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A relationship of selected anthropometric, physical and physiological variables with playing performance of Karnataka state level volleyball players

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Abstract

Purpose of the study is to find out the relationship of selected anthropometric, physical and physiological variables with playing performance of state level volleyball players. 150 state level Volleyball players were participated as the samples for the study. Different variables namely (Weight, Standing height, Sitting height, Arm length, Arm span, Palm breadth, Chest girth, Waist girth, Hip girth, Thigh girth, Calf girth, Speed, Agility, Flexibility, Leg explosive strength, Muscular endurance, Harvard step up, Resting heart rate and Peak expiratory flow rate) were measured of the samples. Standard procedure was followed to measure the anthropometric, physical fitness and physiological variables. To measure the playing performance, five game experts were asked to rate the players playing performance for ten marks. After that all five experts' marks were added and averaged to get the marks of playing performance. Karl-Pearson's co-efficient of correlation technique was used to find out the relationship between anthropometric, physical and physiological measurement and playing performance. Very few anthropometric measurements found significant with skill performance. The implication of results are discussed.

Keywords: Anthropometric, physical, physiological, playing performance and volleyball players

Introduction

Sports is the activity through which the physical ability is maintained and improved by participating in competitive physical activity or games. It provides the enjoyment to participants and entertains the spectators. There are many kinds of sports. Some of them include single participants while some include more than one participant. Sport is recognized through the system of activity which is based on the physical ability of an individual. However, there are certain sport which is recognized through the mental ability of an individual such as chess. Sports contains some rules which ensures fair competition and allow the best person to win. Winning depends on the ability of a person who is capable of defeating the opponent by following the game rules.

These days' sports have become the major source of entertainment. It not only draws large crowd but also generates the revenue. A number of competitions is set to be a tournament where the winning person or the winning team is declared as champions. Some sports are played through leagues, whereas some are played in seasons and it follows by playoffs.

Volleyball

Volleyball is a sport played by two teams on a playing court divided by a net. There are different, versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court, and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a service: hit by the server over the net to the opponents. The rally continues until the ball is grounded on the playing court, goes "out" or a team fails to return it properly. In Volleyball, the team winning a rally scores a point (Rally Point System). When the receiving team wins a rally, it gains a point and the right to serve, and its players rotate one position clockwise.

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Objective of the Study

To find relationship between selected anthropometric, physical fitness and physiological variables with playing performance of volleyball players.

Methods

For the purpose of study 150 male state level volleyball players from various districts of Karnataka state served as the sample for the study. All samples age category was between 18 to 25. Standard procedure was followed to measure the anthropometric, physical fitness and physiological variables. To measure the Playing performance, when samples were playing the match five experts of volleyball were asked to

assess the skills of the player in match situation and give their marks for 10 each. After that all five experts' marks were added and averaged to get the marks of skill performance (playing performance). To find out the relationship between anthropometric, physical and physiological measurement and playing performance Karl- Pearson's Co-efficient of correlation statistical technique was used.

Results

In the following table we can observe the mean and standard deviation of anthropometric, physical fitness and physiological variables and "r" value with significance level in relation to playing ability.

Table 1: Independent variable Standard deviation Pearson's co-efficient of correlation

Independent variable	Mean	Standard deviation	Pearson's co-efficient of correlation	Sig
Height	186.31	7.69	-0.131	0.065
Weight	70.60	4.71	-0.219	0.068
Leg length	91.03	2.83	-0.228	0.04*
Arm span	187.99	44.32	0.099	0.161
Waist girth	81.27	9.94	0.038	0.594
Hip girth	97.18	8.51	0.021	0.772
Chest girth (Inspired)	98.92	6.99	-0.087	0.221
Chest girth (expired)	95.52	4.36	-0.257	0.003*
Thigh girth	64.88	6.24	-0.038	0.595
Calf girth	57.08	4.87	0.033	0.639
Palm girth	23.21	1.35	-0.124	0.08
Arm length	75.98	3.78	-0.135	0.056
Speed (50 mtr Dash)	10.32	2.84	-0.118	0.097
Agility (Shuttle Run)	11.47	1.01	-0.076	0.287
Flexibility (Sit and Reach test)	49.29	3.66	-0.052	0.468
Explosive power (Standing broad jump)	237.60	38.86	-0.204	0.004*
Muscular Endurance (Sit up test)	43.19	8.07	0.067	0.345
Cardio vascular endurance (Harvard step up test)	73.91	3.74	-0.024	0.737
Resting heart rate	70.59	4.15	0.052	0.464
Vital capacity	462.17	31.01	-0.090	0.024

From the above table we can observe that in selected anthropometric, physical and physiological variables arm span, waist girth, hip girth, calf girth and muscular endurance are positively correlated with playing performance. Height, weight, leg length, chest girth (inspired), chest girth (expired), thigh girth, palm girth, arm length, speed, agility, flexibility, explosive power, cardio vascular endurance, resting heart rate and vital capacity are negatively correlated with playing performance. Amongst 20 variables only three variables namely Leg length, chest girth (expired) and explosive power were found significantly correlated with playing performance. Other than that remaining variables were not at the significant level.

Discussion

As we found that leg length, chest girth (expired) and explosive power are the three variables which are significantly correlated with playing performance. For the volleyball player's upper body and lower body use to be strong to execute the skills like spike, blocking, jump service. So that player's upper body and as well as lower body areas like chest girth, leg length which is the indicator of upper and lower body strength and explosive power required for the jumping skills. So that might influenced on the result. Apart from these three variables no other variables are not correlated at the significant level with playing performance because in this study we are having players playing the same tourney of Karnataka state with having same potentials. So that might also influences on results.

Conclusion

In this study leg length, chest girth (expired) and explosive power were found significantly correlated with playing performance of the state level volleyball players. Other than these variables other variables relationship with players playing performance was not at the significant level.

Recommendations

With the help of results derived from the present study. The following Recommendation can be made.

- 1) The present study results can be very much useful for physical educators, coaches and trainers for screening and selecting potential volleyball players at university level.
- 2) Further the result of the study can help experts to frame different methods of training by emphasizing the development of factors which are significantly related to volleyball performance at different levels.
- 3) It is recommended that the present study is limited to anthropometric, physical and physiological variables, further it can be extended to motor fitness variables and psychological variable.
- 4) It is recommended that the present study may be repeated by selecting subjects belonging to different age groups
- 5) This study is only limited to male volleyball player, further it can be extend to female volleyball players also.
- 6) This study is only limited to Karnataka state level players it can be further extended to University, Super division and A division tournament players.

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