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EXAMINATION ON THE ANTHROPOMETRIC FEATURES AND SOMATOTYPES OF THE MALE CHILDREN AT THE AGE OF 16

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Abstract

Objectives.- The aim of the study id to examine the anthropometric values and the somatotypes of the male children from different branches taking place in physical education lessons and taking regular movement training.

Methods.- 218 volunteer subjects at the age of 16, namely, 68 soccer players, 89 persons doing the fitness and 70 sedentary have participated in the study. In the research, sitting height, crawl length, body width parameters, body environment and somatotypic parameters of the subjects are measured. In this work, the highest humeral width value is achieved from soccer group, whereas it is found to be no different from fitness difference ($P>0.05$) and to be significantly higher than sedentary group ($P<0.05$). When femur width parameter is examined, it is determined that soccer group is higher than the other two groups and that fitness group is significantly higher than sedentary group. In the study, while the highest endomorph value is obtained from sedentary group, it is found to be significantly higher than the other two groups ($P<0.05$). While the highest mesomorph value is achieved from soccer group and the lowest value is achieved from sedentary group, it is determined that each of these three groups is significantly different from one another ($P<0.05$). While the highest ectomorph value is achieved from fitness group ($P<0.05$), it is found to be significantly higher than the other two groups ($P<0.05$).*Conclusions*.- Consequently, it can be said that the soccer players have more optimal dimension, environment and somatotypical structure when compared to those doing the fitness and the sedentary.

Keywords: Anthropometric measurements, somatotype, soccer, fitness, sedentary.

1. Introduction

It has been discussed in the world on which body profiles are appropriate for which branches in the studies conducted and the extent to which this issue will play important role in selecting skills in the background has been researched [B. Lale et al, 2003]. Body composition, anthropometric measures and morphologic characteristics play vital role in playing the success of a sportsman [J. Bloomfield, T.R. Ackland, B.C. Elliot, 1994, J. Keogh, 1999, J. Rico-Sanz, 1998]. These parameters which are evident for the sportsmen are sensitive indicators to diet status and growth process in population [S. Chatterjee, et al, 2006]. Height and growth measurements which constitute one part of anthropometric measurements are the measures used in identifying and comparing physical structures of the people in several countries. Weight and height measurements made in one society provide standards for clinical evaluations. Height and eight values are very apparent factors in creating norms for several sport groups [R.W. Fry and A.R. Morton, 1991]. Body weight was regarded as the indicator whether a person has normal or optimal weight until last times. This criterion is also commonly used for the sportsmen and defined as a criterion for determining optimal performance. However, because body weight gives very limited information about the content of the body composition, body composition has been matter of concern for the sportsmen as well as the normal persons and whether there is relationship between the fat rate and performance is researched [P. Bale et al 1992]. Impact of anthropometric characteristics, body structure, composition, weight and height are accepted to be very important factors in motor functions and performance. By combining several variations such as weight, height, age and gender as the indicators of body measurement, norms are developed. Such norms have been useful in knowing the compliance indicator of the children and young persons taking role in many bodily activities with which group. It has been recognized that anthropometric measurements have relations with the motor performance and potential efficiency on the performance levels [K. Özer, 1993]. Anthropometry is systematic measurement technique which reflects sizes of human body [P.J. Maud and C. Foster, 1995]. Somatotype is the definition of thinness, muscularity and massive features of human body and determination of such features with scientific methods; in other words, it is the definition of morphological type f the human body. As a result of the individual features, in parallel to the ratio of weak or strong points of individuals each other, their success or failure occurs. Pre-determining such weak and strong points is an important factor determining particularly the results of the competitions of national sportsmen [C. Çankaya et al 2002]. W.H. Sheldon, 1954, has created an atlas and classified people according to their features of thinness, fattiness and muscularity.

In this study, the aim is to compare body compositions, anthropometric measurement and

somatotypes of sportsmen and sedentary students at the age of 16 in the province of Kayseri.

2. Methods

2.1. Subjects

Totally 218 health boys have participated in our study voluntarily as subjects, namely, 68 soccer players (average of body weight is 57.00±9.30 year, height average is 174.38±5.12 cm), 80 persons practicing fitness (average of body weight is 59.22±8.85 year, height average is 173.72±5.07 cm) and 70 sedentary (average of body weight is 64.88±9.19 year, height average is 172.87±5.04 cm).

