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Relationship between Selected Anthropometric Measurement and Volleyball Players Performance

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Abstract
The present study was undertaken to find out the significant relationship of selected anthropometric variables with the volleyball playing performance. 25 university level male volleyball players from Guru Ghasidas Univertsity, Bilaspur were selected as a subject for the present study with age range between 18 to 22 years. The following anthropometric variables i.e. Height, Weight, Arm length and Leg length variables were selected for the testing the hypothesis. The playing performance was analyzed by three experts through subjective observation. Pearson's Product Moment correlation test was employed for the present study and the level of significance was set at 0.05. The statistical test was computed by using standard statistical package SPSS 16. Analysis of the results indicated that Height and Leg length from the anthropometric variables were shown the significant relationship with the volleyball playing performance.

Keywords: Anthropometric, Volleyball, Performance.

Introduction
Volleyball is a team game played by two teams on a playing court divided by a net. There are different versions existing for specific situation 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 control to ground it on the opponent's court, and to prevent the same attempt by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is set 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.

Anthropometry is the methodical quantitative representation of the human body. Anthropometry helps to study the relationship between the size and shape of the human body and sports performance. Anthropometric techniques are used to measure the complete and relative variability in size and shape of the human body. Depending on the purpose, anthropometric instrumentation may consist of weighing scale, anthropometer, skinfold caliper, body volume tanks, with bioelectrical impedance analyzers. Expert of this field use internationally standardized techniques to determine athletes and use calculations of body composition, dimensions, proportion and ratio to assist improve sport performance.

In recent volleyball measurement, evaluation, analysis and interpretation of player's team performance are very essential in scientific training and development of top class team. Match analysis and tests are the most important means to obtain data and subjective information on the performance of players and team during the match. Scouting has become a tool used by every coach to get ready their team for the competition.

The study was delimited to university level boy's players of Guru Ghasidas Univertsity and selected anthropometric variables. The study was further restricted to the volleyball playing performance which was evaluated through a subject rating in playing ability for each player by a panel of three experts. The study was hypothesized that there would be significant relationship between selected anthropometrical variable with the volleyball playing performance.

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Procedure and Methodology

For the present study 25 university level male volleyball players from Guru Ghasidas Univertsity, Bilaspur, with age range between 18 to 22 years were selected as a subjects. Hence, consecutive sampling was used for the selection of the subjects. On the basis of available related literature, expert guidance, investigators own experience, availability of the equipments and feasibility of the test the following anthropometric variables and over all volleyball playing performance were selected for this study. To find out the relationship between selected anthropometrical variable with the volleyball playing performance Pearson Product Moment correlation test was used. For the purpose of analysis, the level of significance was set at 0.05.

Volleyball Playing Performance Measure

Performance in volleyball was selected as the dependent variable. Performance score was obtained through a subject rating in playing ability for each player by a panel of three experts, who evaluated and rated each player on a scale of 5 broad areas of passing, serving, setting, blocking, and attacking. The combined score of each player in five areas served as the final score of his overall playing ability score in volleyball. For each criteria maximum 10 marks and over all 50 marks were awarded for measuring the performance. There are three experts over all scoring score 150. In order to achieve greater consistency and objectivity in the judges' ratings, a detailed break up skills and areas of competency along with detailed explanation of as to how scores are to be awarded, was provided to the judges. Reliability of tests was established by test retest method.

Anthropometric Variables Measure

Weight- The players stand erect in the center of the scaled platform of a portable weighing machine wearing minimal cloth. The weight was recorded in kilogram.

Height- The height was measured with the help of an anthropometric rod. The measurement was the taken with the individual standing straight against an upright wall. The measurement was taken in meter.

Arm Length- The subject hangs his right arm at the side of the body and measurement from the acromion process to tip of the middle finger. The measurement was taken in centimeter.

Leg Length- The subject stand facing forward. The measurement was taken from greater trochanter to heel of the feet in centimeter.

Result of the Study

The significance relationships of anthropometrical with playing performance of selected subjects were presented in table 1.

Table 1: Relationship of selected anthropometric variables with volleyball playing performance

Anthropometric Variables	N	Mean	S. D.	Correlation Coefficient (r)	Sig.(2-tailed)
Height	25	01.80	0.026	.723*	.000
Weight	25	76.89	5.026	-.119	.571
Arm length	25	66.05	1.896	.169	.419
Leg length	25	86.41	3.846	.745*	.000

*Correlation is significant at the 0.05 level (2-tailed)

It was evident from the table 1 that co-efficient of correlation of Height and Leg length with playing performance in volleyball was. 723 and. 745, which was significant at 0.05 level. It indicates that there was significant relationship of Height and Leg length with playing performance in volleyball. It was also evident from the table 1 that except the Height and Leg length, rest of the anthropometric variables were not significant at 0.05 level. It indicates that there was no significant relationship of rest of the anthropometric variables with playing performance in volleyball.
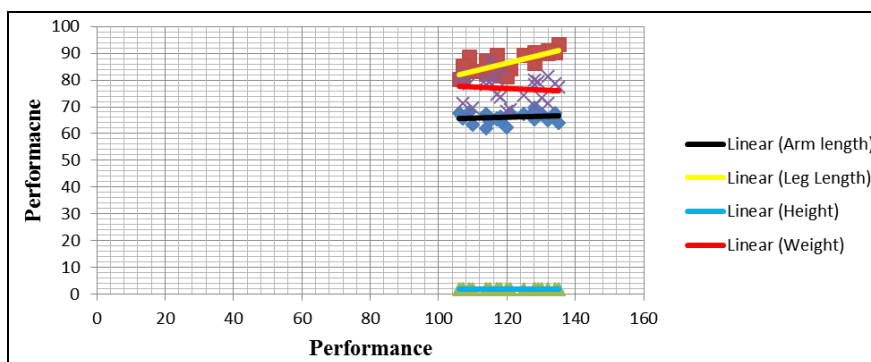
Fig 1: Graphical representation of selected anthropometric variables with relationship of volleyball playing performance

Discussion

The study was conceptualized with the purpose to find out the relationship between selected anthropometrical variable with the volleyball playing performance. The knowledge about difference of selected anthropometric variables is very important for training and performance implementation in volleyball. The finding of the study also be utilized while consider the factor for the selection of player training age, experience, and fitness etc. The finding indicating the requirement of the involvement of player in the match could be used by the coaches while planning the training program bearing in mind the tactical plan for the player. Based on the findings of the study it was revealed that the anthropometrical variable Height and Leg length were significantly correlated with playing performance.

In recent volleyball each team tries to reach high and jump high to make playing action like block and spike more complex for opponent while performed over the net and due to this reason more importance has to be given on team's attack, block and service because these are the offensive action and team's most of the points are achieve through these playing action, along with this, winning probability become more with an effective block and to make the team more stronger in these playing actions Height and Leg Length has to be given more

importance. Even it has been seen the team composition at international rank the average height and leg length of the top class teams are mounting which shows the significant importance of height in volleyball.

On the basis of finding text book depiction, scientific facts obtainable and scholar own understanding the hypothesis stated earlier there would be significant relationship between selected anthropometrical variable with the volleyball playing performance was partially accepted and partially rejected.

Conclusion

Following conclusions were drown from the present study-

- The statistical finding showed that there was significant relationship of anthropometric variable i.e. Height with the volleyball playing performance.
- The statistical finding showed that there was significant relationship of anthropometric variable i.e. Leg length with the volleyball playing performance.
- The statistical finding showed that there was no significant relationship of anthropometric variable i.e. Weight and Arm length with the volleyball playing performance.

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