



ORIGINAL RESEARCH PAPER

Physical Education

EFFECT OF CORE STABILITY STRENGTH TRAINING ON FLEXIBILITY OF KHO- KHO PLAYERS

KEY WORDS: Core Stability Strength Training, flexibility.

Dr. Binod Chowdhary\*

Associate Professor, Seva Bharati Mahavidyalaya, Kapgari. Paschim Medinipur. \*Corresponding Author

ABSTRACT

The objective of the study was to find out the effect of core stability strength training on flexibility of kho-kho players. For the purpose of study forty male kho - kho players who had participated in various competitions in Kho- Kho game at district and university level in Vidyasagar University in Midnapur were selected. Their age ranged from 18-25 years of age. Flexibility was selected as a dependent variable and core stability strength training was considered as independent variable. For the study pre-test and post test randomized group design which consists of control group (n=20) and experimental group (n=20) was used. To test the flexibility of kho-kho players, sit and reach test was used. To find out the significant effects of core stability strength training on flexibility if kho - kho players. Analysis of Co-variance (ANCOVA) was used. The level of significance was set at 0.05 level. The result reveals that there was significant (p<0.05) effect of core stability strength training on flexibility of kho-kho players. Based on the findings and within the limitation of the study it was noticed that practice of selected core strength training exercise helped to improved flexibility of kho-kho players. Since, flexibility of the subjects of experimental group was found to be statistically significant.

INTRODUCTION:

The core can be described as a cylinder with abdominals in front, paraspinals and gluteus in back, diaphragm on top and pelvic floor on the bottom. The core is where our centre of gravity is located and where all movement begins. The core muscles can be divided into three categories based upon their location and relative to the joint they attach and their function. The three divisions include the local stability, global stability and global mobilizing muscles.

Core stability is usually used to strengthen the muscles around the abdominal, lumbar, and pelvic regions, because the muscles of these regions play an important role in stability as well as in controlling the lumbar posture by using tonic or postural muscles during whole-body exercises. The following muscles are related to core stability, multifidus, transversus abdominis, external/internal oblique abdominis, paraspinalis, gluteus, diaphragm in rear part, and hip muscles. The ventral muscles, multifidus, transversus abdominis, and oblique abdominis, provide core stability via cooperative contraction before moving out. The multifidus muscle serves as the intersegmental muscle placed on spiral part, followed by the interspinales and inter-transverse muscles. These muscles control movement of the spinal units while lifting things and while rotating the core. Additionally, owing to the short length of these muscles, the reaction time is very rapid and this is highly important for maintaining stability. Although muscles related to core stability have individual roles, they function in concert via cooperative contraction to establish core stability. Core stability is a prerequisite for maintaining the proper posture of the lumbar and pelvic regions during sports activities.

Kho-Kho, a popular sport in India, is a game of fitness, timing, reflex and stamina. This game involves rapid and forceful movements of the body as a whole with quick reflexes resulting in frequent injuries. Kho-kho is a game that would appear to require little muscular strength. Viewed from a distance, kho-kho in such a seemingly gentle pursuit that the notion of strength training and exercise would seem to have a limitation application. However, as with many sports that involved relatively lengthy periods of low activity punctuated by intervals of extreme muscular focus, kho-kho is deceptively difficult and it also presents significant physical training challenge for the athlete especially at an elite level.

OBJECTIVE & METHODOLOGY:

The objective of the study was to find out the effect of core stability strength training on flexibility of kho-kho players.

Subjects:

For the purpose of study forty male kho - kho players who had participated in various competitions in Kho- Kho game at district and university level in Vidyasagar University in Midnapur were selected. Their age ranged from 18-25 years of age.

Variable:

Flexibility was selected as a dependent variable and core stability strength training was considered as independent variable.

Criterion Measure:

To test the flexibility of kho-kho players, sit & reach test was used.

