



## The Influence of Core Strength Training on Specific Physical Variables among Inter-School Boys Basketball Players

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### ABSTARCT

*This study aimed to investigate the influence of core strength training on selected physical variables of Inter-school boys basketball players who were randomly selected and divided into two groups: Group I, which underwent core strength training group (CSTG), and Group II, serving as the control group (CG). Core strength training group participants received core strength training three days a week for eight weeks, while the CG continued their routine activities without additional training. The physical variables of muscular strength and flexibility were measured before and after the training period. Statistical analysis using the 't' test was performed to assess any significant improvements at a 0.05 level of confidence. The results showed a significant enhancement in muscular strength and flexibility rate among the CSTG participants, despite potential influences of factors such as diet, climate, lifestyle, and prior training. These findings align with previous research in the field of sports sciences, indicating that core strength training had a positive influence on selected physical variables of Inter-school boys basketball players.*

Keywords: Core strength training, muscular strength, flexibility.

### Basketball

The Strength training is a fundamental element for the physical conditioning of basketball players. Its purpose is to improve explosive power and acceleration/speed around the court and to reduce the risk of joint and tendon injuries. During the season, resistance training and power training are performed in different periods. Moreover, individual and team development plans optimize the improvement of each player. Let's find out how athletic training aims to improve strength, speed and acceleration in the field of play, as well as reducing the risk of joint and tendon injuries. (Ashutosh Shukla.,2019) Basketball also involves many lateral movements and jumps, squatting and sinking, which require strong leg muscles and stability of the core. Strength training using weights to perform squat or leg curl allows you to build quadriceps and strong calves. Finally, you can build the strength of the core with abdominal crunch. As we have already seen, the qualities of a basketball player are many and different.

The hypothesis argued in this paper is that Inter-school boys' basketball players can significantly increase the physical fitness parameters of muscular strength, and flexibility by combining normal technical and tactical sessions with a core strength training program over a consecutive 8 weeks period. Therefore, the object of this study was to investigate the changes in the parameters produced during 8 weeks of core strength training in 15 Inter-school basketball players.

### Methods

#### *Experimental Approach to the Problem*

To investigate the presented hypothesis, we recruited 30 boys' basketball players from inter-school teams in the Coimbatore district. These participants were randomly divided into two equal groups: a core strength training group (n=15) and a control group (n=15). The experimental group underwent training three days a week on alternate days for a duration of eight weeks. The control group did not receive any form of training and continued with their regular routines.

#### *Design*

Muscular strength was evaluated using the sit-ups test, with counts as the unit of measurement, while flexibility was assessed through the sit-and-reach test, with measurements recorded in centimetres. These variables were measured both at the baseline and after an 8-week period of core strength training.

### Training programme

The training programme was lasted for 45 minutes for session in a day, 3 days in a week for a period of 8 weeks duration. These 45 minutes included 10 minutes warm up, 15 core strength training for 25 minutes and 10 minutes warm down. Every three weeks of training 5% of intensity of load was increased from 65% to 80% of work load. The volume of core strength training is prescribed based on the number of sets and repetitions.

### Statistical analysis

The collected data on above said variables due to the influence of core strength training was statistically analyzed with 't' test to find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. ( $P < 0.05$ ).

**Table -I**

**Computation of t ratio on selected physical variables of Inter-school boys basketball players on experimental group**

Experimental Group							
		Mean	Standard deviation	N	Mean difference	Standard error mean	t- ratio
Muscular strength	Pre	21.13	1.68	15	-2.60	0.181	-16.87
	Post	24.20	1.61	15			
Flexibility	Pre	15.48	1.36	15	0.97	0.07	12.23
	Post	16.46	1.32	15			

\* Significant at 0.05 level of confidence (2.14), 1 and 14.

Table II reveals the computation of mean, standard deviation and 't' ratio on selected physical fitness parameters, namely muscular strength, flexibility, balance, and agility of experimental group. The obtained 't' ratio on muscular strength, and flexibility were -16.87, and 12.23 respectively. The required table value was 2.14 for the degrees of freedom 14 at the 0.05 level of significance. Since the obtained t values were greater than the table value it was found statistically significant.

