

STUDY REGARDING THE DIFFERENCE OF ANTHROPOMETRIC DEVELOPMENT OF CHILDREN THAT PRACTICE SPORT COMPARED WITH THOSE THAT ARE SEDENTARY

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Abstract: Physical activity is starting to be a priority in child development, more and more scientist in physical education and sport field try to highlight the importance of practicing sport fervently organized or independent. In our study, we concentrated our work in analyzing two school groups consisted of 25 children, with 9 to 10 years. The first group was the experimental group with which we tried to have more physical activity, they had two hours of physical education and sport, one optional hour of sport and 2 other hours of trainings in basketball so they practice one hour of sport every day, special sports camp and basketball competitions. The second group, the control group, had two physical education and sport lessons per week and we followed the specific program.

As methods of research, we used the observation method, for analyzing social integration, and also the anthropometric exams that consisted in measuring, at initial test in 2014 and at the final test in 2015, the dimensions of children body and development. We used measurements of height, weight, different length of superior and inferior segments, bust, spread of arms, biacromial diameter, bitrohanterian diameter and chest perimeter.

The results, at the final testing, showed us that the experimental group had a better development than the control group, with better indices at almost every indicator, so we can conclude that in our case the everyday sport activity helps in the child body development.

Key words: physical activity, physical fitness, measuring and testing in sport.

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INTRODUCTION

Motor activities are an important framework in youth development being more and more important in modern society. This period of development and primary socialization is fundamental in further development of our children.

Physical education lessons are very important in the development of children, both as fitness and social integration. Physical activities are related to the increase of capacity in all functional systems of the body as we mention: the cardiorespiratory system, muscle and skeletal, circulatory, metabolic, Neuro-psychological and endocrine.

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Also, many studies showed that an increase in physical activity can reduce the risk of disease, health problems, lower the fat level and psychological and social improvements.

Testing and evaluating the physical fitness is becoming more and more important at young generations, scientist approved that monitoring the physical activity can reduce sedentary, health problems, social exclusion and stress.

OBJECTIVES

Our study aims to discover the differences between children that practice sport compared with sedentary children, differences that refer to the physical development (height, length of segments, index of body mass, fat percentage and so on), the physiological development (the development of main functional systems like cardio respiratory function, muscle and skeletal, circulatory, metabolic, neuro-psychological and endocrine) and also psychological development (stress, social inclusion, self-esteem, anxiety).

HYPOTHESIS

Using exercising and having an active lifestyle in young age can increase the health and can develop the children organism (both functional and psychological) so children who practice sport and physical activity can be healthier and more social integrated than children that are sedentary.

MATERIALS AND METHODS

In our experimental study, we used many scientific tests for evaluating the physical fitness of our two samples of children. First exams were simple measurements of height, weight, different length of superior and inferior segments, bust, biacromial diameter, bitrohanterian diameter and chest perimeter.

Also, we used in this study the observation method, which is one of the methods most commonly used for psychosocial research, applied and organized relatively easily, can be quickly adapted and used in various situations in analyzing the evolution of groups and can be used in varied forms depending not only on the objective of the investigation, as well as the nature of the group. By this method we can follow and record behavioral manifestations in various social situations individually or psychosocial interaction, as the psychological analysis of the whole group or a particular individual.

Observation combined with various discussions with these groups of students helped us getting information on existing relations in the class, affective communication between students, group decision making, resolving various disputes regarding the group, the degree of socialization, communication and effects of team sports on children's behaviors.

RESEARCH SAMPLE

Our research took place at School No. 179 from Bucharest with two classes from the second grade, the first group of children, the experimental group, with an effective of 25 children (13 females and 12 males), with age between 9 and 10 years old; the second group, the control group, with an effective of 25 children (11 females, 14 males), with age between 9 and 10 years old. In the research of these two school groups we had as main objective to analyze and demonstrate that children from the experimental group that practice more sports activities are healthier than those from the control group that practice sport less than the others.

Both groups were tested twice, first test - the initial test was taken in September 2014 and the second test – the final test was taken in May 2015.

The main objective of the experiment was to discover the different aspects of physical development and functional development of children from those two groups.

The first sample group (the experimental) was involved in a sport project initiation and selection which involved training students in basketball, so the young scholars had extra-curricular 2-3 trainings per week, also participated in numerous competitions and during physical education classes we focused on team games, relay races, competitions in which students had been required to exercise their capacity of cooperation, communication and socialization. The second sample of students (the control sample) had normal physical education classes focused on individual sports such as gymnastics, athletics, chess, badminton where the physical requirements are less soliciting than the other ones.

