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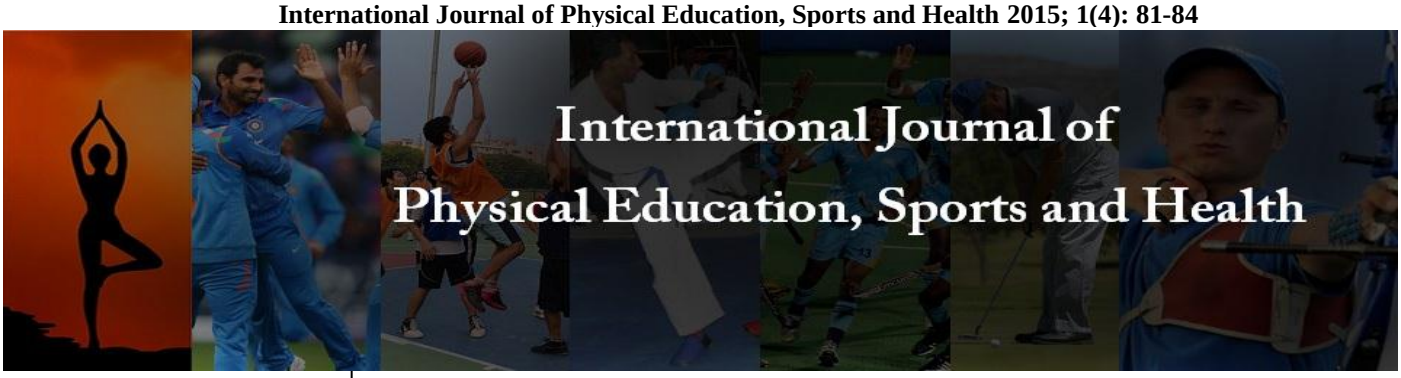

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Effects of during six months volleyball training on some anthropometric measurements

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Abstract
The aim of this study was to investigate effects of during six months voleyball training on some anthropometric measurements. Sample of the research were 11 professional volleyball players (Xage=28+/-5.25) as volunteer. The data of athletes was collected during six months (September 2010 to March 2011). Each athlete was tested by Skinfold thickness measurements. They were taken with Skinfold Caliper. All measurements were taken after training four times a six months. In data analysis IBM SPSS Statistics 20.0 was used. The data were analysed with using descriptive analysis, paired sample t-test, correlation analyze and analyzies of variance (ANOVA). Paired sample t-test was used for determining that changed of measurements level of importance was taken as (0,05). According to the findings, there were significant changes of most measurements after the six months training. ($p<0,05$). As a result, it has been statistically determined that there were not significant differences on position ($p>0,05$); but there were significant differences between development process and age, duration of staying in the game ($p<0,05$).

Keywords: Training, anthropometric, voleyball.

1. Introduction
Physical exercise undertaken on a regular basis in the form of sports training is a factor that has major effect on the human morphological composition. Body composition of athletic populations has been an interest of traniers, exercise scientists and sport medicine professionals. Body composition (BC) is considered one of the components of the physical fitness of athletes. In elite sport, the continuous monitoring of BC may regulate the training process affecting positively the top form of sporters. Volleyball belongs to sport activities in which morphological conditions of its participants influence the level of sport performance. It was established that volleyball players compared to most other athletes have distinctive anthropmorphological characteristics [1, 2, 3, 4].
Volleyball is a game of explosive streght, agility, skill and concentration. The game relies highly on the anaerobic energy system though aerobic endurance is important for recovery between points, stamina and tolerance to heat. Volleyball is a fast playing game. So it requires to be fast. Players can not hold the ball and can not stop the ball. They have to make quick touch without stoping it. The speed of the ball can be 30 m in a second. Players have to make fast movements to do blocking and defense. So volleyball requires agility. And agility requires good body composition. In the endeavour to achieve an excellence in sport, all of the possible concomitants of performance have been subject to scientific research. Modern sport science is characterized by the purposefulness of its endeavour to improve elite athletes and to discover talents as precisely as possible. There is evidence to support the concept that an individual's physique greatly limits or enhances successful participation in physical activity. In the course of life, the human organism undergoes in the changes. From the biological perspective, there are changes not only in general body structure and also in internal aspects (subcutaneous or under skin fat) testifying to the internal composition of the organism. On the measured values, the current body composition of the team was determined. We measured the amount of subcutaneous fat, through it's we found out the percentage of fat. The body composition may go through individual changes, depending on age, sex, physical activity and sport, somatotype, genetics as well as intra - individual variability [5, 6,].
The results were expressed in absolute values and percentages, and the evaluation was made with the use of basic statistical characteristics (arithmetic mean, standard deviation). To discover any significant differences on the body composition of the players analysis of variance was used by harpenden skinfold measurement caliper. In sport and in high-performance sport in particular, the continuous monitoring of body composition may regulate load in the training process and positively affect top form. Body composition is therefore considered as one of the components of physical fitness of athletes. The issues connected with body composition in sport, and in volleyball in particular, have been the subject of monitoring for several years [7, 8,].

