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## Body composition of inter-university handball players according to the playing position

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### Abstract

The aim of this study was to compare the body composition of inter-university handball players according to the playing position. In this study, the researcher had selected 40 handball players playing inter-university as subjects. The selected subjects were in the age group of 18 to 25 years. While selecting the players, 10 players were selected in these positions goalkeeper, left and right wings, left and right backs, half and center backs. Each player was informed and agreed to before the players were included in the study. To measure body composition, The test method developed by J. V.G. A. Durmin and J. Vommersley (1974) was used. Comparison of body composition according to the playing position of handball players was performed by One-Way ANOVA and Post hoc Test using Microsoft excel 2007 software. If the F value was less than 0.05, the difference was considered significant. In the present study, handball players were found to vary in body composition according to their playing conditions. Significant differences were found between the body fat percentage and absolute body fat of the goalkeeper, left and right wings, left and right backs, half and center backs of these handball players.

**Keywords:** Body composition, playing position

### Introduction

Each person's physical ability to some extent depends on the body composition, due to which if the body composition is good, then that person has good stamina and physical ability, due to which the sports and physical ability of the player increases. He is made to participate in a variety of training programs. High level players have a fairly good physical structure. Body composition includes proteins, body water, fats, and minerals, which give an accurate description of a person's weight, revealing the type of person's health. Body Composition Provides information about body fat percentage, body lean mass and fat-free body. Body composition This is the ratio of how much fat is in the body. A physically healthy person is the owner of a balanced body composition, with a low percentage of body fat mass and a high percentage of non-fat mass, which includes muscles, bones, and organs. Players keep doing this training continuously, that is why a limited amount of fat is found in their body. But on the contrary, it has been seen that due to the playing condition of the players, body composition can be found to be different.

### Methodology

In this study, the researcher had selected 40 handball players playing inter-university as subjects. The selected subjects were in the age group of 18 to 25 years. While selecting the players, 10 players were selected in these positions goalkeeper, left and right wings, left and right backs, half and center backs. Each player was informed and agreed to before the players were included in the study. To measure body composition, The test method developed by J. V.G. A. Durmin and J. Vommersley (1974) was used. Measurements were obtained using skin fold calipers at four selected sites namely biceps, triceps, sub scapular and supra-iliac and the score was recorded in millimeters. To measure the skin fold, a skin fold caliper was used to measure the pressure of a 10gm/mm square. After grasping the skin with the caliper, the reading was taken after two seconds. Under which biceps skinfold, triceps skinfold, sub-scapular skinfold and supralic skinfold were measured.

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**Statistical Analysis**

Comparison of body composition according to the playing position of handball players was performed by One-Way

ANOVA and Post hoc Test using Microsoft excel 2007 software. If the F value was less than 0.05, the difference was considered significant.

**Table 1:** Descriptive Statistics of body composition according to the playing position of handball players

Variables	Group	Mean	S.D.
Age	Left and right wings	21.30	1.89
	Goalkeeper	21.50	2.46
	Left and right backs	20.90	1.20
	Half and center backs	21.80	2.35
Body Height	Left and right wings	177.00	7.72
	Goalkeeper	163.80	8.70
	Left and right backs	170.60	9.16
	Half and center backs	177.10	4.38
Body Weight	Left and right wings	68.30	2.98
	Goalkeeper	71.70	6.91
	Left and right backs	72.40	6.52
	Half and center backs	67.90	3.78
Body Fat%	Left and right wings	14.83	1.06
	Goalkeeper	17.57	2.21
	Left and right backs	15.35	2.17
	Half and center backs	14.77	0.65
Absolute Body Fat (Kg)	Left and right wings	10.14	0.97
	Goalkeeper	12.70	2.69
	Left and right backs	11.19	2.45
	Half and center backs	10.05	1.03
Lean body Weight	Left and right wings	58.16	2.41
	Goalkeeper	59.00	4.68
	Left and right backs	61.21	4.75
	Half and center backs	57.85	2.76

**Table 2:** Analysis of Variance in body fat, absolute body fat and lean body weight among goalkeeper, left and right wings, left and right backs, half and center backs groups of handball players

Variables	Source of Variation	SS	df	MS	F
Body Fat%	Between Groups	52.11	3	17.37	6.244*
	Within Groups	100.14	36	2.78	
Absolute Body Fat (Kg)	Between Groups	45.50	3	15.17	3.971*
	Within Groups	137.48	36	3.82	
Lean body Weight	Between Groups	68.93	3	22.98	1.589
	Within Groups	520.45	36	14.46	

\* Significant at .05 level of significance  $F_{.05}(3, 36) = 2.87$

The analysis of data in table-2 revealed that there was significant difference in body fat % and absolute body fat of goalkeeper, left and right wings, left and right backs, half and center backs groups as the obtained F-ratio was (6.244) and (3.971) which was greater than that of required tabulated 'F' value of 2.87 at .05 level significance with (3, 36) degree of freedom. but not significant difference in lean body weight of

goalkeeper, left and right wings, left and right backs, half and center backs groups as the obtained F-ratio was (1.589) which was less than that of required tabulated 'F' value of 2.87 at .05 level significance with (3, 36) degree of freedom. As the results ANOVA were discovered significant, the LSD post-hoc test was applied to uncover the between-group differences among handball players.