2.2. Measurements

2.2.1. Measurement of Height and Body Weight

The measurements are made by causing the subjects to be on measuring device with their bare foot and only shorts on them. Body weights are made by placing the Kaliper sliding on the scale in a way to touch the upper of the heads of the subjects while they are standing vertically on their foot and the height is read with the accuracy of 1 mm.

2.2.2. Body Mass Index (BMI) Measurement

This is measured with Tanita mark Body Composition Analysator.

2.2.3. Circumference Width Measurement

It is measured with Anthropometric set.

2.2.4. Somatotype Measurements

Under the light of the data, endomorphy, mesomorphy and ectomorphy components of the sportsmen were calculated with the help of the Heath Carter regression equitation. Regression equitation used is as the following

Endomorphy: 0,7182 + 0,1451* (X1) - 0,00068* (X2) + 0,0000014* (X3)

X1 = triceps skin convolution thickness (mm)

X2= sub scapular skin convolution thickness (mm)

X3= supraspinale skin convolution thickness (mm)

Height correction formula = X * 170,18 / boy (cm)

Mesomorphy: (0,858 * elbow weight (mm) + 0,601* knee weight (mm) + 0,188 * corrected upper arm surrounding (cm) + 0,161 * corrected calf surrounding (cm) - (height*0,131) + 4,50

Ectomorphy: Height Weight Rate (HWR) * 0,732-28,58

HWR= height (cm) / weight 1/3 (kg)

If HWR< 40,75 or HWR > 38,25 then Ectomorphy = HWR * 0,463 - 17,63

If HWR< 38,25 then Ectomorphy = HWR * 01

Somatoplot coordinates whose somatocards are formed with the endomorphy, mesomorphy and ectomorphy calculated are calculated with equitation of X = Ectomorphy – Endomorphy, Y = 2 (Mesomorphy) – (Endomorphy + Ectomorphy).

2.3. Statistical Analysis

In the research, SPSS 13.0 statistical program was used for evaluation and calculation of the data. We summarized the data and evaluated the means and standard errors. One Way annova test to determine the difference among the groups and Tukey HSD test to find out the originating group of the difference have been applied. P values equal to or less than 0.05 were accepted as significant ($p<0.05$).

3. Result

No significant difference is found on the height values of all the groups in the study ($P>0.05$, table 1). When parameter of body weight is examined, value of sedentary is found to be significantly higher than other two groups ($P<0.05$, table 1), whereas no significant difference is determined between the groups of soccer and fitness groups ($P>0.05$, table 1). When sitting height parameter of the subjects is evaluated, the value of soccer groups is found to be significantly higher than the sedentary ($P<0.05$, table 1), whereas it is identified to be the same as the fitness group ($P>0.05$, table 1). Value of fitness groups is found to be significantly higher than the sedentary ($P<0.05$, table 1). The value of the highest crawl length in the study is obtained from soccer group, whereas the value of the soccer group is found to be significantly higher than that of sedentary group ($P<0.05$, table 1) and to be the similar to fitness group ($P>0.05$, table 1). The highest humeral width value is achieved from the group of soccer, whereas this is found to be no difference from fitness groups ($P>0.05$, table 2) and to be significantly higher than the sedentary group ($P<0.05$, Table 2). When the femur width parameter is examined, soccer group is found to be significantly higher than both of the groups, and the fitness groups is found to be significantly higher than the sedentary group ($P<0.05$, table 2). In the study, it is observed that three groups are similar one another when compared to Achromial and Btr width parameters ($P>0.05$, table 2). When the parameter of shoulder is assessed in our study, the highest shoulder value is achieved in the soccer players ($P<0.05$, table 3), whereas the lowest shoulder value is achieved from sedentary. While there is no significant difference between the soccer group and fitness group ($P>0.05$, table 3), it is determined that there is significant difference between other groups ($P<0.05$, table 3). The waist values of the subjects are the same in soccer players and fitness groups ($P>0.05$, table 3), the value of the sedentary group is found to be significantly higher than the other two groups ($P<0.05$). In the study, while the highest chest value is achieved from the soccer group, it is found to be the same as the fitness group statistically ($P>0.05$, table 3). The sedentary group value is determine to be significantly lower than the other two groups ($P<0.05$, table 3). While the femur value of the soccer group is found to be significantly higher than other to groups ($P<0.05$, table 3), the value of fitness group is determined to be significantly higher than the sedentary ($P<0.05$, table 3). When the calf, biceps extension and biceps flexion values are examined in the study, it is determined that the values of the soccer group are significantly higher than both of the other groups and fitness group is higher that the sedentary group equally. In the study, the somatotype values of the soccer players are determined as 2.06-4.35-2.60; values of fitness groups