2. Materials and methods

2.1. Sample

Sample of the research were 11 professional volleyball players (Xage=28+/-5.25) as volunteer. The data of athletes was collected during six months.

2.2. Assessment Tool

Each athlete was tested by Skinfold thickness measurements. They were taken with Skinfold Caliper (British Indicators, UK) to the nearest 0.1 mm. The Harpenden Caliper is an instrument commonly used for measuring skinfold thickness to estimate total body fat content. The measurements were carried out from the right side of the test person standing upright, in six standard regions of the body: biceps, triceps, abdominal, back, leg, and subscapula. The measurements were repeated until the same values were obtained twice. There are multiple ways to measure the body composition, but some are more tedious than others. A practical method that's readily available and requires little set-up is the use of skin calipers by an experienced professional. Site selection is very important and frequently a source of error in skinfold testing. Skin calipers measure various skin-folds on the body, depending on what protocols the health professional is using. There are three-fold protocols, five-fold protocols and seven-fold protocols, for example. According to the American College of Sports Medicine, the more sites used across the span of the body, the more accurate representation of the total body weight composition. In this study total body fat was estimated from the sum of seven skinfold values taken at the chest, midaxillary, abdomen, thigh, triceps, sub-scapular and suprailiac [9, 10, 11, 12].

2.3. Analysis of Data

All measurements were taken after training four times a six months, first data took on october last data took on march. In data analysis IBM SPSS Statistics 20.0 was used. The data were analysed with using descriptive analysis, paired sample t-test, correlation analyze and analyzies of variance (ANOVA). Paired sample t-test was used for determining that changed of measurements level of importance was taken as (0,05).

3. Results & Discussion

As a result; 6 months of regular training of voleyball shows that there are significant changes on the voleyball players position, Significant differences were found among athletes of different playing positions which are interpreted by their varying roles and physical demands during a volleyball game. Age and duration time of playing time caused some changes only on some measured placeses. In this way we are able to review the playing position has a great effect on the subcutaneous fat [13]

Table 1: Distrbution of athletes according to position, age and times of playing.

