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Relationship between selected morphological characteristics and agility of National level Kho-Kho players

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Abstract
In this research study the researcher effort have been made to know the relationship of selected morphological characteristics with agility ability of national level Kho-Kho players. The subjects were selected from selected south Indian senior national players (Andra pardesh, Karnataka, Keralam Tamil Nadu and Telangana). Total 60 senior national level male kho-kho players were selected, each state consists of 12 national male Kho-Kho players. For this research study the morphological characteristics such as standing height, arm length, shoulder breadth, thigh circumference, calf circumference, mid chest, body fat measurement and lean body mass and agility variables were selected. For find out the relationship of selected morphological characteristics with agility ability the Pearson correlation test was applied at 0.05 level of significant. All statistical analysis was done using SPSS software. The result of the research study showed that a selected morphological characteristic such as calf circumference was found significant positive relationship with agility of Kho-Kho players. On other hand the calculated 'r' values of selected morphological characteristics such as standing height, Arm length, shoulder breadth, Thigh circumference, Mid chest, Body fat percentage, lean body mass were found insignificant relationship with the agility at 0.05 level of significance of Kho-Kho players.

Keywords: Kho-Kho, Morphological characteristics, agility, players

Introduction

Kho-kho is one of the indigenous games, in this game the players performance depends on bio-motor ability. Components such as Explosive strength, speed, flexibility, agility, Endurance worked on the practice sessions are the primary qualities which should go with the Kho-Kho players. Bio-motor Abilities are essential because without them no sport can be played or performed. Bio –motor qualities helps the player to perform the skills in his respective sports to the extreme level. Bio-motor qualities to learn the complex level skills from simple level. Exhibition of the player's skills are purely based on their bio –motor quality. Some of the qualities like speed, endurance may come naturally through the player's heredity, habitat while some qualities like flexibility, agility can be mastered only through practicing. If player need a consistent performance in the game then maintaining the level of bio motor ability is mandatory.

Agility is the one of the part of bio-motor abilities, it helps execution in exercises that requirements to Kho-Kho players to change direction rapidly while keeping balance, strength and body control. Readiness isn't just about speed with which an individual can change direction. Be that as it may, it's additionally characterized by the beauty and smoothness of development.

The researcher conducts this study to find out the possible inter correlation between morphological characteristics and agility of selected south India national level male Kho-Kho players.

Significance of this study

- The study may Helps to physical educationalist and Trainers, Coaches to aware about morphological characteristics and agility component of bio-motor abilities contributing to the performance in Kho-Kho game.

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- The result of the study may be helps to talent identification in Kho-Kho game.
- The study will useful to design the training programme on agility and other bio-motor ability variables to be devolved for achieving good performance in Kho-Kho game.

Methods and Measures
Selection of the subjects
For the present study total 60 male national level Kho-Kho players were selected from South India, in this Karnataka (12), Andra Pradesh (12), Kerala (12), Tamil Nadu (12) and Telangana (12), the age category comes under senior national players.

Selection of Variables
For this study, the morphological characteristics (Standing height, Arm length, Shoulder breadth, Thigh circumference, Calf circumference, mid chest, body fat percentage and lean body mass and in bio-motor ability the agility were selected.

Administration of Morphological characteristics and agility
Morphological characteristics such as Standing height, were measured by the means of a Stadiometer, Arm length, Shoulder breadth, thigh circumference, calf circumference and mid chest measured in cm with the help of anthropometric tools and body fat percentage and lean body mass measured by skin fold calliper with four sites such as Biceps, Triceps, sub scapular and supra iliac and agility was measured by Illinois agility test in seconds.

Statistical techniques
Descriptive statistics such as mean and standard deviation were applied to characterize the morphological characteristics and bio-motor ability of the national level Kho-Kho players. Pearson correlation was applied to establish the relationship of among them. The level of significance kept as $p<0.05$.

Result and Discussion
Analysis of Morphological characteristics and bio-motor ability of male Kho-Kho players, the result revealed on the basis of descriptive statistics and Pearson correlation.

Table 1: Descriptive statistics of morphological characteristics and agility variable of bio-motor ability of national Kho-Kho players.