Experimental Design:

For the present study pre test – post test randomized group design which consists of control group (n=20) and experimental group (n=20). Equal numbers of subjects were assigned randomly to both the groups. One group serve as experimental group on which training was assigned. The other group served as the control group.

Administration Of Test:

The Treatment was administered on experimental group for the period of eight weeks (56 days) while the control group underwent general and specific training of Kho-Kho. Before the administration of core stability strength training, sit and reach test was administered on both the experimental and control groups to collect pre test data. After the completion of eight weeks of core stability strength training again the same sit and reach test was conducted to collect the post training data.

Statistical Analysis:

To find out the significant effect of core stability strength training on flexibility of Kho-Kho players. Analysis of Co-Variance (ANCOVA) was used. The level of significance was set at 0.05.

Finding: The findings of the study are given below:

Table: 1 Analysis Of Co-variance Of The Mean Of Experimental Group And Control Group In Sit And Reach Test.

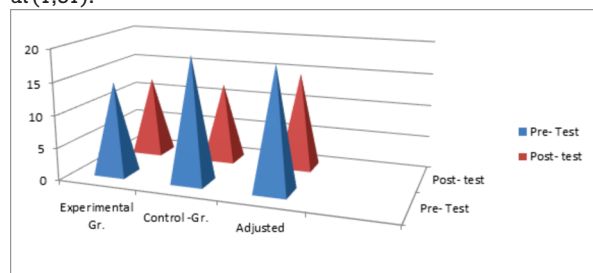
Test	Mean & SD		ANCOVA TABLE			
	Experim ental	Control	SS	df	MS	F
Pre	14.25±4.67	12.32±3.24	A 56.85	1	56.85	2.146
			W 954.213	38	23.82	

Post	19.23±3.84	12.34±4.89	A	338.25	1	345.54	15.89*
			W	812.67	38	20.37	
Adjusted	18.76	14.96	A	156.45	1	156.45	19.86*
			W	272.82	37	7.51	

Significant at 0.05 level: A= Among Mean Variance, W= within Group Variance.

The analysis of co-variance for flexibility was insignificant in case of pre- test mean from which it is clear that the pre- test mean does not differ significantly and that the random assignment of subjects to the experimental group and control group was quite successful. The Post test mean of experimental group yielded an F-ratio of 15.89 which is significant at 0.05 levels. The F-ratio needed for significance at 0.05 level of significance was 4.11 at (1,38)

The difference between the adjusted post test means was found significant as the obtained F-ratio was 19.86. The F-ratio needed for significance at 0.05 level of significance was 4.12 at (1,37).



**Graphical Representation Of The Comparison Of Means Of Experimental And Control Group In Relation Of Flexibility.**

#### RESULT:

Based on the finding and within the limitation of the study it is noticed that practice of selected core stability strength exercise helped to improved flexibility of Kho-Kho players.

Flexibility of the subjects of experimental group was found to be statistically significant. Since, the obtained "F" value 19.86 was found higher than the tabulated value 4.12 at 0.05 level of significance.

#### DISCUSSION:

Smoliga J.M. et al., (2007) studied on relationship between cycling mechanics and core stability said improved core stability and endurance could promote greater alignment of the lower extremity when riding for extended as the core is more resistant to fatigue.

Core training can help junior high school students achieve better performance in both core muscle fitness and basic motor capability. Coaches and teachers are strongly encouraged to develop student's core muscles to help proper growth in puberty and at the same time help to prevent sports injuries (Chang- Cheng shih, 2005).

Similarly, the result of this clearly indicates that a significant difference was found in the flexibility of the subjects. The study is also supported by Dr. Chris. Button (Sep.2004, and Hiligan (2008). This difference may be attributed to the fact that since the core stability strength exercise are known to develop the core muscles of the boy which act as the major force generator for all the movement and improve flexibility.

Finally, result shows that he participants who followed the treatment of core stability strength training improve their flexibility than participants in control group.

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