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Relationship Of Playing Ability From Selected Physical Physiological Anthropometrical And Skill Performance Variables Among Football Players

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Abstract

The aim of the study was to find out the factors related with playing ability among University female soccer players. To achieve the purpose of the study, 100 female football players from various universities and who were participated in the south zone University women Tournament during the academic year 2022-2023 was selected as subjects. The age of the subjects ranged from 18 to 25 years. The present study consists of one dependent variable, namely playing ability of volleyball players, and eighteen independent variables Arm Length, Leg Length, Arm Circumference, Calf Circumference, Thigh Circumference, Speed, Agility, Cardio Vascular Endurance, Flexibility, Muscular Endurance, Explosive Power, Resting Pulse Rate, Vital Capacity, Respiratory Rate, Dribbling, Passing, Shooting, Height and Weight. The selected variables were assessed by using standard testing procedures. In order to study the relationship between the criterion and determinant variables and inter relationship between determinant variables were computed, using the method of Pearson's product moment correlation. The level of significance was accepted at $P < 0.05$.

Key words: Football Playing Ability, Muscular Endurance, Dribbling, Shooting

Introduction

Football is played as well as enjoyed by multitudes of people all over the globe and it is a game of fast, quick, aggressive and attractive which requires both aerobic and anaerobic fitness. It is considered a strenuous game because the game demands a high degree of fitness as well as intelligence and alertness of mind. Speed, endurance, strength, agility, balance, flexibility are the basic qualities for all the elite players. All footballers, whatever their position, need a certain level of basic fitness. The key for football skill is

technique Helgerud et al (2001). Football is a sport that requires a multitude of athletic abilities, such as explosive acceleration and fast sprinting speed, muscular endurance and strength in the lower body, muscular balance and high levels of neuromuscular co-ordination, body awareness and agility, the ability to know where the body is, and being able to move it, good flexibility to avoid injury and correct balance between the quadriceps and hamstrings, as well as strength imbalances between the left and right leg. Thus, every footballer is interested to improve their performance abilities, both bio motor abilities and skill abilities. During a typical game, football players covers about 9000-11000 metres, which includes 4000 meters of jogging, 2000 meters of running at a high. Football player's heart rates are above 150 beats per minute for most of a game, and blood lactate levels often rise to 6-10 millimoles per liter, comparable to the concentrations commonly observed during 5000 meters and 10000 meters running competitions Hoffman et al., (2005). Overall, a football competition is like an excellent, prolonged interval workout. The right level of physical fitness can have a substantial impact on football (soccer) performance. A number of academic studies have explored the components of fitness for football. In addition to the high level of skill required to play soccer, to be a successful player you need excellent aerobic endurance fitness. Other important fitness components are speed and particularly repeat sprint ability and agility. In recent years, football success has been shown to be highly dependent on various physical, technical, tactical, and psychological factors the most important attribute for success in football, the body size of players can still play significant a part in their performance. Important anthropometrical measures include body fat (skinfolds), body weight, and height Gorostiaga et al. (2002).

Methodology

The aim of the study was to find out the factors related with playing ability among University female soccer players. To achieve the purpose of the study, 100 female football players from various universities and who were participated in the south zone University women Tournament during the academic year 2022-2023 was selected as subjects. The age of the subjects ranged from 18 to 25 years. The present study consists of one dependent variable, namely playing ability of volleyball players, and eighteen independent variables Arm Length, Leg Length, Arm Circumference, Calf Circumference, Thigh Circumference, Speed, Agility, Cardio Vascular Endurance, Flexibility, Muscular Endurance, Explosive Power, Resting Pulse Rate, Vital Capacity, Respiratory Rate, Dribbling, Passing, Shooting, Height and Weight. The selected variables were assessed by using standard testing procedures. In order to study the relationship between the criterion and determinant variables and inter relationship between determinant variables were computed, using the method of Pearson's product moment correlation. The level of significance was accepted at $P < 0.05$.