THEORETICAL RESEARCH

Scientists found important individual differences in anthropometric and physiological characteristics among many sport athletes development. Anthropometric measurements have in its components of testing the height, weight, body fat percentage, and waist and hip circumferences. Anthropometric measurements were the primary type of testing used in physical education lessons all over the world. The American Physical Education Association recommends a set of measurements of fifty separate tests that are looking to analyze the body development.

Many scientists define the anthropometry process as the science of measuring the size and proportions of the human body and the development of those. Anthropometry refers to the measurements of man and consists primarily in the measurements of the dimensions of the body.

Some specialist is recommending that the growth of children should be measured periodically and accurately with specific test that are homologated. Two common devices are adequate for such measurements and were described by Rogol and Lawton (Rogol, 1990).

The anthropologists demonstrated that correlations between body structure of physical characteristics and sport capability measurements exists. In many sports the body parameters of height, weight, and other anthropometric variables play a vital role in the player's performance. The physical development, especially the development of height and the length of arms, have can give a decisive advantage in many sport games. In the first phase of selection the segmental length of individual body parts, the arm's length specifically, gives a considerable advantage in the process of selection for different sports. Carlos M. Gil et al. (2003) highlight that the need for accurate anthropometric measurement are very important; reports on growth and physical measurements in human populations rarely include estimates of measurement error.

Anthropometric specialists had proposed that children should be measured with accuracy, so that we could identify individuals or groups of individuals within a large community who require special care or with weak development and to identify the illnesses that influence their growth, or to determine an ill child's and recommend him a way of therapy. We can also analyze by the linear growth of a child or adolescent sportive the adequate level of energy that intakes for a particular training development program. Also the measurement of growth may also be used as a specific index that can express the general health level and the nutrition program of a child or a group of children. (Tanner 1995)

The growth in some dimensions can show the ADN heritage or a significant family resemblance. Adult stature, tempo of growth, timing and rate of sexual development, skeletal maturation, and dental development are all significantly influenced by genetic factors (Sinclair, 1978) and estimates of genetic transmissibility range (Tanner, 1989). Adult height is correlated with calculations of parental height (the average of the height of the parents), and the mode of inheritance of height from parents is resulting in a greater variety of the size of children born to parents of different heights than in pupil with parents that are both medium height (Smith, 1977).

The influence of testosterone on boys can show an increase in growth of bone and muscle and also can produce a loss of fat percentage (Tanner JM, 1989). The height development is determined also by the maximal loss of fat and increase in muscle mass in the upper arms. When

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talking about boys the increase development of body mass exceeds the total gain in weight because of the concomitant loss of adipose and fat tissue. As the height speed of development declines, fat accumulation percentage resumes in both sexes but is twice as rapid in girls. In adult period, males have more than 150% of the lean body mass difference from the average of females and twice the number of muscle cells (Cheek, 1974).

Talking about nutritional status scientist determine also that nutrition has a significant effect in the development and the timing of adolescent sexual development. A weak nutrition is associated with later age at menarche (as well as secondary amenorrhea), and a moderate degree of obesity is associated with early sexual maturation (Espstein, 1985) (Forbes, 1987).

Many researchers use nowadays technological devices like accelerometers and pedometers developing new methods of testing physical fitness and passing the old methods of estimation like questionnaires or diaries, so called “self-reports of activities” (Vanhess et al., 2005).

The schools can be very important in identifying and developing children with low physical fitness, with the help of right physical tests. Also testing and teaching children to frequently use physical exercises can develop a positive behavior and can also increase physical fitness (España-Romero et al., 2010), and promote positive and healthy habits by developing the will to practice in their free time physical activities with a particular focus on the intensity of the activities (Ortega et al., 2008)

The importance of physical education is in an ascendant trend in the development of society and environment (Dedaj, 2011), more countries recognized also the importance of testing and measuring in physical education and the assessment in physical fitness and included the required battery of test in their education conception.

RESULTS

The results of the initial and final test at the experimental and control group were centralised in the next table.

