards a lack of physical activity and bases on unhealthy food, this being derived from the motifs explained earlier, and a healthy life needs exactly the opposite of what was mentioned above,; that means physical activity and a healthy alimentation habits.

The genetic inheritance ensures similarities between people at the level of the specie and more over ensures the differences (disregarding the ones of sex) through framing of the individuals in three somatic groups, in which the individuals from a group that presents similar physical, psychical, physiological characteristics. The three groups include all the individuals.

The groups do not represent clear distinctions; the characteristics of a group are to be found in the other two. In this way, the framing into a certain group is given by the predominance of the many characteristics of the respective

person. There are then 3 groups in which the individuals are predominant ectomorph, endomorph or mezomorph.

The existence of notable differentiation between the somatic types regarding their characteristics brings in discussion the following premises: differentiated programs must be conceived for the development of strength. These have to identify and address themselves to the predominant characteristics of each somatic type out of the three groups.

General data

- Three groups consisting of 24 subjects, each group having 8 subjects each from each somatic type
- Age: 17-18 years;
- Period of time: September 2010 – June 2011;
- Place: Theoretic High-School Lupeni;
- Duration of the program: 40 weeks, 90 training sessions;
- Number of participants: 72;
- Place of the program: the weights gym
- Exercise duration: 40-50 minutes
- Training frequency: 3 times per week

Experiment hypothesis

1. If the somatic types are different according to their definition regarding their characteristics, for the efficiency of strength development a certain development methods are required to be found in relation with each somatic type.

2. If a certain training and a certain diet is applied to each somatic type then there shall be a certain change of attitude of the individual towards his own person.

The objectives of the experiment

- The establishment of the most efficient method of strength development, depending on the somatic type;
- Force growth;
- The growth of the muscle mass;
- The reduction of the fat tissue;
- Positive behavior modifications;
- Self-trust growth and growth of the ego force

Tests utilized in research

Test of maximum force: 1RM; Test of abdominal strength; Test of explosive force: Sergeant Jump, Test of abdominal endurance; Test of tractions; test of evaluation of the physical capacity: Ruffier Test; Test for measuring the fat tissue percentage: test with bioelectrical impedance.

Procedures of strength development

The procedures utilized in the present work are adapted versions of classical procedures and combine characteristics of body-building respecting the methodological criteria. Within the procedures is used the same number of series and repetitions. The exercises utilized cover all the muscle groups of the body.

- The weight work process
- The repeated effort until exhaustion process
- The circuit work-out process

Conclusions that drawn following the realization of the experiment

Following the results that have been obtained at the end of the experiment it has been arrived to the following conclusions:

- All the processes of strength development have had a positive impact upon the groups of subjects, but each group of subjects has excelled more in a process than in the other, as it follows:
 - The method in which the ectomorphs have obtained the best results is the method of working with weights. In the other two processes they had a smaller growth, this fact shows that for the ectomorphs the process through which they can obtain better results is the process of working with weights;
 - The method by which the mezomorphs have obtained the best results was the method of the repeated efforts until exhaustion. The other two methods had a smaller rate of growth, that shows that for the mezomorphs the best way to obtain results is the process of repeated efforts until exhaustion;
 - The endomorphs have obtained the best results in a circuit work-out. The other two procedures had a smaller rate of growth, which shows that the endomorphs can obtain the best results working in a circuit procedure.
- We can observe that the experiment calculated $H - s$ are bigger than the critical $H-s$ from the Chi- square tables.
- From what it was presented until now it can be ascertained that all the conclusions drawn from the experiment attest the confirmation of the two hypotheses structured in the experiment itself.