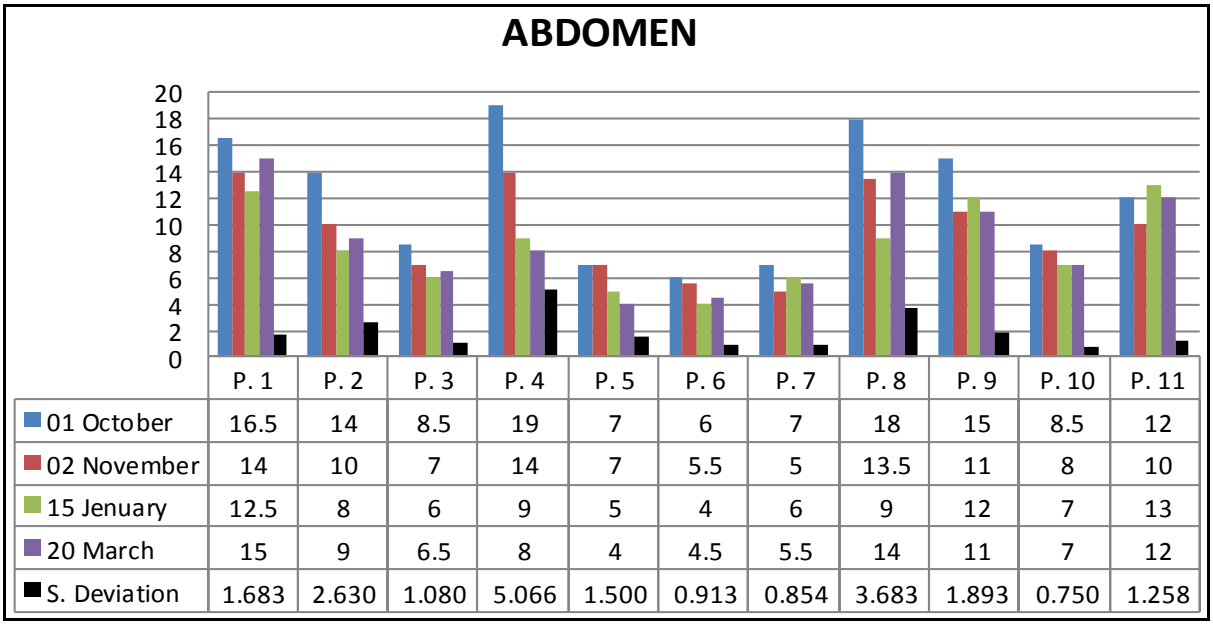
PLAYER	POSITION	AGE	TIME
P1	Opposite	32	57
P2	Mid - Blocker	28	35
P3	Hitter	26	55
P4	Mid - Blocker	28	37
P5	Hitter	32	45
P6	Opposite - Hitter	30	35
P7	Setter	31	60
P8	Libero	30	60
P9	Mid - Blocker	20	45
P10	Hitter	17	20
P11	Hitter - Opposite	34	5

On the table above shows that there are details of the athletes participated in our study according to the table while 5 Hitter joined in the study, 3 Mid-Blocker joined. Duration of games which are played by the athletes change between 57 and 5.

Table 2: According to the age and duration number of the time pearson correlation analys.

	X	SD.	TriceF	TriceL	ChestF	ChestL	Abd.F	AbdL
Age	28	5.25	.101	-.610*	.030	-.037	.018	.119
Dur. Of Time.	41.27	17.40	-.055	-.218	.097	-.076	.066	-.638*

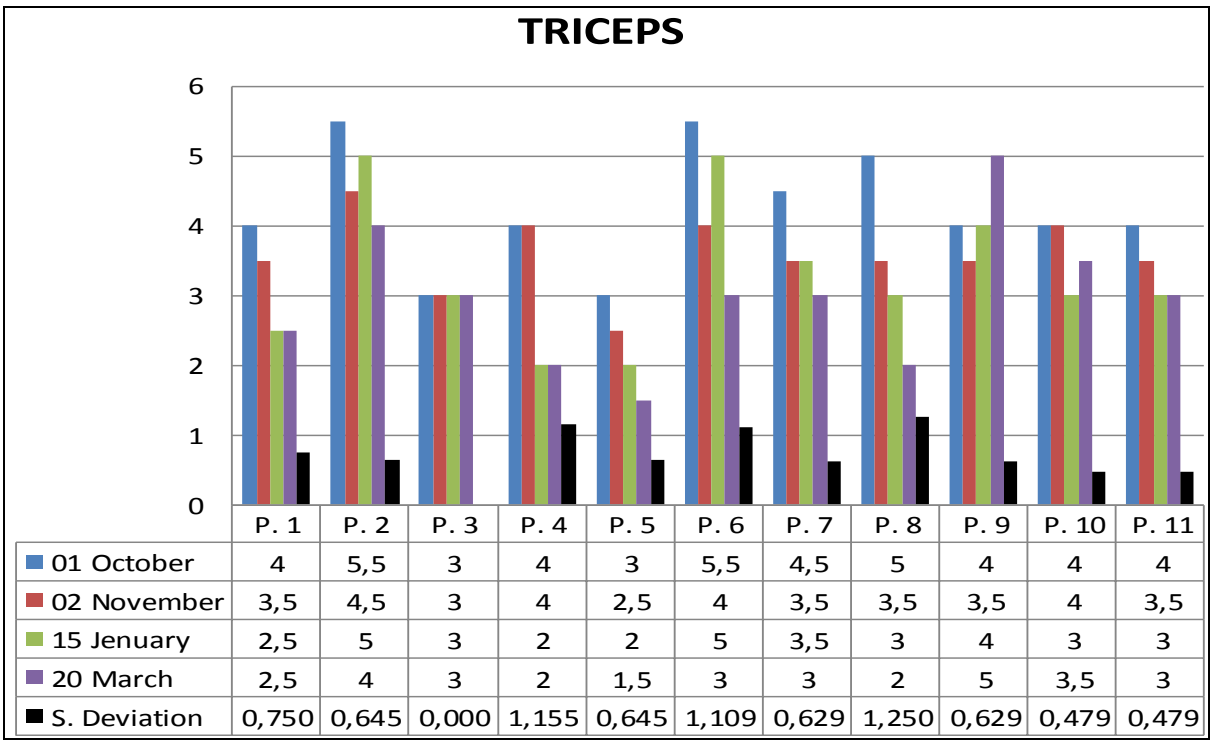
As understood above table, there is no significant relationship among in the ages of the participants, duration of staying in the game and fat percentages in the subcutaneous in body.($p > 0.05$). On the other hand, it was found significant difference between ages of the participants and their last tricep subcutaneous fat measurement ($r = -.610$; $p<.05$). In other words, as the ages of the participants increases, far percentage in tricep subcutaneous decrease. In addition, it was also found significant relationship between the participant's duration of staying in game and last measurements of Abdominal ($r =-. 638$; $p <. 05$). That is to say that as duration of staying in the game increase, participants abdominal muscle fat ratio decrease.



