

## Effects on Physical and Strength Parameters of Sports of Different Sports Branches

Ercan Tizar\*<sup>1</sup> Savaş Ayhan<sup>1</sup> Süreyya Yonca Sezer<sup>2</sup> Gönül Rezzan Tizar<sup>3</sup> Veysi Akpolat<sup>4</sup>

*1 Dicle University, Physical Education and Sport High School, Diyarbakir-Turkey*

*2 Firat University Faculty of Sports Science, Elazığ-Turkey*

*3 Student, Master*

*4 Dicle University, faculty of Medicine, Diyarbakir-Turkey*

### ABSTRACT

*The purpose of this study is; is to compare the physical and conditional parameters of athletes in different sports branches.*

*A total of (N = 45) athletes actively participating in the basketball, handball and volleyball teams in the Kayapınar Municipality from the third league teams in the province of Diyarbakır participated in the study voluntarily during the 2015-2016 season.*

*In comparison of the demographic physical and conditional parameters of these teams, Kruskal Wallis test was used to compare the descriptive statistics and the Bonnoni Corrected Mann Whitney U test was used for the comparison of teams.*

*As a result; this work will help trainers and sports scientists preparing the training program and determine what teams should look for in sports selection.*

\* Corresponding author: Ercan Tizar, Dicle University, Physical Education and Sport High School, Diyarbakir-Turkey

## **INTRODUCTION**

The morphological characteristics are not only influencing human movements but also determining the sporty performance. Topics in the field of morphology which are frequently investigated; length, width, environmental measurements and body composition. Regular training in sport branches and training programs based on scientific bases increase muscle strength, strength, speed and flexibility, while body composition that is prone to activity is also regulated (1).

In order to be able to perform at the maximum level in basketball, it is necessary to activate all of the basic motor skills (strength, speed, endurance, mobility, skill and coordination etc.).

In team sports, especially in the volleyball branch, body structures and leaping abilities are important factors in the performance of the team in terms of performance (3).

The most important effect of fatigue on performance in sports is to limit the technical capacity by affecting neuromuscular coordination in the negative direction (4,5).

In this study, some physiological and anthropometric characteristics of the athletes struggling in basketball, handball and volleyball 3rd League were determined during the 2015-2016 season and the differences between the branches were tried to be determined. It is aimed to determine the physiological and anthropometric characteristics of sports branches and athletes.

## **MATERIAL METHOD**

A total of 45 (basketball (n = 15), volleyball (n = 15) and handball (n = 15) volunteers from the volleyball, basketball and handball men teams in the amateur league in Diyarbakır athletes participated. The leg and back strength of the selected physical parameters of the volunteers participating in the study were measured by height, weight, length, circumference, diameter and subcutaneous fat fold measurements, vertical jump from the conditional parameters, long jump by left and right hand grip tests.

**Statistical Analysis:** IBM SPSS 21.0 for Windows statistical package program was used for statistical evaluation of our research data. Showing normal distribution; A one-way ANOVA test was used to compare groups. It has no normal distribution; Kruskal Wallis test was used to compare the groups. Bonferoni corrected Mann Whitney U test was used for the binary comparison of the groups. The Chi-Square ( $\chi^2$ ) Test was used to compare qualitative variables. Hypotheses were taken bidirectionally and  $p < 0.05$  was considered statistically significant.

## RESULTS

Kruskall Wallis test analysis was carried out to determine whether Kayapınar Municipality volleyball, basketball and handball teams differed in height, weight, age and sports history from the third league teams of Diyarbakır. As a result of the analysis, basketball, handball and volleyball groups statistically; There was no significant difference in age and athletic background ( $p > 0.05$ ); but there was a significant difference in height and weight ( $p < 0,05$ ).

