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**Dr. Krishna R Yadav**  
Assistant Professor, Department  
of Physical Education, College of  
Horticulture, Munirabad,  
Koppal, Karnataka, India

## Study on morphological characteristics of high school state level handball players

**Dr. Krishna R Yadav**

### Abstract

**Introduction:** Sports play a vital role in modern society, especially in young athletes. In modern era the sports performance are highlighted in the newspapers, news channels & they become national & international heroes. To achieve highest performance they train hard, the coach try to get maximum from the sportsman's. Thus the study of morphological characteristics in sports has become significant role, because the best structure & physique of athletes will have best outcome in the high competitive world of sports. Sport is a highly organized form of play and play is a general innate tendency. Sports has very important role in growth and development of a human body.

**Purpose of the study:** The main Purpose of this study was to investigate, selected morphological Characteristics of the High School State Level Handball players.

**Methodology:** The present study is to identify the significant and limited number of morphological variables of High School State Level Handball players, total 100 subjects were selected for fulfill the aim of the study. The age group of the above players was between 12 to 15 years and players were selected from different High School from Koppal, Hosapete, Ballari & Gadag district.

**Results:** In the Factor analysis High School State Level Handball players, Among the Thirty six Morphological variables Eight (08) components were identified. The identified Morphological Characteristics were found significant & limited.

**Conclusion:** From this study it was concluded that there was a significant role Morphological Characteristics of High School State Level Handball players & the morphological variables will helps in the selection of High School State Level Handball players.

**Keywords:** Morphology, anthropometry, junior college & handball players

### Introduction

Sports play a vital role in modern society, especially in young athletes. In modern era the sports performance are highlighted in the newspapers, news channels & they become national & international heroes. To achieve highest performance they train hard, the coach try to get maximum from the sportsman's. Same way in sports has the perfect morphological characteristics (structure & physique) has best skill performance. The skill execution depends on the body movements and body structure. Eg: In Volleyball height of sportsman will have better shooting ability, dunking, rebound collection & defensive tactics. Thus Morphological Characteristics of Volleyball players have impact on their performance.

In performance sports, competition provides the means by which one can show one's worth by competing successfully. Consequently sports competitions have triggered off a vigorous competition in research on sports physiology, sports psychology, sports training, sports nutrition and sports medicine. Competitive sports have brought into sharp focus many methods for improvement and achieving high level performance. Everywhere efforts are on to set up research laboratories so that ways and means could be found out to access and accelerate human performance in sports.

Seryozha Gontarev *et al* (2017) <sup>[9]</sup> The research was concentrated on a sample of 133 top handball senior players with the main objective to analyze the anthropometric characteristics and somatotype components in terms of the position at which they play in the team. Within the statistical analysis, the basic descriptive parameters are being calculated and a univariate analysis of variance and post-hoc analysis are applied.

**Corresponding Author:**  
**Dr. Krishna R Yadav**  
Assistant Professor of Physical  
Education, College of  
Horticulture, Munirabad,  
Koppal, Karnataka, India

A general mesomorphic athletic is obtained with the obvious longitudinal dimensionality of the skeleton, even compared to the bone and muscle tissue and slightly higher values of fat and endomorphic component especially for goalkeepers and the pivot. The external lateral players and the goalkeepers are characterized by dominant pronounced longitudinal dimensionality, bone composition, and voluminosity. The wing players have lower longitudinal dimensionality, while the central players are characterized with pronounced voluminosity and somewhat larger amounts of fat tissue.

Garcia-Gil, Maria *et al* (2017) [4] he studied the technical, tactical and psychological skills, performance in playing basketball depends on anthropometry and physical fitness. However, limited information is available regarding such features in women. We hypothesized that anthropometry and physical fitness are associated with female basketball performance, and consequently, performance could be predicted using the results of certain anthropometric measures and fitness tests. Body parameters (age, height, body mass, skinfold thickness, limb perimeters, and lengths) were measured. Physical fitness capacities (jumping, agility with and without the ball and speed) were measured by the specific test. Additionally, game performance index rating (PIR). Teams ranked better in the regular season had smaller mean fat skinfold thickness and spend less time on the agility test (T-drill). Correction analyses indicated that players with better PIR were older, taller and had a longer arm and greater contracted arm perimeter (CAP). Further, those players had better results in the T-drills test. Multiple regression analysis indicated that combined age, height, CAP, fat skinfold thickness and time in T-drill test yielded a string predictor of PIR per time played. In conclusions, the results of the present study indicate that some anthropometric and physical fitness characteristics of female elite basketball teams and players are highly associated with performance-related parameters. In addition, a regression model has been developed to predict the performance of female basketball players.

