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## Effects of core circuit stability training and periodised resistance circuit training on flexibility of collegiate male badminton players

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### Abstract

The motivation behind this investigation was to discover the impacts of core circuit stability training and periodised resistance circuit training on collegiate male badminton players. In light of their preparation, eighty male collegiate badminton players were chosen from Mysore College Subsidiary First Grade College and they were separated into four groups which were as per the following: Group – I core circuit stability training (n = 20), Group – II periodised resistance circuit training (n = 20) Group – III combination of core stability and periodised resistance circuit training, Group IV (n = 20) control Group (n=20). The reason for existing was to discover the flexibility in sit and reach test was taken, as estimated with in the twelve-week preparing period. Subjects in the preparation bunches prepared 2 days for every week, though control subjects did not take any preparation movement. The information were broke down by t proportion, examination of change, and investigation of co-fluctuation, Scheffe's post hoc test. The outcomes demonstrated that the prepared medicines evoked huge ( $P < 0.05$ ) change in the greater part of the tried factors of adaptability. Be that as it may, the periodised obstruction high-intensity resistance gathered the hinted change in adaptability. Sit and achieve test execution was demonstrated fundamentally which had more prominent change in the other 2 gatherings (opposition preparing and control gathering). This investigation offers help for the utilization of a center aerobics strategy to enhance adaptability.

**Keywords:** Core stability circuit training (CSCTG), Periodised resistance circuit training (PRCTG), combination of core circuit stability and periodised resistance training (CCSPRCTG), Flexibility

### 1. Introduction

One component of equalization is the capacity to keep up an unflinching trunk while moving an appendage. When we connect an arm or make a move to walk, our sensory system switches on our muscles in a particular request, with trunk muscles contracting before appendage muscles. This balances out the body, guaranteeing that we are not pulled wobbly by moving arm or leg. This trunk relentlessness is ordinarily known as 'center soundness'. Preparing programs, for example, Pilates, practice the 'center' muscles in an exact controlled way with the point of enhancing trunk strength. Center dependability is a critical quality of the body that is imperative to a variety of competitors. In this is a viewpoint that keeps the body in harmony with particular kinds of developments. For instance, it's center dependability that enables a wrestler to toss a rival in a liquid motion to rise criticalness is the way that center steadiness becomes a protection measure against damage in the lower spinal area. The wrestle should have center dependability to avoid prompting damageous (identifying with the muscles, bones, joints, tendons, ligaments and spinal plates). The center for the individuals is the lower middle area including the abs, obliques and lower back. This is associated with encouraging a wide assortment of developments, for example, hopping, curving, and so on. It is likewise essential as a power hotspot for some activities. For instance the power from a punch or kick comes not from the arm or leg, but rather from the center. Dependability is characterized as staying unaltered even within the sight of powers that would ordinarily change the state or condition. Since this is the meaning of dependability, simply apply this deeply locale and there you have center soundness. Legitimate steadiness of the center enables competitors to withstand powers of crippling.

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It is additionally associated with coordination of basic and complex developments that outcome in ideal execution. To know how center dependability can impact a competitor's execution, we should perceive how this trademark can be enhanced and created. Different analysts have underlined the significance of maximal rate of intensity headway in the difference in versatility (Behm and Sale 1993; Hakkinen and Komi, 1985). Resistance high-force practice has been pushed for games that requires the contenders to have peril and an extended versatility.

**2. Methodology**

In the present study investigator had identified eighty male collegiate badminton players from Mysore College Subsidiary First Grade College and they were separated into four groups Group – I core stability circuit training (n = 20), Group – II periodised resistance circuit training (n = 20), Group – III combination of core stability and periodised resistance circuit training, Group IV (n = 20) control Group (n = 20). The reason for existing was to discover the flexibility in sit and

reach test. It was estimated to have twelve-week preparing period to find the outcomes. The age was constructed to 17-23 years.

**Table 1:** Pre and post-test mean value of core stability circuit training flexibility

	Mean	Std. Deviation	Std. Error Mean	M.D	't' ratio
Pre-Test	15.25	2.14	0.31	2.80	8.94
Post-Test	18.05	2.03			

\* Significant at 0.05 levels (2.14)

The Table-1 shows the obtained 't' ratio for pre and post test mean difference CSCTG on flexibility of 8.94. The obtained 't' ratios are higher than the table value of 2.09 for the degrees of freedom (1, 19). The result shows a statistically significant improvement at 0.05 level of confidence. It is observed that the mean gains and losses made from pre and post test significantly show improvement in flexibility (2.80  $p < 0.05$ ).

