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Research Article

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The Comparison of Main Features of Anthropometric and Biomechanical of Female Students 16 to 18 Year-Old

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ABSTRACT

*The main purpose of this study was to compare anthropometric and biomechanical characteristics of female students 16 to 18 years Pars Abad city. For this purpose, 105 females 16 to 18-year-old high school student second period Pars Abad city were selected by random cluster. For each subject 42 anthropometric characteristics, Kolomogrov-Smirnov test biomechanical features 7 normal distribution of data was examined. The mean and standard deviation and percentile rank to describe the data, were studied. According to the results of the research results, the main indicators of anthropometric characteristics between the knees to the floor height, the width of the head and thigh subcutaneous fat girls 16 to 18 years there was a significant difference, and also features biomechanics, between agility (*Illinois*) and dynamic balance (take off and landing) girls 16 to 18 years old in a smaller surface area equal to 0.05, there was a significant difference, and suggest that the main indicators anthropometric and biomechanical characteristics of the other age groups should be investigated further.*

Keywords: Anthropometric Biomechanics, Girls

INTRODUCTION

Musculoskeletal and psychological problems will be. Which causes imbalance in the body biomechanical and neuromuscular pain will be. Sports medicine professionals only way to cure and save the human race from a variety of ailments, exercise and turning to the move and strengthen the physical and mental faculties are known. In addition, research has shown that if the girls in their teens have a profound impact on physical activity and exercise during pregnancy, breastfeeding and health in old age will be. So part of research studies to identify and remedy to solve the problem is inactivity [1].

Factors most closely associated with health status of the population is asked to check the details of each of these factors should be addressed and what would be better if these factors interact with each other and also in different age groups and both sexes are studied. Of the most important steps in understanding the human body motion analysis; measure physical characteristics and biomechanical body [2].

One of the essential needs of man that shows him in good health, good physical condition. Human gestures and postures on all criteria for individual performance in a variety of activities, so that it can be stated that the start and end of each motor status and physical structure of the individual. One of the major benefits of sporting activities for girls, improving the performance of organic body. Regular training for girls to improve breathing, digestive system, drainage system and improve the body's muscles become stronger and gets them [3].

When it comes to body structure and physical properties of the term anthropometry (measuring physical characteristics of the body) in size, shape, proportions or body composition with issues such as growth, sports,

running and nutrition are concerned, one of the first and most important to understand and analyze processes in the human body is known. Measurement of human body structure has been scientifically only in recent decades. The aim of the measure has information on the characteristics of objects, structures or events, and the results of the measurements and to describe the phenomenon of human physical characteristics [4].

In the field of biomechanics mechanical properties of human organs is checked, all trying to employ people in positions appropriate to the physical characteristics and physical abilities do. Effective training programs, improving fitness and athletic performance evaluation, talent detection is used. The application of this research is that knowledge of anthropometric parameters and biomechanical factors in planning and advance the goals of education and public health education and prevention of diseases caused by lack of mobility.

Extensive research was conducted by different researchers, which indicates that the situation very closely with body composition and body type and health status as well as the implementation of the exercise is [2]. Baba Ali (2014) compared the main indicators anthropometric, biomechanical, physiological, psychological, musculoskeletal and postural city girls 10 to 12 years old pay anymore. The anthropometric and biomechanical characteristics due to the proximity to the age of puberty and the development of height and weight of the samples, the difference between age groups was observed [6]. Bayati (2014) the main indices anthropometric, biomechanical, physiological, psychological, musculoskeletal and postural elite shooters paying adult. The results showed that the main anthropometric indicators (except for sitting height, the palm of the hand, elbow width, the width of the knee, the ankle, waist-to-hip ratio and body mass index), bio-mechanical (range of motion in joints just in move to the right lateral flexion of the neck joint), physiological and psychological (only in basic skills) there was a significant difference between the two groups [7]. Koch et al (2014) examined the relationship between neck pain with anthropometric and biomechanical parameters in obese adolescents, India. The samples were randomly divided into 108 obese adolescents aged 12 to 18 years (56 boys and 52 girls). The control group of 113 adolescents (59 boys and 54 girls) were considered. The results showed that in all the variables between the two groups studied (except the right side flexion and rotation of the neck and side of the neck) in obese and non-obese boys and girls were significantly different [8] achieved. Thus, because of the importance of the subjects and the results more accurate information to achieve results described [9].

EXPERIMENTAL SECTION

This study was descriptive-comparative study. The purpose and the method of collecting data from the field. The population of this study included all 16 to 18-year-old female students Pars Abad city. Cluster sampling among secondary school students took second period Pars-Abad city. To do this, the second city of Pars Abad secondary schools were randomly selected schools. A sample of 105 patients (35 men, 16-year-olds, 35, 17 and 35, 18) of secondary school students in the second period of Pars-Abad city: 35 to 16 years (mean and standard deviation of weight: 52.83 ± 6.07 kg and height: 162.53 ± 5.17 cm), 35, 17 years old (mean and standard deviation weight: 53.36 ± 7.87 kg and height: 163.05 ± 7.05 cm) and 35 patients 18 years of age (mean and standard deviation of weight: 163.80 ± 5.41 kg and height: 54.94 ± 7.25 cm) voluntarily and randomly available to participate in this study. Nmvdnd.kh identified through demographic questionnaire and were chosen randomly.

