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Effect of core stability training on selected fitness components among cricket players

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Abstract
This study aims to understand the effect of Core Stability Training on selected fitness components among Cricket players. This study specifically checks or assess the variables such as, Speed Flexibility, Agility and Balance of Cricket players before and after six week Core Stability Training. The final result of the study may help the physical educators and coaches for conducting Core Stability Training program for improving the performance of Cricket athlete. Conducting Core Stability programs will produce athletes with great stability, controlled body movements. Improving core strength can help to rehabilitating lower limp injuries, so CST training program may help normal people for maintaining good core strength.

Keywords: Speed, agility, flexibility, balance

Introduction
Heath and physical fitness have a vital role in the life of men from time to time immemorial the progress of the nation lies in the hands of the people, who are healthy and physically fit. Every individual, should develop physical fitness for a happy and effective living. In order to get physical fitness one has to involve in physical activities. Physical education programs are recognizing the academic benefits of quality fitness programs.

The area of the body, which is commonly referred to as the core, is your midsection and it involves all your muscles in that area including the front, back and sides. The core includes the Traverse Abdominals, Erector spine, Obliques your lower last. These muscles work as stabilizers for the entire body. (Wikipedia)

Core stability refers to a person's ability to stabilize their core. Stability, in this context, should be considered as an ability to control the position and movement of the core. Thus, if a person has greater core stability, they have a greater level of control over the position and movement of this area of their body. The body's core is frequently involved in aiding other movements of the body, such as the limbs, and it is considered that by improving core stability a person's ability to perform these other movements may also be improved i.e. core stability training may help improve someone's running ability. The body's core region is sometimes referred to as the torso or the trunk; although there are some differences in the muscles identified as constituting them. Core stability is an important component maximizing efficient athletic function.

Health Related Physical Fitness Components (H R P F)
Health related physical fitness refers to those components of fitness affected by habitual physical activity and related to health status. It defined as a state characterized by (A) an ability to perform and sustain daily activities and (B) demonstration of traits or capacities associated with a low risk of premature development of diseases and conditions related to movement.
- Cardio respiratory Endurance
- Muscular Strength
- Muscular Endurance
- Body Composition
- Flexibility

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Performance Related Physical Fitness Components

There are six skill-related fitness components: Agility, Balance, Coordination, Speed, Power, and Reaction time. Skilled athletes typically excel in all six areas.

- Agility
- Balance
- Speed
- Reaction time
- Power
- Coordination

Materials and Methods

This section describes the methodology and procedure adapted to resolving the problem; this includes selection of subjects, selection of test item, selection of variables, research design, administration of test and statistical technique employed for analysis data.

Selection of subjects: To achieve the purpose of the study a sample of thirty (N=30) male intercollegiate cricket players of MG University will be randomly selected; they are in the age group of 18-25 years. The selected players should be divided into two groups, in each group contains 15 members each. One is control group and other is experimental group. Control group will do regular exercises and practice, and experimental group will be treated with CST training.

Selection of variables: The research scholar reviewed the various scientific literatures pertaining to the selected variables from books, journals, periodicals, magazines and research papers. Taking onto consideration of feasibility criteria, availability

- Independent variable: Core stability training
- Dependent variable: Speed, Flexibility, Agility and Balance
- Criterion variable: 50 meter sprint test, Sit and reach, T-test and Stork stand test.

Experimental design: Pre and post experimental design was used here for resolving the problem of the study. In the experiment including warming up and general exercises, Core stability training and warming down. First is preparatory training session (10 to 15 minutes) it is including warming up and general exercises. Second s is core stability training (20 to 25 minutes), and last session is warming down.