Table 1. Physical measurement values of groups

Table 1. Physical Measurement Values								
Basketball			Handball		Volleyball		Test Name	
Variables	Mean±ss	Medyan(Min.-Max.)	Mean±ss	Medyan(Min.-Max.)	Mean±ss	Medyan(Min.-Max.)	Z-Ohisquare	P
Arm length	59,60±1,65	60 (56-62)	59,66±1,69	60 (56-62)	60,10±2,45	60 (57-65)	0.104	0.949
Flare Length	180,13±5,42	180 (165-188)	182,66±5,39	182 (175-195)	182,83±5,57	183(175-198)	1.447	0.485
Shoulder width	42,15±1,50	41(40-45)	41,90±1,96	41(37-44,50)	42,12±9,7	38(35-67)	10.422	0.005
Chest circumference	90,26±4,7	89 (82-100)	89,25±5,1	89 (82-100)	90,6±3,80	90 (83-95)	0.451	0.798
Arm circumference	33,45±1,56	33(29-35)	30,5±2,33	30 (26-35)	30,29±2,67	30 (26-34)	7.363	0.025
Forearm circumference	29,12±1,52	29 (27-33)	28,60±1,67	27,20 (25,20-31)	28,30± 1,76	28 (25-31)	4.112	0.128
Waist circumference	78,50±6,77	79 (67-88)	78,23 ± 6,73	79 (67-88)	70,80± 5,15	70 (63-80)	11.829	0.003
triceps	8,77 ±4,12	6,80 (4,40-18)	8,30 ± 4,21	6,80 (4,40-18,20)	7,33±3,24	7,00 (3-15)	0.941	0.625
abdomen	10,59 ±3,55	11,24 (5,20-16)	13,20 ±6,82	12,15 (5,20-29)	7,87 ±2,13	8,13(5-12)	5.438	0.066
suprailiac	9,72 ±3,26	9,4 (5,80-17,40)	9,57 ±3,33	9,40 (5,80-17,40)	9,36 ±2,47	9,16(6-14)	,0,30	0.985

\*  $P < 0.05$  was significant.

Bipolar comparison of groups with significant shoulder width, arm circumference, waist circumference was done with Mann Whitney Utesti Bonferoni Correction.

Bonferoni corrected Mann Whitney U test as a result of the shaft comparison; There was no significant difference in basketball-handball teams in terms of shoulder width, arm circumference, waist circumference ( $p > 0,017$ ).

Table 2. Strength measurement values of groups

Table 2. Strength measurement values of groups								
Basketball			Handball		Volleyball		Test Name	
Variables	Mean±ss	Medyan(Min.-Max.)	Mean±ss	Medyan(Min.-Max.)	Mean±ss	Medyan(Min.-Max.)	Z-OhiSquare	P
Strength Right	92,46±14,15	88(n-112)	95,33 ±14,81	100(72-112)	112,13 ±5,97	112(103-125)	18.008	0
Strength left	89,80±15,05	91(68-109)	91,73 ±14,41	92(68-109)	104,5±5,9	105(93-118)	8.843	0.012
Vertical Splash	±5,2	65(58-76)	62,5 ±8,65	63(41-76)	70,40 ±3,48	70(64-75)	7.988	0.018
Long jump	228,86 ±14	226(200-254)	222,93 ±17	225(190-251)	266,66±6,48	267(251-275)	29.239	0
Leg Strength	118,66 ±15	115(90-145)	109,33 ±13	110 (90-130)	137,40 ±7,79	135(126-155)	22.35	0

\* P <0.05 wa significant.

As a result of the comparison of the Bonferoni corrected Mmann Wwhitney U test and the sham; Significant difference between basketball and handball teams in terms of force right, force left, vertical jump, long jump, back force, only back strength (p> 0,05). (Table 10).

Table 3. Dual Strength measurement values of groups

Table 3. Dual Strength measurement values of groups						
Basketball			Volleyball		Test Name	
Variables	Mean±ss	Medyan(Min.-Max.)	Mean±ss	Medyan(Min.-Max.)	z	p
Strength Right	92,30 ± 14,15	88 (72-112)	112,65 ±5,97	112 (103-125)	-3.765	0.000
Strength left	89,78 ±15,05	91(68-109)	104,5 ±5,9	105 (93-118)	-2.600	,009*
Vertical Splash	66,25 ±5,2	65 (58-76)	70,5 ±3,48	70 (64-75)	-2.101	0.036
Long jump	228,63 ±14	226 (200-254)	266,13 ±6,48	267 (251-275)	-4.608	0,000*
Leg Strength	118,45 ±15	115 (90-145)	137,52±7,79	135 (126-155)	-3.267	,001*
Back Strength	112,78 ±11	112 (95-130)	127,33 ±9	130 (110-143)	-3.646	ooo*

P <0.017 was significant.