Table 1. The results of anthropometric initial and final test at experimental and control group

No. Crt	Somatic index	Arithmetic average at the experimental group		Arithmetic average at the control group		The difference between groups	
		2014	2015	2014	2015	2014	2015
1.	The age (in years)	9	10	9	10	-	-
2.	Body height	132	140	130	134	2	6
3.	Body weight	30	35	32	40	2	5
4.	Bust	69	76	68	73	1	3
5.	Spread of arms	128	138	125	130	3	8
6.	Length of superior segments	50	56	48	50	2	6
7.	Length of inferior segments	67	68	62	62	5	6
8.	Biacromial diameter	27	29	23	25	4	4
9.	Bitrohanterian diameter	28	30	25	26	3	4
10.	Chest perimeter	69	73	66	68	3	5

As we can see in Table 1. the results at the anthropometric exams at the initial and final testing at the experimental and control group show real improvements in both groups. The difference of development, between the experimental group and the control group, at both testing,

can be seen in the 3rd column, so as we can see in the indicator of body height we had a difference of 2 cm at the initial testing between both groups and a 6 cm difference of development at the final testing. At the body weight indicator we can see that control group has a higher value or 2 kg at the start of the experiment than the experimental group, and at the final test we have a 5 kg arithmetic average between groups, with a higher value at the control group.

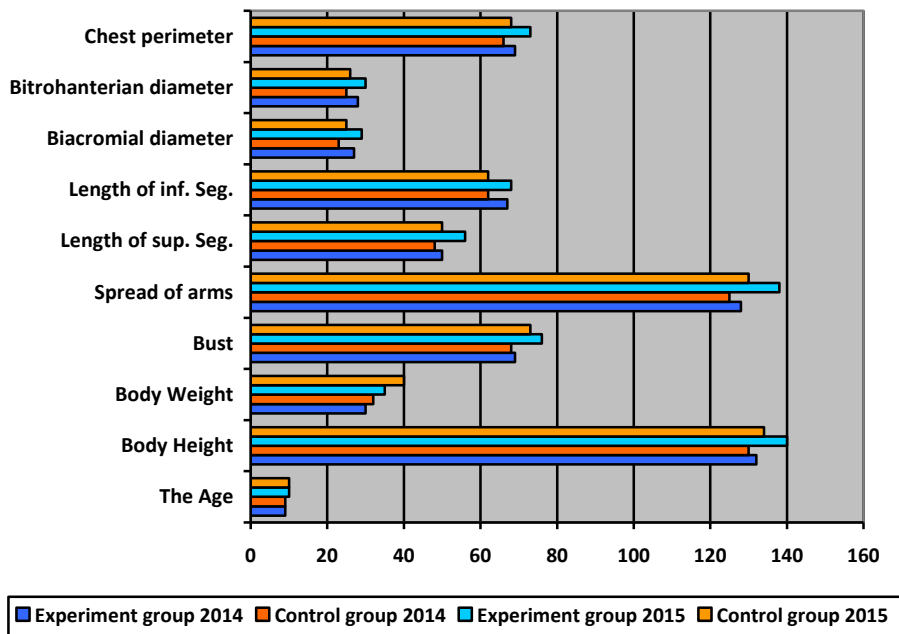
We can see a difference of 1 cm at bust indicator in the initial test and a 3 cm difference in the final testing between the two groups in favor of the experimental group.

Also at the spread of arms indicator we had a good development of 8 cm at the experimental group than the control group at the final testing.

At the indicator of length of superior segments and length of inferior segments we had a 6 cm difference of development between the two groups at the final testing.

In the biacromial and bitrohanterian diameter we can see a difference of development of 4 cm between the two groups at the final testing.

At the last measurement chest perimeter indicator we registered a difference, between the experimental groups compared with the control group, at the final test, of 5 cm.



Graphic. 1 The difference of development between the experimental group and the control group in 2014 and 2015 at the initial test and final test

CONCLUSIONS

Our study focused on the anthropometric testing of two groups of children that practice sport in different measures, first group – the experimental group practice 5-6 times per week sport, the second group – the control group practice two times a week sport. We wanted to see their development in one year so we took measurements of height, weight, different length of superior and inferior segments, bust, biacromial diameter, bitrohanterian diameter and chest perimeter.

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The difference of development between the two groups, the experimental and control group, from first testing and final testing, showed us that both groups increased the numbers in all indicator from the initial test compared with the final test, but the difference of grow in the experimental group was much better than the control group.

We can conclude that sport activity can improve the development of our children, the regular practice of sport can develop their organism, can improve their performance and can integrate them in society.

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