	P. 1	P. 2	P. 3	P. 4	P. 5	P. 6	P. 7	P. 8	P. 9	P. 10	P. 11
01 October	16.5	14	8.5	19	7	6	7	18	15	8.5	12
02 November	14	10	7	14	7	5.5	5	13.5	11	8	10
15 Jenuary	12.5	8	6	9	5	4	6	9	12	7	13
20 March	15	9	6.5	8	4	4.5	5.5	14	11	7	12
S. Deviation	1.683	2.630	1.080	5.066	1.500	0.913	0.854	3.683	1.893	0.750	1.258

Graph 1: The changes of abdomen measurement of the volleyball players.

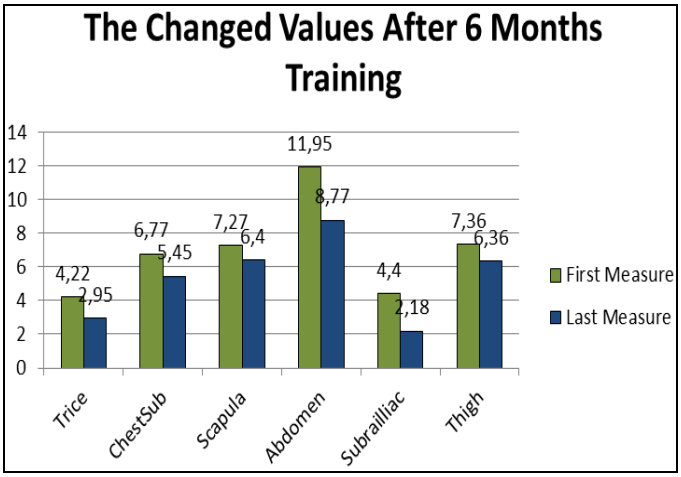
The graph above shows the result of Abdomen skinfold measurement. As it can be seen according to the data result of the add measurements of the players, the obvious changes was found. The highest changes were found on the player 4 in the ratio of 5,066. The minimal changes were found on the player 10 in the ratio of 0,75.



	P. 1	P. 2	P. 3	P. 4	P. 5	P. 6	P. 7	P. 8	P. 9	P. 10	P. 11
01 October	4	5,5	3	4	3	5,5	4,5	5	4	4	4
02 November	3,5	4,5	3	4	2,5	4	3,5	3,5	3,5	4	3,5
15 Jenuary	2,5	5	3	2	2	5	3,5	3	4	3	3
20 March	2,5	4	3	2	1,5	3	3	2	5	3,5	3
S. Deviation	0,750	0,645	0,000	1,155	0,645	1,109	0,629	1,250	0,629	0,479	0,479

Graph 2: The changes of triceps measurement of the volleyball players.

