



Comparison of Core Strength Among Different Team Games Players

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ABSTRACT

Background: The purpose of the study was to compare core strength among different team games players.

Method: Eighty male University/National players of different team games were selected from Varanasi and nearby cities. In which sixteen subjects from each games i.e. cricket, hockey, basketball, volleyball and football. Their age ranged from 17-25 years of age. The static group comparison design was used for this study. Core strength was selected as a Dependent Variable and different team games i.e. cricket, hockey, basketball, volleyball and football were considered as Independent Variables. Core strength was measured by Side Ramp Test. For comparison of core strength among different team games players, analysis of variance was used and the level of significance was set at 0.05.

Results: The findings of the study revealed that insignificant difference ($p > .05$) was found between different team games players.

Conclusions: It is concluded that the all team games player are equal in core strength.

Keywords: core strength.

Introduction

Core strength/stability is a concept used in the health and fitness professions which became popular in the early 1990s. Physicians, physical therapists, biomechanists, and chiropractors use the concept to educate patients on the recovery from or prevention of injuries. It is further used by fitness professionals in relation to the improvement of physical fitness and athletic performance. Despite its popularity, core stability remains a generalized term, which is poorly understood and described (Panjabi, 1992). Furthermore, it lacks a universal definition, and currently there is not a gold standard assessment of core stability. This makes it difficult to identify or measure the role of core stability in athletic performance (Nesser, Huxel, Tincher, & Okada, 2008) and determine its relationship to athletic injuries (Heiderscheit & Sherry, 2007).

It is believed that a strong core allows an athlete the full transfer of forces generated with the lower extremities, through the torso, and to the upper extremities and sometimes an implement (Behm, et al. (2005), Cissik, (2002) and McGill, (2004)). A weak core is believed to interrupt the transfer of energy, resulting in reduced sport performance and risk of injury to a weak or underdeveloped muscle group. For this reason, there is an assumption that an increase in core strength will result in increased sport performance. Therefore, training the core has become popular among strength coaches and personal trainers as a means to improve performance and reduce the chance for injury despite the lack of research to support such findings.

The concept of core strength arose from the research work performed at University of Queensland in response to determining the suitable exercises for the patients with low back pain. The term 'core strength' describes muscular control of the axial skeleton (that is the lumbar spine and pelvic girdle) to maintain functional stability. Many strength training programmes have evolved to emphasize strengthening muscles of the core. The core is where the movement begins. Because all movements begin at the core, and then progresses out to the arms and legs, a strong foundation of core strength is very essential. Lack of sufficient coordination in the core musculature can lead to less efficient movements, compensatory movement patterns, strain, overuse and injuries.

Importance of the core and methods of training and assessing it have been largely publicized, few studies have been completed which quantitatively demonstrate core strength's role in strength and performance. Scibek, et al. (2001) tested swimming performance and core strength in high school level swimmers. Tse, et al. (2005) tested rowing performance and core strength in college aged rowers, and Stanton, et al. (2004) reviewed running performance and economy, and core strength in high school aged touch football and basketball athletes. Groups from each study completed core training and groups that underwent training experienced improvements in core strength (based on their measurement criteria of core strength) but did not show improvements in swimming, rowing or running performance, respectively. Nesser et al. (2008) compared core strength to a number of sport performance variables in division I football players and found weak to moderate correlations. Explanations for the lack of significant relationships in these studies include inconsistent methods used to measure core strength with the performance variables, the population tested, or there is no relationship.

Core stability is a common term used in medical and fitness fields, but despite its popularity, core stability remains a novel concept with many debatable issues. One of the major issues surrounding core stability is the lack of a standard core stability assessment. Hibbs, Thompson, French, Wrigley, and Spears (2008) indicated that the lack of a gold standard for measuring core stability may explain the lack of literature on the relationship between core stability and athletic performance. Therefore, two experiments are introduced in this document to help define and develop a standard evaluation of core stability.

Objective of the study

The objective of the study was to comparison of core strength among different team games players.

Methodology

Subjects

Eighty male University/National players of different team games were selected from Varanasi and nearby cities. In which sixteen subjects from each games i.e. cricket, hockey,

basketball, volleyball and football. Their age ranged from 17-25 years of age.

Variable

Core strength was selected as a Dependent Variable and different team games were considered as Independent Variable.

Criterion Measure

Core strength was measured by Side Ramp Test. The side ramp test measures the control and endurance of the lateral core stabilizing muscles. The aim of this test is to hold an elevated position for as long as possible. The subject lays on their right side, the upper body supported off the ground by the right elbow and forearm. The legs are straight, with the left foot (top) in front of your right foot. The hip is lifted off the floor so that the elbow and feet support the body, creating a straight line from head to toe. The left hand is placed on the supporting shoulder. As soon as the subject is in the correct position, the stopwatch is started. The test is over when

the subject is unable to hold the back straight and the hip is lowered. After five minutes rest, the other side is tested. The score is the total time completed for each side.