as 2.13-3.16-3.58 and values of sedentary groups as 3.60-2.09-2.90. When the somatotype parameters are examined, while the highest endomorphy value is obtained from sedentary group, it is found to be higher than the other two groups significantly ($P<0.05$, Table 4). It is determined that the value of the fitness group is significantly higher than the value of the soccer group ($P<0.05$, table 4). The highest mesomorphy value in the study is seen in the soccer group, whereas the lowest value is achieved from sedentary and it is determined that the values of three groups are significantly different from one another. ($P<0.05$, table 4). While the highest ectomorphy value is obtained from the fitness group ($P<0.05$, table 4), it is found to be significantly higher than other two groups ($P<0.05$, table 4). While the value of sedentary group is higher than the value of the soccer group, this is determined not to be significant statistically ($P>0.05$, table 4).

4. Discussion

General aim of studies related to the body structure, size and composition is to determine and improve individual physical compliance. Body composition of sportsmen is an important criterion in determining required optimal body profile for the health and performance in terms of many sports branches [T.D. Palo et al, 2000]. That there is no important difference among the all groups in terms of height values is important in terms of indicating that groups are close to one another. When the body weight parameter is examined, the value of the sedentary is found to be significantly higher than the other two groups, while no significant difference is determined between soccer and fitness groups. One of the important issues for the sportsmen is the body weight they can carry without affecting the performance and fat which is excess in the body is harmful in terms of performance. That states that sedentary life style causes significant increase in body growth and fat ratio during 4-week shift period of the soccer players indirectly supports the findings we have found through our study. Johnson [B.H. Heath and J.E.L. Carter, 1967] determined 6% decrease in body fat rate of the group practicing aerobic training for two days a week and 11% decrease for the group practicing aerobic training three days a week. That the growth weight of the sportsmen is significantly lower than the sedentary group in our study, although it shows similarity with the studies, reinforces the idea that fat metabolism can be used effectively as energy in long-term aerobic exercises. In our study, while it is determined that the fitness group and soccer group have the same sitting height and crawl length, that they are higher than the sedentary group in terms of both of the parameters indicates that the sportsmen groups have higher muscle and bone development.

In the study we conducted, all the circumferences measurements were significantly higher than the other groups. [A. Bandyopadhyay, 2007] suggests on the study about Indian sportsmen that sedentary group has higher sub dermal fat thickness and higher fat ratio when compared to the soccer players. D.B. Duthie et al, 2006 and P. Chatterjee et al. S. Chatterjee, 2002 argues that this is resulted from inactive lifestyle of sedentary group. During the childhood, determining somatotype is very important in skills selection. It is because revealing body type will provide competing in advantageous situation in revealing the tendency in the branch and in achieving high performance.