There was a significant difference in the comparison of volleyball and handball teams in terms of force right, force left, vertical jump, long jump, leg strength, back strength (p> 0,05). (Tablo.12).

## **DISCUSSION**

In our work we compare; basketball, handball and volleyball groups in terms of height and body weight ( $p < 0.05$ ). When study groups are compared in duplicate; ( $p < 0,017$ ) between the basketball and handball groups in terms of volleyball and handball in body height values and body weight values.

In a study on elite handball players, it was determined that the average height length of athletes was  $188,74 \pm 7,32$  cm (6).

In a study performed, average height value of volleyballs was  $184.52 \pm 6.24$  cm, body weight was  $75.84 \pm 6.93$  kg. and mean height of handballs was  $183 \pm 3.76$  cm, body weight was  $74.96 \pm 4.49$  kg. (7).

The results obtained in our study are close to the values of Gillam and Driskell et al. similar to the results we have found that the longest are basketball and volleyball. However, in the literature, it is seen that the measurements made on our country and also on foreign athletes differ from the values we have found

In the master thesis research done by Aktaş Y (2011) on volleyballs; The mean biacromial diameter was  $41,30 \pm 1.8$  cm, the circumference of the arm was  $30,91 \pm 2,7$  cm, and the waist circumference was  $78,983 \pm 6,6$  cm (8).

## **CONCLUSION AND SUGGESTIONS**

According to our results; it can be said that players who played in the third league of different leagues and applied similar training programs have similar physiological characteristics.

The results obtained from similar studies with our study will be evaluated together and used in the selection of talents specific to these branches. We also think that while coaches of basketball, handball and volleyball are organizing their programs, it is a qualitative outcome that can help the athletes choose and implement special training programs that will contribute to their individual development.

## REFERENCES

1. ŞEN C, Durgun B, Kozanoğlu ME. (2007). Evaluation of Upper Extremity Morphologic Features of Sportsmen Playing Basketball in Dislocated Ligue by Locations. *Sportmeter, Journal of Physical Education and Sport Sciences*, 2007, V (3) 135-138.
2. Bektas Y., Koca Özer B., Gültekin T, Sağır M., Akın G., Anthropometric Characteristics of Female Basketball Players: Somatotype and Body Composition Values, Niğde University, *Journal of Physical Education and Sport Sciences*, 2007; Volume: 1: Issue: 2.
3. Clarke, O.H., *Exercise Physiology*, Prentice Hall, New Jersey, USA, 1975.
4. Temoçin, S., Ek, R.O., Tekin, T.A., The Effect of Speed and Durability on Soccer Players on Respiratory Capacity, *Ankara University Journal of Sport and Physical Education and Sport Sciences*, Vol.2, No: 1, p: 31, 35, Ankara, 2004.
5. Herzog, W., *Muscle Function in Movement and Sport*, pp:14, *The American Journal of Sport Medicine*, Vol:24, No:6, USA, 1996.
6. Yıldırım İ, Özdemir V. Anthropometric Characteristics of Elite Male Handball Players "Journal of Sports and Performance Studies *Journal of Sports and Performance Research* 2010; 1 (1) 6-13.
7. Gillam, G.M., Identification of anthropometric and physiological characteristics relative to participation in college basketball. *NSCAJ*, 7, 34-36, 1985
8. Aktaş Y., Some Physical And Comparison of Kondüsyonel parameters of Turkey's Volleyball Third and Regional League Men Teams Athletes., *Harran University Institute of Health Sciences Physical Education and Sports Department, M.Sc.*, p: 39, 26-28, Şanlıurfa, 2011.