Design of the study

The static group comparison design was used for the study. Five groups were made as cricket, hockey, basketball, volleyball and football.

Collection of Data

The data were collected from different tournaments and championships held at different Universities, colleges and stadiums situated in Varanasi in the session 2009-10. Necessary instructions were given to the subjects before administration of the Side Ramp Test.

Statistical Analysis

For comparison of core strength among different team games players, descriptive statistics and analysis of variance (ANOVA) was used. The level of significance was set at .05.

Findings

Table - 1

Descriptive Statistics of Core Strength of Different Team Games Players of BHU

Dependent Variables	Descriptive Statistics	Different Team Games Players of BHU				
		Cricket	Hockey	Basketball	Volleyball	Football
Right Core	Mean	75.12	75.31	75.56	80.06	78.75
	Std. Deviation	9.905	10.719	9.416	7.325	8.970
	Skewness	.550	.764	.588	.845	.514
	Kurtosis	-.920	-.993	.694	.662	-.961
Left Core	Mean	78.94	73.62	75.12	78.94	76.44
	Std. Deviation	8.322	10.178	9.472	6.923	10.159
	Skewness	-.196	.884	.756	.703	.522
	Kurtosis	-.956	-.099	.309	.030	-.791

Table - 2

Analysis of Variance of Core Strength of Different Team Games Players of BHU

Vari-ables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Right Core	Between Groups	333.825	4	83.456	.957*	.436
	Within Groups	6537.062	75	87.161		
Left Core	Between Groups	351.675	4	87.919	1.063*	.381
	Within Groups	6205.313	75	82.738		

*Insignificant at .05 level

F value required to be significant at 4, 75 df = 2.49

Table 2 revealed that the obtained 'F' value of 0.957 for right core and 1.063 for left core were found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 2.49 at 4, 75 df.

Discussion

The result clearly indicates that an insignificant difference was found in core strength of the subjects due to all selected team games need similar kind of sharp athletic movements and performance at University level. The levels of players, their daily routine and socio-economic level were same at this level. The sports performances have improved at a rapid pace in all sports in the last couple of decades. Many factors have contributed towards the rapid improvement of sports performance. Core strength is an essential determinant of success for all sports people, be they cricketers, hockey players, football or volleyball players, or basketball players etc. That's because the body's core muscles are the foundation for all other movement. The muscles of the torso stabilize the spine and provide a solid foundation for movement in the extremities. These core muscles lie deep within the torso. They generally attach to the spine, pelvis and shoulders and create a solid base of support. We are then able to generate powerful movements of the extremities. Core strength improves neuromuscular efficiency, which eventually leads to better sports performance. Core strength training develops functional fitness: the fitness essential for daily living and other physical activities and also helping in correcting postural imbalances.

Much of the theory linking core stability to athletic performance is based on the concept that athletic power is generated and then transferred from the body's trunk or core (Santana, 2003). Furthermore, Santana (2003) stated that the core's muscular layout is in a crisscross design, which resembles a serape, a colorful blanket worn by people in Mexico and other Latin American countries (Logan & McKinney, 1977). From this piece of clothing, the concept of the Serape Effect was developed. The Serape Effect is important during ballistic movements, as the muscles of the Serape Effect (the rhomboids, the serratus anterior, the external obliques, and the internal obliques) add to the internal forces. These forces are then transferred from the large muscles of the lower extremities, trunk, and pelvis to the smaller muscles of the up-

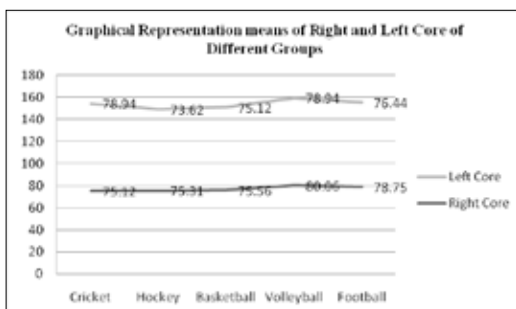


Figure 1

per extremities (Logan & McKinney, 1977). The Serape Effect has been observed more in skilled athletes when compared to non-skilled athletes (Logan & McKinney, 1977).

Conclusions

Based on the results of the current and previous research, it

is noticed that the all team games player of BHU are equal in core strength. It is also believed core training is necessary for optimal sport performance and should be special part of any training plan. Determination of the role of core strength/ stability requires additional research and sport specific means of determining its effectiveness.

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