For each subject 42 anthropometric characteristics: body weight, body length (height, sitting height, head length, arm length, hand length, ankle, two hand-Srinivasa knee-length, thigh length, knee height above the ground, the leg , leg length and height of the appendage), organs width (width of the head, head diameter, width of chest level, the width of the navel, the width of the pelvis, elbow width, the width of the knee, wrist width, hip width, sitting and width ankle), peripheral (environmental head, trunk circumference at chest level, trunk circumference at the navel, trunk circumference at hip level, the arm in the armpit, most of the upper arm, forearm Most environment, the elbow, the wrist , in the middle of thigh circumference, knee circumference, most of the muscles of the leg and foot bows environment), subcutaneous fat (fat thoracic, abdominal fat and thigh fat, fat legs, fat under the arm), and 7 biomechanical features (including: strength, speed, agility, flexibility, endurance, strength and balance) were measured.

Chairs for measurements in a sitting position, a flexible tape measure and standard for the measurement accuracy of 1.0 cm to the height of the knee, knee length - serine sitting height, the distance between dual and limbs environment. Balance (BEARER) made in Germany for weighing. Caliper (VERINER CALIPER) Made in China with 02.0 mm error for the measurement of body panels. Caliper (fat meter VOGE) with an accuracy of one millimeter to measure subcutaneous fat was made in Germany. Swedish and sit-up, 4 pieces of wood, leaves stopwatch and record the results to measure agility 9 * 4. Flat surface and tape measure to measure the length jump, chalk, tape measure, measuring flat surface and wall jump Sergeant, dynamometer (40127 YAGAMI) made in Japan and a stopwatch to measure the strength of the wrist muscles, filing the results, chairs , a plastic cone and 8 tape

measure to measure the balance test stork and was sitting up. Statistical analysis was performed using SPSS version 20.

RESULTS

Descriptive data related to anthropometric parameters:
Most standard deviation (SD = 7.87) and the distribution of weight in the age group 17 years and the lowest standard deviation (SD = 5.17) and dispersion of the height in the age group of 16 years. The highest average value of the heights of the age group 18 years and minimum average weight in the age group of 16 years.

Most standard deviation (SD = 6.73) and dispersion of the height of the growth to the surface in the age group 17 years and the lowest standard deviation () and dispersion of the head in the age group 16 years.

Most standard deviation (SD = 6.73) and dispersion of the height of the appendage of the latter to the surface in the age group 17 years and the lowest standard deviation (SD = 0.48) and dispersion of the head in the age group was 16 years old. In all three groups, the highest and lowest average value of the two wings and hand over the wrist to the end of the second finger.

Most standard deviation (SD = 2.18) and dispersion of hip width, sitting in the age group 16 years and the lowest standard deviation (SD = 0.7318 and dispersion of the width of the wrist in the age group 18 years. The highest average value in all three age groups of the width of the pelvis in an upright position and the lowest average value of the width of the wrist.

Most standard deviation (SD = 4.86) and dispersion of trunk circumference at the navel in the age group 17 years and the lowest standard deviation (SD = 0.57) and dispersion of the arc foot in the age group 16 years. The highest and lowest averages in all three age groups of trunk circumference at the hips and wrists environment.

Most standard deviation (SD = 1.54) and the distribution of abdominal subcutaneous fat in the age group 17 years and the lowest standard deviation (SD = 0.68) and the distribution of subcutaneous fat in the thoracic age group 18 years. The highest and lowest averages in all three age groups of abdominal subcutaneous fat and subcutaneous fat was biceps.

Descriptive data on the biomechanical parameters:
Most standard deviation (SD = 9.86) and dispersion of Swedish swimming in the age group 16 years and the lowest standard deviation (SD = 0.57) and scattering at the time of takeoff and landing (dynamic balance) in the age group 18 years. The greatest average amount of body bending forward in the age group of 16 years and the lowest static balance in the age group of 18 years.

The results showed there is no significant difference in the main index (anthropometric characteristics). To respond to this hypothesis, because normal distribution of data from the test ANOVA (one-way ANOVA) was used. Based on the findings in all the main indicators anthropometric characteristics between the knees to the floor height, the width of the head and thigh subcutaneous fat girls 16 to 18 years there was a significant difference, because the level was significantly smaller than 0.05 (Table 1).