Schedule of Exercise

	Warming up	Core stability training	Volume	Recovery time	Warming down	Total duration
Week 1	10 - 15 Minutes	Russian twist Plank Crunch Heel touch Scissor kick Cross crunch	4 sets = 3 minutes	2 minutes rest between each sets	5 - 10 minutes	35 minutes
Week 2	10 - 15 minutes	Russian twist Plank Crunch Heel touch Scissor kick Cross crunch Plank step up Plank walk out	Sets 1, 2&3 = 3 minutes. Set 4 = 4 minutes.	2 minutes rest between set 1, 2& 3. 1 minute rest between set 3&4.	5 - 10 minutes	35 minutes
Week 3	10 - 15 minutes	Russian twist Plank Crunch Bicycle crunch Plank step up Plank walk out Seated scissor kick Cross crunch	Set 1&2 = 3 minutes. Set 3&4 = 4 minutes.	2 minutes rest between set 1& 2. 1 minute rest between 2 &3 2 minute rest between 3&4.	5 - 10 minutes	35 minutes
Week 4	10 - 15 minutes	Russian twist Plank Crunch Bicycle crunch Plank step up Plank walk out Superman Swimmer	Set 1 = 4 minutes. Set 2, 3&4 = 4 minutes.	1 minute rest between 1&2. 2 minutes rest between 2,3&4	5 -10 minutes	36 minutes
Week 5	10 - 15 minutes	Bicycle crunch Hip raise Plank step up Plank walkout Spider crawl Alternating heel touch Swimmer Plank	4 sets = 4 minutes.	1minute rest between sets 1&2. 2 minutes rest between sets 2&3. 1 minute rest between 3&4.	5 -10 minutes	36 minutes
Week 6	10 - 15 minutes	Russian twist Bicycle crunch Hip raise One leg push up Spider crawl Bird dog Scissor kicks Plank	Set 1, 2&3 = 4 minutes. Set 4 = 5 minutes.	1.5 minutes rest between each sets.	5 - 10 minutes	36 minutes

Selection of the test

The Speed of the subjects was assessed by the 50 meter sprint test. Sit and reach test is for measuring the Flexibility of lower back and hamstring. Agility of subject was assessed by T-test; Storks stand test is for measuring Balance

1. 50 Meter sprint test
2. Sit and Reach
3. T-Test
4. Stork & Stand Test

T-Test   **Stork & Stand Test**
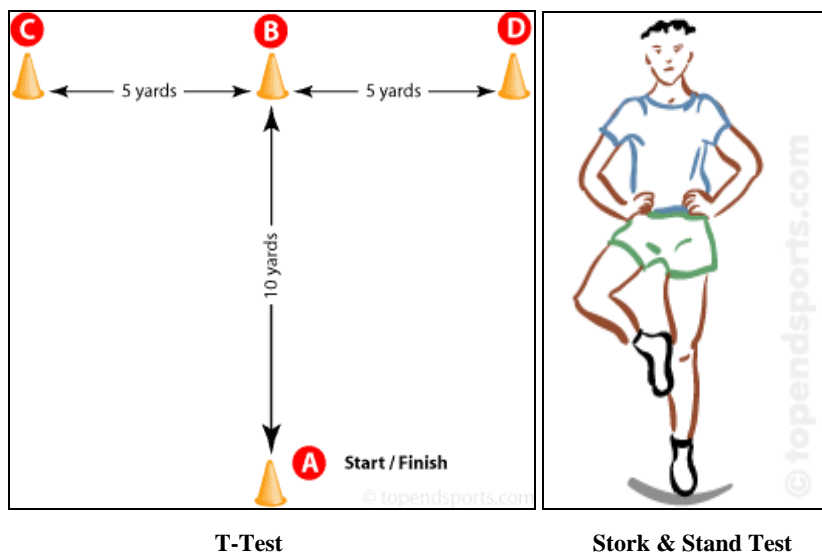
Findings of Study