**Table 2:** Pre and post-test mean value of periodised resistance training Group on flexibility

	Mean	Std. Deviation	Std. Error Mean	M.D	't' ratio
Pre-Test	15.05	2.08	0.16	2.15	12.90
Post-Test	17.20	2.06			

\* Significant at 0.05 levels (2.14)

The Table-2 shows the obtained 't' ratio for pre and post test mean difference CSCTG on flexibility of 12.90. The obtained 't' ratios are higher than the table value of 2.09 for the degrees of freedom (1, 19). The result shows statistically significant improvement at 0.05 level of confidence. It is observed that the mean gains and losses made from pre and post test significantly show improvement in flexibility (2.15  $p < 0.05$ ) in the periodised resistance circuit training group.

obtained 't' ratios are higher than the table value of 2.09 for the degrees of freedom (1, 19). The result shows statistically significant improvement at 0.05 level of confidence. It is observed that the mean gains and losses made from pre and post test significantly show improvement in flexibility (4.25  $p < 0.05$ ).

**Table 3:** Pre and post-test mean value of combination of core stability circuit and periodised resistance circuit training group on flexibility

	Mean	Std. Deviation	Std. Error Mean	M.D	't' ratio
Pre-Test	15.05	3.15	0.54	4.25	7.00
Post-Test	19.30	3.16			

\* Significant at 0.05 levels (2.14)

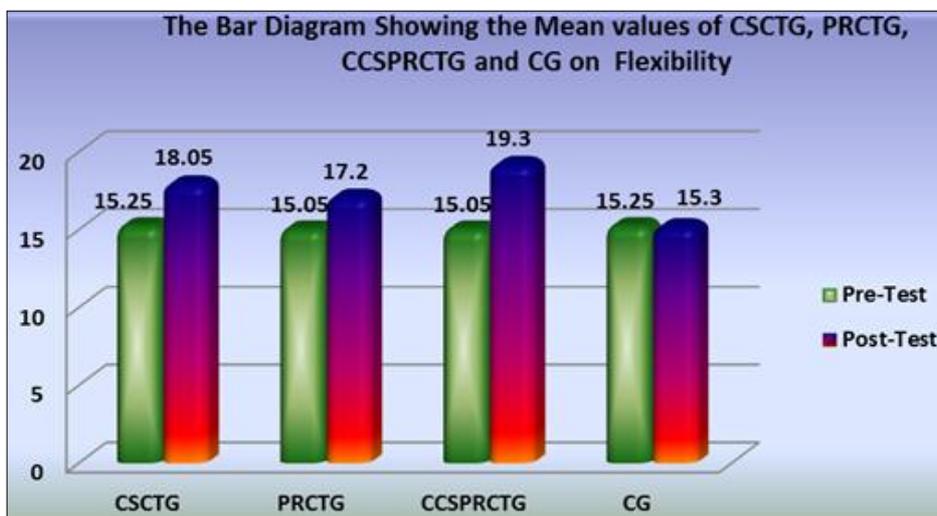
**Table 4:** Pre and post-test mean value of control group flexibility

	Mean	Std. Deviation	Std. Error Mean	M.D	't' ratio
Pre-Test	15.2500	3.30669	.08811	0.05000	0.567
Post-Test	15.3000	3.29433			

\* Significant at 0.05 levels (2.14)

The Table-4 shows the obtained 't' ratios for pre and post test mean difference CG on flexibility of 0.56. The obtained 't' ratio is lesser than the table value of 2.09 for the degrees of freedom (1, 19). It is found that the result does not show any significant improvement at 0.05 level of confidence.

The Table-3 shows the obtained 't' ratio for pre and post test mean difference CCSPRCTG on flexibility of 7.00. The



**Fig 1:** Bar diagram showing the pre-test and post test means of the flexibility of the experimental and control groups.

**Table 5:** Analysis of variance in pre and post tests on flexibility of CSCTG, PRCTG, CCSPRCTG and CG on Flexibility

Mean	SFTG	SRFTG	CSTSRFTG	CG	Source of variance	Sum of square	df	Mean square	'F'
Pre-test	15.25	15.05	15.05	15.25	B.G	0.80	3	0.26	0.036
					W.G	567.40	76	7.46	
Post –test	18.05	17.20	19.30	15.30	B.G	169.33	3	56.44	7.70*
					W.G	556.55	76	7.32	
Adjusted post test	17.96	17.28	19.38	15.21	B.G	180.47	3	60.15	29.89*
					W.G	150.91	75	2.01	