In the study, somatotype values of the soccer players are determined as 2.06-4.35-2.60 (ecto-mecophormic); the value of fitness group as 2.13-3.16-3.58 (ecto-mecophormic); and the values of the sedentary group as 3.60-2.09-2.90 (endo-mesophormic). According to this, while the highest endomorphic value is obtained from sedentary group, it is determined o be significantly higher than the other groups. It is determined that the value of the fitness group is significantly higher than value of the soccer group. In the study where somatotypes of soccer and handball players are examined, C. Raschka and C. Wolthausen, 2007, state hat both of he group players have ectomophic-mesomorphic score according to somatograms of B.H. Heath and J.E.L. Carter, 1967. Bandyopadhyay [A. Bandyopadhyay, 2007] in a study suggests that sedentary has significantly high endomorphic and significantly lower mesomorphic scores and W.D. McArdle et al. [16], says that sportsmen have mesomorphic ectomorphy scores. E. Rienzi et al, 2000, informs that international soccer players of Northern America have balanced mesomorphy (2-5.5-2) and this finding displays sameness with the findings of T.R. Neni et al. and G. Florida-James T. Reill, 1995. In another study, T.R. Neni et al, 2006, inform that Russian soccer players have thin somatotype (1.7-5.6-2.6), soccer players of Liverpoll (2.4-4.2-2.4) and Indonesian soccer players (2.7-4.9-3.0) have middle somatotype. F. Can et al. 2004, determined the somatotype values of the soccer players as mesomorphic–endomorphy (3.07-3.55-2.43) and the values of the young sedentary as endomorphic–mesomorphy (3.57-3.35-2.90). In another study, C. Sánchez-Muñoz et al., 2000, determined somatotypes of the young tennis players as ecto-mesophormic (2.4-5.2-2.9). This finding is important since it displays sameness with the somatotype scores of the soccer players we obtained in our study. Consequently, it may be suggested that soccer players have more optimal width, circumference and somatotype structure than those practicing fitness and sedentary and such measurements are important factor in comparing the sportsmen.

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Table 1: 'F' and 'P' values of the height, body weight, sitting height and crawl length parameters of the groups

Parameters	Groups	N	Mean	SD	F	P
Height	soccer	68	174,3824	5,1228	,768	,466
	fitness	80	173,7250	5,0763		
	sedentary	70	172,8714	5,0473		
Body weight	soccer	68	57,0000	9,3030	6,953	**,001****
	fitness	80	59,2250	8,8506		
	sedentary	70	64,8857	9,1901		
Sitting height	soccer	68	87,9706	3,2797	7,760	**,001****

	fitness	80	87,0000	3,2106		
	sedentary	70	84,9714	3,2312		
Crawl length	soccer	68	174,9412	6,6966	3,219	**,044***
	fitness	80	173,1000	6,7740		
	sedentary	70	170,8571	6,6161		

***p<0,05 **p<0,01**

Table 2: 'F' and 'P' values of the width parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Humeral width	soccer	68	12,3647	,5140	246,253	**,000****
	fitness	80	11,5425	,4814		
	sedentary	70	9,7629	,5065		
Femur width	soccer	68	16,2794	,6540	274,529	**,000****
	fitness	80	14,3700	,6676		
	sedentary	70	12,5600	,6545		
Achromial width	soccer	68	327,9412	13,1609	1,254	,290
	fitness	80	329,2500	12,6364		
	sedentary	70	324,6000	13,1221		
Btr width	soccer	68	217,4412	15,5587	1,608	,205
	fitness	80	215,8750	14,7304		
	sedentary	70	211,1714	15,4110		

***p<0,05 **p<0,01**

Table 3: 'F' and 'P' values of girth parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Sholder girth	soccer	68	98,6029	5,6038	14,840	**,000****
	fitness	80	96,1675	5,3678		
	sedentary	70	91,5286	5,5382		
Waist girth	soccer	68	70,2382	7,9327	6,343	**,003****
	fitness	80	70,6950	7,5024		
	sedentary	70	76,1314	7,8407		
Chest girth	soccer	68	82,0088	6,5264	8,019	**,001****
	fitness	80	79,4775	6,2296		
	sedentary	70	75,8743	6,4788		
Thigh girth	soccer	68	47,4441	4,3204	17,512	**,000****
	fitness	80	44,1550	4,1114		
	sedentary	70	41,4314	4,2571		
Calf girth	soccer	68	33,2676	2,3590	26,208	**,000****
	fitness	80	31,0975	2,2653		
	sedentary	70	29,2314	2,3339		
Biceps ekstantion girth	soccer	68	22,4882	2,9250	16,893	**,000****
	fitness	80	20,2450	2,7947		
	sedentary	70	18,4886	2,8817		
Biceps flexion girth	soccer	68	24,6882	3,3668	28,383	**,000****
	fitness	80	21,4375	3,2180		
	sedentary	70	18,7114	3,3198		