The graph above shows the result of Triceps measurement. In this study the standard deviation consideration shows that there is not too much differences have been observed between value of players as a measure. In this measurement the biggest change has been seen on the player 8 in the ratio of 1,25. The player 3 has not had any change in measurement of trici for six month. And there was not no any proportional connection between result and data of the player. On the four measurement the same result was found.



Graph 3: The changed values after 6 months training.

It is seen on the graph 3 that there are changes of fat percentages in body as results of the sample paired t-test, after the participant's six months trainig. The analize results show that trice, scapula, abdomen, subrailliac, thigh measurements changes were found significant ($p<0,05$), while other measurements which were applied, there were no significant changes between them ($p>0,05$).

4. Conclusıon

The aim of this study was to investigate effects of during six months voleyball training on some anthropometric measurements. As a result of the measurements taken during the six-month season, the statistical analysis of the data showed that according to participants playing position some changes have been found on some part of their body but this results staticaly was not found significant. Several studies have compared the anthropometric and physiological profiles of volleyball players according to their playing positions. Between participants firs and last measurements of triceps, scapula, abdomen, subrailliac and thigh changes significantly have been found. This case shows the effect of volleyball on that kind of muscles. While comparing the age, duration number of playing and some measurement of the participants we can see that incrising of the age causes dicrising of triceps muscle subcutaneous fat rate. While incrising of duration number of playing causes dicrising of abdominal subcutaneous fat rate. In this case the age of progress on the development of the triceps muscle, did not make any changes to the form can be interpreted. But the development of abdominal muscles is directly related with the duration of the game. To be trained, fit and getting more playing time developed muscle groups and the same results have been found on the study of. We have done similar studies in the literature of our support in this study [14, 15].

5. References

1. Urszula SG. Segmental Body Composition in Male and Female Ice-Hockey Player. Life Science Journal 2014, 11(5).
2. Aytek Aİ. Body Composition Of Turkish Volleyball Players. Intensive Course in Biological Anthropology 1st Summer School of the European Anthropological Association Prague, Czech Republic, 2007, 16-30.
3. Malá L *et al.*, The Profile and Comparison of Body Composition Kinesiology 2010; 1:92-93.
4. Gaurav V, Singh M, Singh S. A comparative study of somatic traits and body composition between volleyball players and controls. Indian Journal of Science and Technology, 2011, 4(2).
5. http://www.ausport.gov.au/ais/nutrition/factsheets/sports/volleyball, 12 january, 2013.
6. Sukhdev S, Karanjit S, Mandeep S. Anthropometric Measurements, Body Composition and Somatotyping of High Jumpers. (Guru Nanak Dev University, Amritsar, Punjab, INDIA, 2010.
7. Malá, L. *et al.*, The Profile and Comparison of Body Composition Kinesiology 2010; 1:93-94.
8. www.academicjournals.org/jpesm/PDF/pdf2010/.../Gaurav%20etal.pdf, 12 january, 2013.
9. Tamer K. Sporda Fiziksel-Fizyolojik Performansın Ölçülmesi ve Değerlendirilmesi, Bağırgan Yayınevi, Ankara, Turkey, 2000, 56-60.
10. Muralidhara DV. Body Mass Index and its Adequacy in Capturing Body Fat. Thai Journal of Physiological Sciences, 2008, 20(2).
11. Jackson AS, Pollock ML. Generalized equations for predicting body density of men. Br. J. Nutr. 1978; 40:497-498.
12. Yawen B, Ruth N. Protein Folding Protocols Methods in molecular biology. Clifton, Newjersey, Usa, 2007, 350.
13. Malousaris GG. *et al.* Somatotype, size and body composition of competitive female volleyball players. J Sci Med Sport, 2008; 11(3):337-338.
14. Con M. *et al.* Voleybolcuların Esneklik ve Vücut Yağ Yüzdesi Değerlerinin Dikey Sıçrama, *Performansına Etkisi.* Selçuk Üniversitesi Beden Eğitimi Ve Spor Bilim Dergisi, 2012; 14(2):202-204.
15. Trajković N. *et al.* Positional Differences in Body Composition and Jumping Performance Among Youth Elite Volleyball Players. Acta Kinesiologica 2011; 5(1):62-66.