Data Analysis and Results of The Study

The mean standard deviation and correlation values of the participated subjects among the selected variables were computed and presented in the table- 1

Table- I
Mean Standard Deviation and correlation value on Selected variables

S.NO	VARIABLES	MEAN	SD	'r' value
1	Arm Length	66.44	3.15	.208*
2	Leg Length	96.42	1.43	.044
3	Arm Circumference	24.90	1.60	.005
4	Calf Circumference	34.08	1.78	.251*
5	Thigh Circumference	53.52	5.42	.271**
6	Speed	8.54	0.40	-.547**
7	Agility	13.87	0.87	-.375**
8	Cardio Vascular Endurance	2647.20	177.83	.244*
9	Flexibility	21.84	0.81	.065
10	Muscular Endurance	38.44	3.10	.805**
11	Explosive Power	2.51	.45	.823**
12	Resting Pulse Rate	70.45	2.23	.017
13	Vital Capacity	2.87	.42	.865**
14	Respiratory Rate	15.21	1.92	-.878**
15	Dribbling	13.97	2.00	-.829**
16	Passing	19.26	2.73	.866**
17	Shooting	9.41	2.62	.881**
18	Height	163.08	6.17	.210*
19	Weight	59.22	2.50	.255*

The table-IV showed that the anthropometric variables namely arm length height, weight, calf circumference and thigh circumference are highly correlated to playing ability and motor fitness variables such as speed, agility, explosive power, cardio vascular endurance and muscular endurance showing significant relationship with playing ability vital capacity and respiratory rate in related to physiological variables and skill variables namely dribbling passing and shooting are highly correlated to the playing ability of the female football players of university women football players. The associations were moderate and they are ranged from 0.-375 to 0.878. The selected variables such as leg length, arm circumference, flexibility and resting pulse rate are having no significant association with playing ability.

Discussions

Team tactics as well as individual skills are integral for playing in association with football. Chelly et al., (2009). observed the age, height and weight are related to physique of the players and it is complex in nature, less trainable factors and largely dependent on the heredity and life style factors. These variables are directly related with performance of football playing ability. Dörge et al., (2002). Body circumference is the most important anthropometric parameter which had a significant relationship with the performance all games and sports. Body circumference is related to body mass, body size and also significantly related with strength. Considering the playing position, it is opined that thigh circumference of goalkeeper as the positive significance with the performance. Considering the initial anthropometric variables like height, body

weight, percentage of body fat- the goalkeeper and defender were better than that of other positional players. Goalkeeper and defender are specially involved in skill like high drive and spot vertical jump either for heading by the defender or receiving and ball clearance by the goalkeeper. In this situation involvement of quadricep and hamstring group of muscles are more responsible. Iga et al., (2009) Speed is the complex conditional ability and complicated in nature which depends on the central nervous system of our body to a considerable extent. It is the performance-oriented prerequisite to do movement-oriented activity under the specific conditions in minimum possible of time. As per sports science, speed abilities classified into five meaningful phases such as reaction ability, movement speed, acceleration ability, locomotor ability and speed endurance. It is an important physical attribute has essential involvement for participant in all games and sports. Yamanaka(2003) the sprinting ability of football players with ball or without ball is being changed according to playing position. Davis and Atkin (2000) speed variables in relation forward position had found higher sprinting ability during a match, the nature of speed is very complex, low trainability and influence by central nervous system. Apart from the transmission of the nervous system, speed is also dependent on different factors such as explosive strength, good technique, flexibility, muscle fibre and another psychological characteristic. Leg explosive Strength Strength-speed is one of the sub-divisions of explosive strength which is called power. Muscular power is the ability to exert maximum muscular contraction instantly in an explosive burst of movements. Generally, more speed or velocity produce the greater power. Masuda et al., (2003) Explosive strength is directly important for cyclic and acyclic nature of movement in all games and sports. In the present study, leg explosive power was significantly higher for playing football. As explosive strength is highly movement specific, therefore, the role of technique or skill should never be under estimated. Depending on the magnitude of resistance and specificity of movements the explosive strength has a different nature in respect of different playing position in football. Hoff, J. (2005) Agility is being seen that running speed are highly co-related with agility. It is highly important in football performance, because a player has to change his direction in high speed with or without ball during the match. Reilly et al., (2000) Pre-exercise Heart rate Heart rate is directly related with endurance-oriented games and sports. found that resting heart rate normal value of football player was 59 beats per minute was significant relation ship with football playing. So, from the discussion of the previous studies showed and justified the results of the present investigation which the anthropometric, physical physiological and skill performance variables are highly correlated to the football playing ability of university football players.

Conclusion

From the results of the study it was concluded that

1. The anthropometric variables such as height, weight, arm length, calf circumference and thigh circumference are having significant relationship with university level women football players.
2. The physical fitness variables such as speed agility cardio vascular endurance explosive power and muscular endurance are having significant relationship with football playing ability among women football players.
3. The physiological variables such as respiratory rate and vital capacity are having significant relationship with playing ability of university level women football players.

4. The skill performance variables such as dribbling passing and shooting are having significant relationship with playing ability of university level women football players.

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