0.05 level of significance (2.72)

The Table-5 reveals that the obtained 'F' value on pre – test means of flexibility is 15.25 for experimental group – I, 15.05 for experimental group – II, 15.05 for experimental group – III and 15.25 for control group. The obtained 'F' ratio 0.036 is lesser than the table 'F' ratio 2.72. Hence, the pre test means are found to be insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post - test means are 18.05 for experimental group – I, 17.20 for experimental group – II, 19.30 for experimental group – III and 15.30 for control group. The obtained 'F' ratio 7.70 is higher than the table 'F' ratio 2.72. Hence, the post – test means are found to be significant at 0.05 level of confidence for degree of

freedom 3 and 76. The adjusted post – test means are 17.96 for experimental group – I, 17.28 for experimental group – II, 19.38 for experimental group – III and 15.21 for control group. The obtained 'F' ratio 29.89 is higher than the table 'F' ratio 2.72. Hence, the adjusted post test means are found to be significant at 0.05 level of confidence for the degrees of freedom 3 and 75. It is concluded that there is a significant mean difference among the core circuit stability training group, periodised resistance circuit training group, combination of core circuit stability and periodised resistance circuit training group and Control Group in developing the flexibility of the badminton players.

**Table 6:** The Scheffe's test for the differences between pared means on flexibility

CSCTG	PRFTG	CSTSRFTG	CG	Mean Differences	Confidence Interval Value
17.96	17.28	-	-	-0.68	1.264
17.96	-	19.38	-	1.42	1.264
17.96	-	-	15.21	-2.75	1.264
-	17.28	19.38	-	2.1	1.264
-	17.28	-	15.21	-2.07	1.264
-	-	19.38	15.21	-4.17	1.264

\* Significant at 0.05 level of confidence

The Table-6 shows the post hoc analysis of obtained order adjusted post test means. The confidential interval mean difference required to be significant at 1.26. It is observed that the mean difference values of the core stability circuit training group, periodised resistance circuit training group, combination of core circuit stability and periodised resistance circuit training group and control Group. Combination of core circuit stability and periodised resistance circuit training group in developing the flexibility is significantly higher than the core stability circuit training group, periodised resistance circuit training group and control group. The core Stability circuit training group has developed the flexibility better than the periodised resistance circuit training group and control group. The periodised resistance circuit training group developed flexibility better than the control group.

## 2. Discussion on Findings on Flexibility

The core stability circuit training group, periodised resistance circuit training group, combination of core circuit stability and periodised resistance circuit training group significantly show improvement in flexibility from pre test to post test. The flexibility decreased in the CSCTG group from pre test (15.25 ± 2.14) to post test (18.05 ± 2.03), PRCTG group from pre test (15.05 ± 2.08) to post test (17.20 ± 2.06), CCSPRCTG group from pre test (15.05 ± 3.15) to post test (19.30 ± 3.16) and there are no changes in the control group from pre test (15.25 ± 3.30) to post test (15.30 ± 3.29). The flexibility significantly shows improvement from pre test to post test in the three treatment groups and there is no changes in control group.

The present study demonstrates that an increase in flexibility of 18.36 %, 14.28 %, 28.23 % and 0.32 % is estimated with sit and reach for the core stability circuit training group,

periodised resistance circuit training group, combination of core circuit stability and periodised resistance circuit training group and control group respectively. The combination of core circuit stability and periodised resistance circuit training group significantly show improvement in flexibility by 28.23 % better than the core stability circuit training group 18.36 % periodised resistance circuit training group 14.28 % and control group 0.32 %. The core stability circuit training group improves in flexibility by 18.36% better than the periodised resistance circuit training 14.28 % and control group 0.32 %. The periodised resistance circuit training improves in flexibility by 14.28 % better than the control group 0.32%.

## 3. Result of the study

1. It is identified that the core circuit stability preparing fundamentally has enhanced flexibility of inter collegiate male badminton players.
2. It is identified that the periodised resistance preparing fundamentally has enhanced flexibility of inter collegiate male badminton players.
3. It is identified that the blend of core circuit stability and periodised resistance preparing fundamentally has enhanced flexibility of inter collegiate male badminton players.

## 4. Conclusion

1. It was presumed that the core stability circuit preparing enhanced Flexibility of inter collegiate male badminton players.
2. It was presumed that the periodised Resistance circuit preparing had enhanced flexibility of inter collegiate male badminton players.

3. It was presumed that the mix of core circuit stability and periodised resistance preparing had enhanced flexibility of inter collegiate male badminton players.

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