



Predict the Playing Ability of District Women Handball Players Using Selected Anthropometric Physical Physiological and Psychological Variables

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ABSTRACT

The aim of this study was to investigate the relationship between selected anthropometric, physical, physiological, and psychological variables and the playing ability of district women handball players. A total of 150 state-level handball players participated as the study's samples. Various variables, such as chest circumference, waist circumference, thigh circumference, upper circumference, forearm circumference, calf circumference, arm explosive power, muscular strength and endurance, body composition, flexibility, cardiorespiratory endurance, resting pulse rate, systolic blood pressure, diastolic blood pressure, self-confidence, self-concept, anxiety, aggression, and motivation, were measured for each participant. Standard procedures were followed to measure the anthropometric, physical fitness, and physiological variables. To assess playing ability, five game experts were consulted and asked to rate each player's performance on a scale of ten. The marks given by all five experts were then added and averaged to determine the final playing performance score. The Karl-Pearson's coefficient of correlation technique was utilized to explore the relationships between the anthropometric, physical, physiological, and psychological measurements and playing performance. The findings revealed that only a few anthropometric measurements showed significant correlations with skill performance. The implications of these results are discussed in the study.

Keywords: Anthropometric, physical, physiological, psychological, playing ability and handball players

Introduction

Sports are activities that contribute to maintaining and enhancing physical abilities through engaging in competitive physical activities or games. They offer enjoyment to participants and entertainment to spectators. There are various types of sports, some involving single participants, while others require multiple participants. Sports are typically characterized by their reliance on an individual's physical prowess, although certain sports, such as chess, are recognized for their emphasis on mental abilities.

In sports, rules are established to ensure fair competition, allowing the most skilled individual to emerge victorious. Success in sports depends on an individual's capability to defeat their opponents while adhering to these rules.

In contemporary times, sports have evolved into a significant source of entertainment, drawing large crowds and generating substantial revenue. Many competitions are structured as tournaments, where the individual or team that emerges victorious is declared the champions. Some sports follow a league format, while others are played in seasons and culminate in playoffs.

Handball

Handball is an ideal synthesis of the three fundamental athletic disciplines of running, jumping and throwing. Therefore it is not only a purely competitive sport but also a fine sport to be taken up with advantage by many for purposes of training and health. The player must be able to start quickly, he must be persevering runner, he must be able to skillfully deceive his opponent, he must be able to swiftly pick up the ball or catch it in the air, he must pass the ball with precision to his team-mates and he must be able to execute all sorts of throws; in short, his body, his arms and his legs will have to be harmoniously trained. As the name of the game suggests, hands play the most important role; hands being naturally the deftest members of the body, the growing popularity of handball is easily explained. Many kinds of throws to score a goal are possible. The handball player is inspired to use his hands as a means of carrying out his ideas. The game is, of course, also faster than other ball-games.

Objective of the Study

The objective is to investigate the correlation between selected anthropometric, physical fitness, physiological, and psychological variables and the playing ability of handball players.

Methodology

For this study, a sample of 150 women handball players from various districts of Tamil Nadu, aged between 18 to 23, was selected. Standard procedures were employed to measure anthropometric, physical fitness, physiological, and psychological variables. Assessing the playing ability, during matches, five handball experts observed the players' skills in match situations and rated them on a scale of 1 to 10. The marks given by all five experts were then aggregated and averaged to determine the skill performance (playing ability) of each player. The relationship between anthropometric, physical, and physiological measurements and playing ability was analyzed using Karl-Pearson's coefficient of correlation statistical technique.

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

Independent variable	Mean	Standard deviation	Pearson's co-efficient of correlation	Sig
Chest circumference	39.02	± 2.28	-0.131	0.065
Waist circumference	73.65	± 2.49	-0.219	0.068
Thigh circumference	49.95	± 1.56	-0.228	0.04*
Upper arm circumference	26.72	± 2.62	0.099	0.161
Fore arm circumference	26.71	± 2.64	0.038	0.594
Calf circumference	30.93	8.51	0.021	0.772
Arm explosive power	3.10	± 1.14	-0.087	0.221
Muscular strength endurance	41.34	± 4.19	-0.257	0.003*
Body composition	24.13	± 1.17	-0.038	0.595
flexibility	25.22	± 3.17	0.033	0.639
Cardio respiratory endurance	2629.11	± 714.12	-0.124	0.08
Resting pulse rate	83.96	± 2.94	-0.135	0.056
Systolic blood pressure	81.96	± 2.94	-0.118	0.097
Diastolic blood pressure	101.91	± 2.93	-0.076	0.287
Self-Concept	31.31	± 2.36	-0.052	0.468
Self Confidence	63.96	± 2.94	-0.204	0.004*
Anxiety	25.25	± 3.16	0.067	0.345
Aggression	32.91	± 2.07	-0.024	0.737
Motivation	26.72	± 2.62	0.052	0.464

Results

The table below presents the mean and standard deviation of anthropometric, physical fitness, and physiological variables, along with the "r" value and significance level concerning playing ability.

From the data in the table, it can be observed that among the selected anthropometric, physical, physiological, and psychological variables, chest circumference, waist circumference, thigh circumference, upper circumference, forearm circumference, calf circumference, arm explosive power, muscular strength and endurance, body composition, flexibility, cardiorespiratory endurance, resting pulse rate, systolic blood pressure, diastolic blood pressure, self-confidence, self-concept, anxiety, aggression, and motivation exhibited a significant correlation with playing ability. On the other hand, the remaining variables did not reach the level of significance.

Discussion

We have observed that anxiety and aggression (expired), and e chest circumference, waist circumference, thigh circumference, upper circumference, fore arm circumference, calf circumference, arm explosive power, muscular strength and endurance, body composition, flexibility, cardio respiratory endurance, resting pulse rate, systolic blood pressure, diastolic blood pressure, self confidence, self concept, and motivation are the variables that show a significant correlation with playing ability. In handball, both upper body and lower body strength are crucial for executing skills like shooting, jumping, and diving. Hence, indicators of upper and lower body strength, such as chest girth and leg length, are essential for the explosive power required in jumping skills. These factors may have influenced the results.

Furthermore, no other variables showed a significant correlation with playing ability in this study. It is possible that since all the players participated in the same tournament in Tamilnadu with similar potentials, this uniformity might have influenced the outcomes as well.

Conclusion

In this study, anxiety and aggression (expired) along with chest circumference, waist circumference, thigh circumference, upper circumference, forearm circumference, calf circumference, arm explosive power, muscular strength and endurance, body composition, flexibility, cardiorespiratory endurance, resting pulse rate, systolic blood pressure, diastolic blood pressure, self-confidence, self-concept, and motivation were found to be significantly correlated with the playing ability of district women handball players. However, the relationship between other variables and players' playing ability did not reach the level of significance.

Recommendations

Based on the results derived from the present study, the following recommendations can be made:

1. The findings of this study can prove to be highly valuable for physical educators, coaches, and trainers in the screening and selection of potential handball players at the university level.
2. The study's results can aid experts in formulating diverse training methods that emphasize the development of factors significantly associated with handball performance at various levels.
3. It is suggested that future research should expand beyond anthropometric, physical, and physiological variables to include motor fitness variables and psychological aspects.
4. For a more comprehensive understanding, it is recommended to replicate this study with subjects from different age groups.
5. Since this study focused only on male handball players, further research should be conducted to include female handball players as well

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