Variables	Mean	Std. Deviation	N
Agility	16.716	1.606	60
Standing Height	166.166	22.688	60
Arm Length	73.116	10.206	60
Shoulder breadths	38.466	2.029	60
Thigh Circumference	47.366	4.008	60
Calf Circumference	33.116	3.309	60
Mid Chest	84.000	3.354	60
Body Fat percentage	7.896	3.752	60
Lean Body mass	60.116	3.493	60

Interpretation
The above table 1 shows that, the descriptive result of morphological characteristics and agility variable. The descriptive (mean ±SD) of morphological characteristics were standing height is 166.166±22.688, Arm length is 73.116±10.206, shoulder breadth is 38.466 ±2.029, Thigh circumference is 47.366±4.008, Calf circumference is 33.116 ±3.309, Mid chest is 84.000 ± 3.354, Body fat percentage is 7.896 ± 3.752, Lean body mass is 60.116 ± 3.493 and agility is 16.716 ± 1.606.
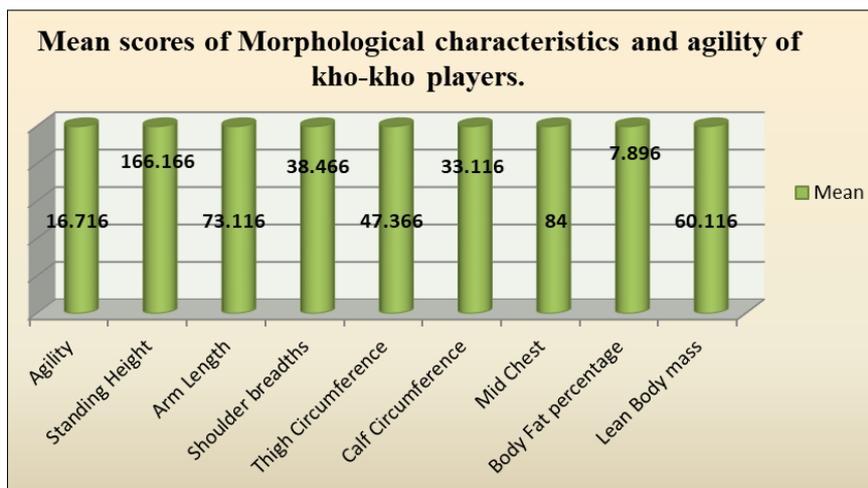
Fig 1: Graphical representation of mean values of morphological characteristics and agility of national level Kho-Kho players.

Table 2: Pearson Correlation of selected morphological variable with agility performance of National level Kho-Kho players

S. No	Variables	r- value	P-value
1	Agility and standing height	-0.114	0.388
2	Agility and Arm length	-0.062	0.640
3	Agility and Shoulder breadth	-0.039	0.766
4	Agility and Thigh circumference	0.143	0.277
5	Agility and Calf circumference	0.286*	0.027*
6	Agility and Mid chest	0.122	0.353

7	Agility and Body fat percentage	0.043	0.745
8	Agility and lean body mass	-0.150	0.251

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

Inference

The table 2 it is evident that the calculated 'r' values of selected morphological characteristics such as Calf circumference (cm) (r= 0.286) was found significant positive relationship with agility of Kho-Kho players. On other hand the calculated 'r' values of selected morphological characteristics such as standing height (cm) (-0.114), Arm length (-0.062), shoulder breadth (-0.039), Thigh circumference (0.143), Mid chest (0.122), Body fat percentage (0.043), lean body mass (-0.150) were found insignificant relationship with the agility at 0.05 level of significance of Kho-Kho players.

Conclusion

On the basis of findings following conclusions have been drawn. Calf circumference was found there was significant relationship with agility of National level Kho-Kho players and both variables are influencing on each other.

Next the standing height, Arm length, shoulder breadth, Thigh circumference, Mid chest, Body fat percentage, lean body mass there is no significant relationship with agility and these variables will not have any influence on each other.

Finally this article will helps to the coaches and physical educationalist to know the relationship of Morphological characteristics with agility in Kho-Kho game and this study will also useful for preparation of training programme and talent identification for Kho-Kho game.

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