Dr. Sukhwinder Singh (2016) [3] investigation finds the relationship between selected Anthropometric variables and performance of university-level Volleyball Players. For the

purpose of the study, thirty (N=30) volleyball players were selected as subjects from the North Zone Inter-University Volleyball Tournament. The selected Anthropometric measurements were taken with the help of vernier callipers and Lange's skinfold callipers. The performance of the subjects was measured in terms of Spiking ability of the players during the match. Product moment method for inter-correlation was applied for analysis of data. The body diameters i.e. bi-acromial, bicrystal and elbow diameters have been found to possess positive and significant (p0.05) correlation with the performance. The skinfold measurements i.e. subscapular and suprailiac have been found to possess positive and significant (p0.05) correlation with the performance. It can be concluded from the findings of the present study that body diameters bi-acromial, bicrystal, and elbow and; subscapular, suprailiac biceps, and calf skinfold measurements contribute significantly to Volleyball performance.

### Purpose of the study

The main Purpose of this study was to investigate, selected morphological Characteristics.

### Methodology

The aim of the present study is to identify the significant and limited number of morphological variables of High School State Level Handball players.

### Subjects

The present study is to identify the significant and limited number of morphological variables of High School State Level Handball players, total 100 subjects were selected for fulfill the aim of the study. The age group of the above players was between 12 to 15 years and players were selected from different High School from Koppal, Hosapete, Ballari & Gadag district.

### The variables

In order to assess morphological characteristics selected anthropometric measurements were under taken.

**Table 1:** Administration of Tests

Morphological variables			
Length	Skinfold	Width	Girth
Body weight in Kgs.	Chest	Bi-epicondylar Humorous	Tensed Arm
Stature in Cms	Triceps	Bi-epicondylar Femur	Arm Relaxed
Sitting height	Biceps	Bi-acrominal width	Forearm
Leg length	Sub Scapular	Bi-iliocrystal width	Chest
Arm span	Supra Spinale		Waist
Hand Length	Abdomen		Thigh
[1]	Thigh		Medial Calf
[2]	Calf		

**Table 2:** Varimax (Kaisers) rotated factor matrixes of High School State Level Handball players

	Rotated Component Matrix							
	Component							
	1	2	3	4	5	6	7	8
Mesomorphy	0.883						0.302	
Supra Spinal Skinfold	0.858							
Biceps Skinfold	0.836							
Sub Scapula Skinfold	0.791							
Ectomorphy	0.774							
Femur Width	0.754	0.358						
Humorous Width	0.735	0.513						
Percentage of fat	0.687			0.561				
Abdomen Skinfold	0.584	0.446		0.579				

Waist Girth		0.923						
Wrist Girth		0.762	0.304					
Leg Length		0.750					.309	
Mid Calf Skinfold		0.541		.454				
Arm Relax Girth		0.533				-.388		
Ankle Girth	.385	0.510						
Hand Length		0.499					.488	
Thigh girth			.882					
Forearm Girth			.837					
Abdomen Girth		-.374	.778					
Weight		.576	.724					
Chest Girth		.554	.682					
BODY MASS INDEX			.669					.496
Calf Girth			.659					-.483
Arm Tense Girth	-.453		.651					
Thigh Skinfold				.848		.334		
Endomorphy	-.454			-.825				
Body Density	-.454			-.825				
Chest Skinfold	.430			.684				
Arm Span					.908			
Sitting Height					.827		-.340	
Arm Length	.394				.720			
Height		.614			.672			
Shoulder Width						.814		
Waist Width			.356			.651		
Triceps Skinfold							.788	
Muscle Mass						.498		0.511

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

By the examination of the factor loading in the table, the twelve components extracted earlier represent waist girth, arm span, mesomorphy, thigh girth, thigh skinfold, shoulder width, triceps skinfold and muscle mass based on the high factor loading of related variables.

The test variables were selected through interpretation of rotated factor loading of various test variables. Factor solutions can best be interpreted with respect to the pertinent field of research and the researcher's insight into the field of study. The interpretation of the factor analytic results necessitates subjective but they are rational interpretation. A factor loading of muscle Mass 0.511 and more is, therefore, considered as significant for each factor analysis. When on a factor of two or more related test variables load significantly, the one which that loads highest was selected as the representative test item for that factor. On the other hand, if a test variable loads significantly in more than one factor, by the theory of redundancy it was ignored in the factors except the one in which it loaded highest.

**Table 3:** Factors loading of variables in morphological characteristics of High School State Level Handball players

Si No	Morphological variables	
1	Waist Girth	0.923
2	Arm Span	0.908
3	Mesomorphy	0.883
4	Thigh Girth	0.882
5	Thigh Skinfold	0.848
6	Shoulder Width	0.814
7	Triceps Skinfold	0.788
8	Muscle Mass	0.511

These are the variables of a major system called morphological characteristics in High School State Level Handball players. This morphological characteristic is dominated by waist girth, arm span, mesomorphy, thigh girth,

thigh skinfold, shoulder width, triceps skinfold and muscle mass.

### Conclusion

The different factors loading of variables in Morphological characteristics of High School State Level Handball players, it was found that Waist Girth (0.923) was maximum, while in Muscle Mass (0.511) was found to be minimum & found significant role in the Morphological Characteristics of High School State Level Handball players & the morphological variables will helps in the selection of players.

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