

Effects of Core Stability and Periodised Resistance Training on Flexibility of Hockey Players

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Abstract

The purpose of the study is to investigate the Effects of core stability and periodised resistance training on flexibility of hockey players on coach rated hockey skills in relation to selected physical fitness variables. To achieve the purpose of the present study 80 hockey players were selected from Mysore collegiate subsidiary first grade college as subjects from Karnataka state at random. The selected variable was Flexibility. The collected data on criterion measures were treated by Sit and Reach Test, Box for Sitting and Reaching (or on the other hand a ruler can be utilized, and a stage or box). The position of greatest flexion must be held for roughly two seconds. The test has rehearsed twice for Flexibility. The collected data were statistically analyzed by t-ratio, one ways analysis of variance test was applied and the level of significance for the study was 0.05 level. The collected data were statistically analysed by t-ratio, one-way analysis of variance test was applied. The level of significance for the study used was 0.05 level. Wherever significant differences were found Scheffe's post-hoc test was used. The results revealed that there was significant difference in the Flexibility of Hockey players. There was significant difference exist in their interaction effect in Flexibility level among collegiate Hockey players.

Keywords: Core Stability Circuit Training, Periodized Resistance Circuit Training, Combination of Core Stability and Periodized Resistance Circuit Training, Collegiate Hockey players and Flexibility.

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1. INTRODUCTION

The Core muscles of the human body (lumber) spine and viscera falls without any problem. To permit development, convey stacks and secure the spinal column rope and nerve roots “solidness” were required. The maximum solidness is given in a coordinated way by the dynamic reactions about the particular contraction of the muscles. (Eg. Muscles) uninvolvement (Eg. Lumber spine) and control the maximum power of the neurological frameworks. There is a decision and discussion of some disarray on the basis of model expression. Equal validity required for the Musculo skeletal muscles. It reached the core stability and resistance-based core circuit training requires the maximum power of the human body. Generally, this term has alluded to the dynamic part of the balancing out framework including profound/nearby muscles that give fiber dependability (Eg. Transverse abdominis, lumber multifidus) and additionally shallow/worldwide the proper muscles reflect the identification process.

The empower development of the muscles/force age and furthermore aid soundness in more actually requiring undertakings. Various defenders have upheld various kinds center solidness practices going from the stomach attracting move to sit ups or board type workout. Periodized resistance circuit training resistance is one of the best trainings to develop the physical and physiological variables. It should concentrate the muscles an unpredictable aptitude for the member and coaches requires exact force applied for the frequency.

Preparing the shallow muscles can be similarly perplexing and is attempted by a scope of wellbeing and donning experts with an enormous assortment approaches clear. An elective term to center dependability is engine control that reflects ideals around the muscles to tangible information source. Standard writing give definite data on the life structures on key profound muscles and online assets are likewise accessible. The components of the profound and soundness/firmness are questionable, yes cross over abdominal muscles.

1.1REVIEWS RELATED LITRATURE

Weston, et al., (2013) concentrated on the Effect of Isolated Core Stability Circuit Training on Selected Measures of Golf Swing Performance. This study aimed to quantify the effect of an 8-wk isolated Core Stability Circuit Training program on selected ball and club parameters during the golf swing and also the variability of these measures.

Casey A. Reed, et al., (2005) examined the Effects of Isolated and Integrated Core Stability Training on Athletic Performance Measures. This systematic review focuses on identification of the association between core stability and sports-related performance measures. A secondary objective was to identify difficulties encountered when trying to train core stability with the goal of improving athletic performance.

John D Willson, et al. , (2002) mulled over Core stability and its relationship to lower extremity function and injury.

Lisa S Bliss and Peter Teeple, (1992) compared the Core stability: the centre piece of any training program. This study demonstrated a relationship between core stability and increased incidence of injury. A training program should start with exercises that isolate specific core muscles but must progress to include complex movements and incorporate other training principles.