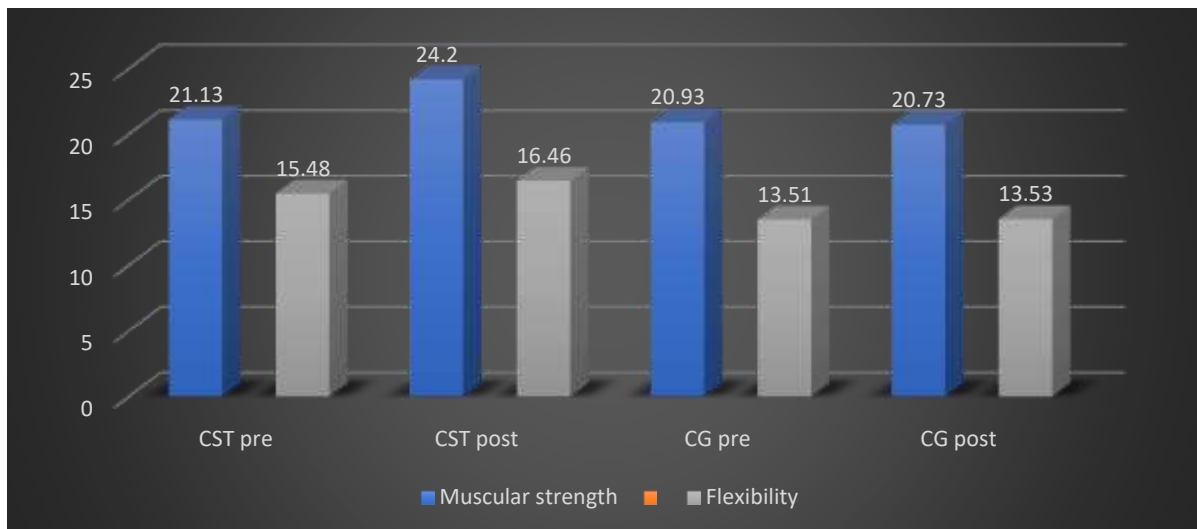
**Table -II**

**Computation of t ratio on selected physical variables of Inter-school boys basketball players on control group**

Control Group							
		Mean	Standard deviation	N	Mean difference	Standard error mean	t- ratio
Muscular strength	Pre	20.93	1.279	15	0.510	0.144	1.38
	Post	20.73	1.38	15			
Flexibility	Pre	13.51	15.11	15	0.02	0.02	1.00
	Post	13.53	1.49	15			

\* Significant at 0.05 level of confidence (2.14), 1 and 14.

Table I reveals the computation of mean, standard deviation and 't' ratio on selected physical fitness parameters, namely muscular strength, and flexibility of experimental group. The obtained 't' ratio on muscular strength, flexibility, balance, and agility were 1.38 and 1.00 respectively. The required table value was 2.14 for the degrees of freedom 14 at the 0.05 level of significance. Since the obtained t values were greater than the table value it was found statistically significant.



**Fig 1: Bar diagram showing the mean value on selected physical variables of Inter-school boys basketball players on experimental and control group**

### Discussion on Finding

The present study experimented the effect of core strength training on muscular strength and flexibility of inter-school boys' basketball players. The result of this study indicated that the core strength training improved the muscular strength and flexibility. The findings of the present study had similarity with the findings of investigations referred in this study.

The result of the present study indicates that the core strength training programme is effective method to improve muscular strength and flexibility of inter-school boys' basketball players. The discrepancy between the result and the result of previous studies might be attributed to several reasons, such as the training experience level of the subjects, the training program, the intensity used and the duration of the training program. **Granacher et al., (2014)** It has been demonstrated that core strength training is an effective means to enhance trunk muscle strength (TMS) and proxies of physical fitness in youth. Of note, cross-sectional studies revealed that the inclusion of unstable elements in core strengthening exercises produced increases in trunk muscle activity and thus provide potential extra training stimuli for performance enhancement. **Subramanian et al. (2014)** conducted a study to investigate the impact of eight weeks of supervised core strength training on various physical and physiological parameters, including muscular strength, back strength, flexibility, mean arterial pressure, vital capacity, and resting pulse rate, among cricket players.

### Conclusion

The study's findings lead to the conclusion that an eight-week core strength training program effectively enhanced the muscular strength and flexibility of inter-school boys' basketball players. This suggests that incorporating core strength training is a suitable training protocol for eliciting positive changes in the physical fitness variables of basketball players.

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