Table 1: Results of analysis of variance for the main anthropometric characteristics of girls 16 to 18 year-old

Sig	Degrees of freedom	Root Mean	Main anthropometric indices	
0.67	2	14.29	height	ANOVA
0.49	2	6.83	Vertical height sitting	
0.71	2	7.18	Appendages final height of the land	
0.13	2	54.17	Two wings	
0.41	2	3.24	Length of leg	
0.03	2	23.06	Knee height to the ground	
0.48	2	6.21	Knee length - gluteal	
0.01	2	3.18	Width of the head	
0.78	2	0.53	Width of the body at the navel	
0.07	2	61.52	Trunk circumference at chest level	
0.71	2	1.18	Most of the forearm	
0.69	2	1.47	elbow circumference	
0.46	2	5.15	Most of circumference arm	
0.001	2	31.23	Subcutaneous fat thighs	

The findings also showed that there is a significant difference between the main index (biomechanical characteristics). To address the hypothesis of normal distribution of data from the test ANOVA (one-way ANOVA) was used. Based on the findings of the biomechanical characteristics between agility (Illinois) and dynamic balance (takeoff and landing) girls 16 to 18 years there was a significant difference, because the level was significantly smaller than 0.05 but other significant features (Table 2).

Table 2. Results of variance analysis of the main characteristics of biomechanical girls 16 to 18 year-old

Sig	Degrees of freedom	Root Mean	Main indices of biomechanical	
0.27	2	1.87	Muscular endurance (swimming Swedish)	ANOVA
0.002	2	7.11	Dynamic balance (takeoff and landing)	
0.14	2	1.22	Speed (45 meters)	
0.27	2	27.54	Can (jump Sergeant)	
0.04	2	2.86	Agility (Illinois)	
0.28	2	22.35	Power (power wrist)	

DISCUSSION AND CONCLUSION

The results showed that the main parameters related to the anthropometric characteristics of 16 year old daughter arm in the underarm area of Pars-Abad city, most media outlets, width and height in girls 17 years old knee to the ground and breadth of the navel, hip width, sitting , trunk circumference at chest level, most of the arm, above the iliac fat, abdominal fat and thigh fat and 18 year old girls Pars Abad city height, the height of the appendage of the latter to the ground, sitting vertical height, distance between two wings, knee length - gluteal length of femur, tibia length, knee height to the ground and in the 16-18 year-old girls Pars Abad city the highest setting arm, the elbow, the arm in the armpit, most of the forearm, trunk circumference at breast and thigh circumference in the middle and subcutaneous fat thighs were the main indicators. Among the main indicators anthropometric only between knee heights above the ground, the width of the head and thigh subcutaneous fat girls 16 to 18 years was a significant difference that this may be due to the appearance of symptoms after puberty differences in their physical growth. The findings of the research by Akbari (2014), mercy (2012), benefit (2010), explorer (2009), Shojaaddin et al (2008) and Joe et al (2008) is consistent, though the gender, activity level and age range of the study subjects and study groups is different.

Baba Ali (2014), Bayati (2013), Karili (2012), Husseini (2011), Ghale Shahin (2009), Ghash et al (2010), Mehraban (2013) is inconsistent, which may be due to differences between the study groups.

The main objective of this sub-divided into the following six specific targets. Principal components analysis, the main parameters of the biomechanical properties of Pars-Abad city for 16 year old girl speed (both 45 meters), power (power wrist) and Power, (Sargent Jump), for 17 year old girl Pars Abad city balance (dynamic) endurance and muscle power (swimming Sweden), the 18-year-old city PARSABAD be (jump up and jump Sergeant) and muscular endurance (swimming Sweden) and the main reason for girls 16-18 years old biomechanical properties of Pars-Abad city flexibility (bending body forward), balance (test stork) and muscular endurance (Swedish swimming and sit-up) identifying features. From the main indicators biomechanical the results of this test, agility (Illinois) and dynamic balance (takeoff and landing) girls 16 to 18-year difference was statistically significant, increase with age agility (Illinois) and dynamic balance (takeoff and landing) subjects dropped slightly, perhaps due to a decrease in physical activity and fitness them. The results of the research in biomechanics factors for all or part of the investigation Akbari (2014) (Agility (Illinois) and dynamic balance (take off and landing), Sheikh (2014) (which is static muscular endurance and balance), Krili (2012), Zolfi (2013), Bayati (2013), Hussein (2011), Ghale Shain (2010), Sayah (2009) and Jafari (2001) is consistent. But the results Baba Ali (2014), Bayati (2014), Mehraban (2013) (in flexibility and sprinting 40 meters), Rahmati (2012), Ghale Shain (2009), Bagher Zadeh et al. (2007) and Salam (2004) was consistent, perhaps because of differences between the subjects and the tools and methods used in the research. Muscular strength and muscular endurance gradually increased their total motor abilities and increase their physical fitness. Qatar muscles and therefore there is not physical capabilities. These findings contradict the findings of the study may be the cause of Baba Ali (2012) and Bayati (2013) to justify.

In physical education and sport, the aim of understanding the physical structure by measuring physical dimensions, physical properties and characteristics of physical relationship with sport is successful operations. Using and according to the survey results, researchers, coaches and physical education teachers should be scouting for different sports to measure the biomechanical and physiological characteristics of students at different age levels of pay.

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