



Comparison between University level cricket and handball players on right and left hand grip strength

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Abstract

The purpose of the study is to compare hand grip strength between university level cricket and handball players. To achieve the purpose 25 cricket players and 32 handball players aged between 18-28 years were selected from the Department of Physical Education and Sports Sciences, Annamalai University. These players had a right hand as the dominant hand. Grip dynamometer was used for measuring grip strength of both dominant and non dominant hand. For statistical analyses independent *t* ratio of unequal sample size was performed. The result of the study showed there was no significant difference between university level cricket and handball players on dominant ($t = 0.240, p > 0.811$) and non dominant ($t = 0.759, p > 0.451$) hand grip strength. However, the mean values depict handball players dominate in the dominant hand and cricket players on non dominant hand grip strength. It is concluded that these findings suggest that different sports events could constitute different effects on hand grip strength and which has to be should be considered to sports performance.

Keywords : Grip strength, Grip dynamometer, Cricket, Handball and ANOVA

Introduction

The human hand is unique in being free of habitual locomotor duty and devoted entirely to functions of manipulation. Its effectiveness in these activities is due to a particular configuration of the bones and muscles which permits opposition of the pulp surface of the thumb to the corresponding surfaces of the other four finger tips in a firm grasp, together with a highly elaborated nervous control and sensitivity of the fingers. The Hand is a very complex structure capable of not only a multitude of motor tasks but also of relaying sensory information about the temperature, the shape and texture of objects to the brain (Barut *et al.*, 2008).

The hand does not function in isolation, and is dependent on the integrity of the shoulder

and elbow complexes to allow the appropriate and positioning of the hand in space to complete the desired task. Ball games require comprehensive ability including physical, technical, mental and tactical abilities. Among their physical abilities of players exert marked effects on the skills of the players themselves and the tactics of the team. For the ball games in which the use of the hand is essential, hand morphology and functional properties could be important for the performance (Barut *et al.*, 2008).

The aim of this study was to evaluate the effect of different sports branches on the function of the hand. Grip strength was chosen as the indicator of hand function. These parameters were evaluated in university level cricket and handball players in which hand functions are very important for the performance of the players.

Table - 1. Dominant and non dominant hand grip strength of cricket and handball players

Hand	groups	N	Mean	Std. Deviation	t	p
Dominant	Cricket	25	68.96	18.13	0.240	0.811
	Handball	32	70.00	14.58		
Non Dominant	Cricket	25	66.32	15.44	.759	0.451
	Handball	32	63.15	15.75		

Materials and methods

This study was performed with the participation of 25 cricket and 32 handball players aged between 18-28 years. All the participants were selected from the Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram. All the players represented university teams and took part in state level tournaments. These players had a right hand as the dominant hand. Exclusion criteria were set upon our knowledge of some genetic, psychological, neurological or chronic diseases affecting hand function and anthropometric characteristics (Malina and Buschang, 1984; Brill and Stier, 1999). Diseased or disabled persons were excluded from the study according to the mentioned criteria. Informed consents of all participants were obtained.

Grip strength

Grip dynamometer was used to measure the grip strength. The participant sat on a chair with the elbow flexed at 90° and the forearm in semi pronation lying on an armrest. The participants were asked to squeeze the dynamometer three times with each hand. There was a one minute resting period between each squeeze in order to overcome fatigue. The mean value of three squeezes was taken into account.

Statistical analysis

Statistical analyses were performed with SPSS packages for windows Release 11.5. For statistical analyses independent 't' ratio of unequal sample size was performed.

Results

The table - 1 reveals that there was no significant difference between university level cricket and handball players on dominant ($t = 0.240$; $p > 0.811$) and non dominant ($t = 0.759$; $p > 0.451$) hand grip strength. However, the mean values depict handball players dominate in the dominant hand and cricket players on non dominant hand grip strength.

Discussion

The present study showed no significant difference between university level cricket and handball players on dominant and non dominant hand grip strength. Hand grip strength is a general term used by strength athletes, referring to the muscular strength and force that they can generate with their hands. The strength of a hand grip is the result of forceful flexion of all finger joints, thumbs, and wrists with the maximum voluntary force that the subject is able to exert under normal biokinetic conditions. Hand grip strength is a significant predictor of performance in various sports activities such as lawn tennis (Lucki and Nicolay, 2007), volleyball (Melrose *et al.*, 2007), ten-pin bowling (Tan *et al.*, 2001) and rock climbing (Watts *et al.*, 1996).

People prefer to use one hand rather than the other is a remarkable behavioral asymmetry (Tsuji *et al.*, 1995). Genetic and familial influences, as well as social and cultural factors (Tsuji *et al.*, 1995), have been considered to underlie handedness. Better skill performance in one hand can be seen as a training effect from more

frequent use of one hand (Tsuji *et al.*, 1995). Tsuji *et al.* (1995) opined that grip strength was one of the determinant factors of radial bone mineral density in the dominant forearm of young college athletes. Whereas, Ducher *et al.* (2005) found that forearm bone mineral content adjusted to lean tissue mass or grip strength was higher on the dominant side, suggesting that tennis playing exerted a direct effect on bone. This may be the reason that cricket players showing best in left hand grip strength though their dominate hand was right.

Conclusions

In this study handball players found to be better in right hand grip strength and cricket players in left hand grip strength, though statistically no significant difference is elicited. The reason for the differences was handball and cricket group, as handball and cricket requires more efficacious usage of hands.

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