***p<0,05 **p<0,01**

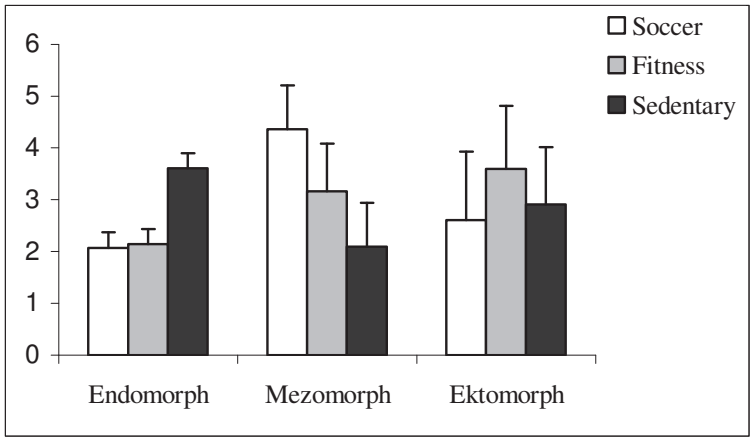
Table 4: 'T' and 'P' values of the body anthropometric parameters of the groups

Parameters	**Groups**	**N**	**Mean**	**SD**	**F**	**P**
Endomorphy	soccer	68	2,0669	,3089	34,201	**,000****
	fitness	80	2,1365	,2930		
	sedentary	70	3,6068	,2936		
Mesomorphy	soccer	68	4,3579	,8485	401,362	**,000****
	fitness	80	3,1620	,9138		

	sedentary	70	2,0939	,8444		
Ektomorphy	soccer	68	2,6031	1,3224	17,485	**,000****
	fitness	80	3,5899	1,2262		
	sedentary	70	2.9091	1,1048		

***p<0,05 **p<0,01**

Figure 1: Somatotype score of the sportsmen and sedentary individuals



VIEWS OF PHYSICAL EDUCATION TEACHERS IN PRIMARY AND SECONDARY SCHOOLS ON IN-SERVİCE ACTIVITIES AND THEIR FREQUENCIES OF PARTICIPATION IN THESE ACTIVITIES

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Abstract

The purpose of this study is to determine the views of physical education teachers in primary and secondary schools in Ankara on in-service activities as well as their frequency of participation in these activities.

The voluntary participation of total 117 physical education teachers who work in 67 primary schools and 50 secondary schools in Ankara. The data were obtained via questionnaire method in the study. The views which are in the questionnaire were obtained from various sources with regards to the point and then they were made to be referred to specialists. The questionnaire is made up of five chapters and total 34 questions. Likert scale method was used for the questionnaire. Crombach Alpha confidence coefficient was found α: .864 in the second chapter of the questionnaire while it was found α : .788 in the third part of the questionnaire.

Averages, standard deviations, frequencies and percentage distributions were notated in tables for the evaluation of the data obtained from the questionnaires. t test and one-Way Anova was made and found in $p< 0.05$ significance level in order to determine whether there were differences among the answers of these teachers to the questions about their age, gender and period of service. Tukey HSD test was used in order to determine from which the differences stem.

As a result of the study, teachers stated that they agreed with the questionnaires about in-service activities (X=3,61). The general conditions and the percentage of physical education teachers participating in in-service trainings such as courses and seminars were 3,83% whereas the peak participation was realized in "Computer and Internet Use" in the rate of 60,7%. On the other hand, the rate of not participating in this kind of trainings was 95,93%. The seminar which rendered most participation according to gender, age, educational background and period of service was "Computer and Internet Use".

In their suggestions about in-service training the physical education teachers have stated that they would like to get their in-service training in the form of "seminar" (48.7%), and the most appropriate time period for getting in-service training is "June – September" period (33.3%).

Key Words: In Service Training, Physical Education Teacher, Primary and Secondary School

Introduction

Teachers have necessities for in-service training so as to renew themselves, to acquire the knowledge about their fields, to benefit from new technological instruments throughout the education process, to have a modern education understanding, to be capable of using modern methods and techniques