	Group	Main Effect				
		Sum of squares	df	Mean Square	F	P-Level
Speed	Effect	0.038548	1	0.038548	21.0715	9.16
	Error	0.049394	27	0.001829		
Agility	Effect	0.01498	1	0.01498	0.43075	0.51718
	Error	0.939001	27	0.034778		
Flexibility	Effect	15.24936	1	15.24936	6.08144	0.0203
	Error	67.70316	27	2.507524		
Balance Left Leg	Effect	0.001431	1	0.001431	4.01082	0.05534
	Error	0.009633	27	0.000357		
Balance Right Leg	Effect	2.1905	1	2.1905	0.03767	0.84757
	Error	0.015685	27	0.000581		

It is very clear that the f value obtained with reference to post test score is 21.07 and p-value is 9.16 ($P<0.05$) after nullifying the pre test effect meaning that null hypothesis formulated is rejected. That means statistically there is significance difference after the method of CST adjusting for the effect of the pre test score for the experimental group and control group for Speed performance. It is very clear that the f value obtained with reference to post test score is 0.430 and p-value is 0.517 ($P<0.05$) after nullifying the pre test effect meaning that null hypothesis formulated is accepted. That means statistically there is no significance difference after the method of CST adjusting for the effect of the pre test score for the experimental group and control group for Agility.

It is very clear that the f value obtained with reference to post test score is 6.081 and P-value is 0.020 ($P<0.05$) after nullifying the pre test effect meaning that null hypothesis formulated is rejected. That means statistically there is a significance difference after the method of CST adjusting for the effect of the pre test score for the experimental group and control group for Flexibility.

Balance : It is very clear that the f value obtained with reference to post test score is 4.010 and p-value is 0.055 ($P<0.05$) after nullifying the pre test effect meaning that null hypothesis formulated is rejected. That means statistically there is a significance difference after the method of CST adjusting for the effect of the pre test score for the experimental group and control group for Balance (Left leg).

When it comes to right leg It is very clear that the f value obtained with reference to post test score is 0.037 and p-value is 0.847 ($P<0.05$) after nullifying the pre test effect meaning that null hypothesis formulated is accepted. That means statistically there is no significant difference after the method of CST adjusting for the effect of the pre test score for the experimental group and control group for Balance (Right leg).

Discussion of Findings
This study reveals that after the six weeks Core Stability Training program may improve all selected variables of the study except Agility and Balance. Meaning that there is a significant difference in the variables such as Speed and Flexibility between the pre test and post test of control and experimental group. In the other side the variables such as Agility and Balance there is no significant difference

Conclusion
Core Stability is often defined as the ability to control the movement and position of the muscles of the central core of the body, responsible for improving posture and limb movement through the strengthening of muscle groups of the lower back and abdomen. Good Core Stability will allow the sportsman to maximize their sporting performance and minimize injury risk. Core Stability is improved through a regular and repeated exercise program, which concentrated in the abdomen and lower back that does not require any

equipment.

This study concluded that after the six weeks Core Stability Training program may improve all selected variables of the study except Agility and Balance. Meaning that there is a significant improvement in the variables such as Speed and Flexibility between the pre test and post test of control and experimental group. In the other hand the selected variables such as Agility and Balance there is no significant differences. Usually the Core Stability Training program is exclusively for improving the speed, muscle strength, muscle endurance, flexibility etc. Similarly the most of the exercises included in our training package are also improving the aforesaid fitness qualities. All the individuals in experimental group are done the CS-Training either on supine or prone position. Unknowingly the researcher does not include any specific CST for improving balance. However the improvement of the experimental group on balance is low.

According to previous related studies on CST programme stated that CS-Training is the vital training programme for improving Agility. Similarly, based on the statistical mean value of the study on agility reveals that, those individuals in experimental group have much better improvement in agility than the control group after CS-Training. But after the final computation by the statistical tool ANCOVA we had get the result that statistically there is no significant difference between experimental group and control group.

Hence I concluded that, six weeks Core Stability Training program is not sufficient for making significant improvement in Agility. So the researcher may give more possibility to conduct the similar study in the recommendation part of this study in future.

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