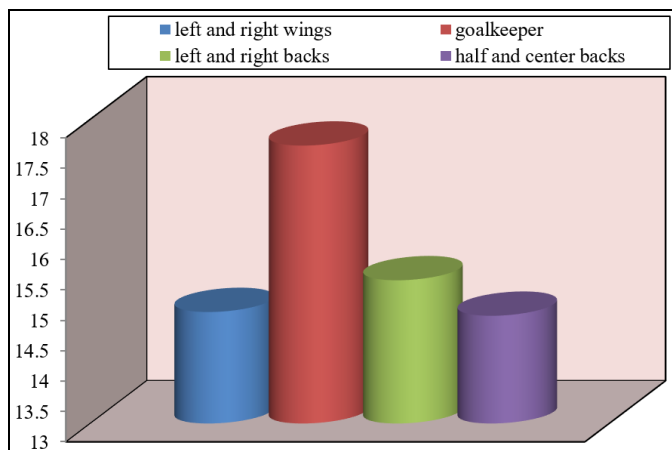
**Table 3:** Post hoc test for comparison of the means of body fat% among handball players.

LRW	GK	LRB	HCB	M.D.	C.D.
14.83	17.57			2.74*	1.57
14.83		15.35		0.52	1.57
14.83			14.77	0.06	1.57
	17.57	15.35		2.21*	1.57
	17.57		14.77	2.80*	1.57
		15.35	14.77	0.58	1.57

\*Significant at .05 level

Table 3 revealed that there was differences among the goalkeeper, left and right wings, left and right backs, half and center backs groups. For the variable body fat%, the mean difference between goalkeeper and left & right wings (2.74), goalkeeper and left and right backs (2.21), goalkeeper and half and center backs (2.80), as the mean difference of above four was greater than the critical differences. Insignificant

difference was found between the means of left and right wings and left and right backs (0.52), left and right wings and half and center backs (0.06), left and right backs and half and center backs (0.58) players as the mean difference were less than the critical difference.



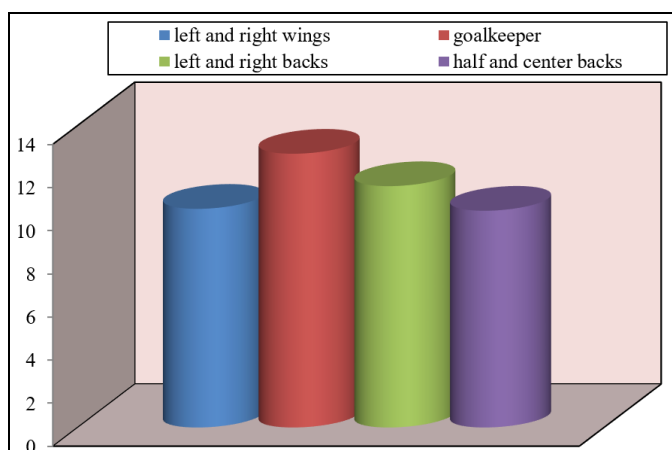
**Graph 1:** Mean difference among handball players on body fat%

**Table 4:** Post hoc test for comparison of the means of Absolute Body Fat among handball players.

LRW	GK	LRB	HCB	M.D.	C.D.
10.14	12.70			2.56*	1.84
10.14		11.19		1.05	1.84
10.14			10.05	0.09	1.84
	12.70	11.19		1.50	1.84
	12.70		10.05	2.64*	1.84
		11.19	10.05	1.14	1.84

\*Significant at .05 level

Table 4 revealed that there was differences among the goalkeeper, left and right wings, left and right backs, half and center backs groups. For the variable body fat%, the mean difference between goalkeeper and left & right wings (2.56), goalkeeper and half and center backs (2.64), as the mean difference of above four was greater than the critical differences. Insignificant difference was found between the means of left and right wings and left and right backs (1.05), left and right wings and half and center backs (0.09), goalkeeper and left and right backs (1.50), left and right backs and half and center backs (1.14) players as the mean difference were less than the critical difference.



**Graph 2:** Mean difference among handball players on Absolute Body Fat

**Conclusions**

In the present study, handball players were found to vary in body composition according to their playing conditions. Significant differences were found between the body fat percentage and absolute body fat of the goalkeeper, left and right wings, left and right backs, half and center backs of these handball players. It has been suggested by the researcher

that handball players should be ranked in the game according to the body composition so that good performance in the game can be done by the players and can take the game to new heights.

**References**

1. Virgínio E *et al.* Anthropometry and Body Composition of Elite Brazilian Soccer Players According to the Playing Position. *Health Science Journal.* 2021;15(3):1-6.
2. Pueo B *et al.* Optimal Body Composition and Anthropometric Profile of World-Class Beach Handball Players by Playing Positions. *Sustainability.* 2020;12(6):1-13.
3. Hermassi S *et al.* Playing Level and Position Differences in Body Characteristics and Physical Fitness Performance among Male Team Handball Players. *Bioeng. Biotechnol.* 2019;7(149):1-12.
4. Pena, *et al.* Anthropometric and Fitness Profile of High-Level Basketball, Handball and Volleyball Players. *ELSEVIER,* 2018;2(1):30-35.
5. Pastuszak A *et al.* Anthropometric Profile of Female Handball Players is Related to Bone Mineral Density. *Anthropologic AI review Sciendo.* 2018;81(3):298-306.
6. Michalsik LB *et al.* Technical Match Characteristics and Influence of Body Anthropometry on Playing Performance in Male Elite Team Handball. *Journal of Strength and Conditioning Research.* 2015;29(2):416-428.