1.2OBJECTIVE OF THE STUDY

1. The study will be finding the effects of core stability training on the development onFlexibility of inter collegiate male hockey players.
2. The study will be finding the effectiveness of periodized resistance circuit heavy treatment to developmentonFlexibility of inter collegiate male hockey players.
3. The study will be finding the effects of combination of core stability and periodized resistance circuit training on the development onFlexibility of inter collegiate male hockey players.

1.3HYPOTHESIS

1. It is hypothesized that the effects of core stability circuit training would significantly improve Flexibility of inter collegiate male hockey players.
2. It is hypothesized that the effects of periodized resistance circuit training would significantly improve Flexibility of inter collegiate male hockey players.
3. It is hypothesized that the effects of combination of core stability and periodized resistance circuit training would significantly improve Flexibility of inter collegiate male hockey players.
4. It is hypothesized that the effects of combination of core stability and periodized resistance circuit training would significantly improve the Flexibility better than the core

stability circuit training, periodized resistance circuit training and control group of inter-collegiate male hockey players.

5. It is hypothesized that the effects of periodized resistance circuit training would significantly improve the physical physiological variable better than the core stability circuit training and control group of inter collegiate male hockey players.

6. It is hypothesized that the effects of core stability circuit training would significantly improve the Flexibility better than the control group of inter collegiate male hockey players.

2. METHODS AND MATERIALS

The purpose of the study is to investigate the Effects of core stability and periodised resistance training on flexibility of hockey players on coach rated Hockey skills in relation to selected physical fitness variables. To achieve the purpose of the present study 80 hockey players were selected from Mysore collegiate subsidiary first grade college as subjects from Karnataka state at random. The selected variable was Flexibility. The collected data on criterion measures were treated by Sit and Reach Test, Box for Sitting and Reaching (or on the other hand a ruler can be utilized, and a stage or box). The position of greatest flexion must be held for roughly two seconds. The test has rehashed twice for Flexibility. The collected data were statistically analyzed by t-ratio, one ways analysis of variance test was applied and the level of significance for the study was 0.05 level. The collected data were statistically analysed by one-way analysis of variance test was applied. The level of significance for the study used was 0.05 level. Wherever significant differences were found Scheffe's post-hoc test was used.

3. ANALYSIS AND INTERPRETATIONS OF DATA

Table-1. THE TABULATION SHOWS THE MEAN VALUES BETWEEN PRE AND POST TEST OF CORE STABILITY CIRCUIT TRAINING ON FLEXIBILITY OF HOCKEY PLAYERS

Variables	Test	Mean	S. D	S.E.M	M.D	T-Ratio
Flexibility in Centimeters	Pre-Test	15.81	1.60	0.378	4.61	12.21
	Post- Test	20.42	1.34			

0.05 level of significance (2.09)

Table 1 displayed the results of ‘t’ value of Flexibility (12.21). The obtained tabulated t value was 2.09 statistically significant difference at the 95 % confidential level, D.F. (1, 19). It was found that statistically significant at 0.05 level of confidence. It was observed that the mean gains and losses made from pre and post-test were showed significant improvement in Flexibility, thus the formulated hypothesis No 1 is accepted.

Table- 2. THE TABULATION SHOWS THE MEAN VALUES BETWEEN PRE AND POST TEST OF PERIODIZED RESISTANCE CIRCUIT TRAINING ON FLEXIBILITY OF HOCKEY PLAYERS

Variables	Test	Mean	S. D	S.E.M	M.D	T-Ratio
Flexibility in Centimeters	Pre-test	15.68	1.77	0.338	7.25	21.44
	Post test	22.93	1.68			

0.05 level of significance (2.09)

Table 2 displayed the results of ‘t’ value of Flexibility (21.44). The obtained tabulated t value was 2.09 statistically significant difference at the 95 % confidential level, D.F. (1, 19). It was found that statistically significant at 0.05 level of confidence. It was observed that the mean gains and losses made from pre and post-test were showed significant improvement in Flexibility, thus the formulated hypothesis No. 2 is accepted.

Table-3. THE TABULATION SHOWS THE MEAN VALUES BETWEEN PRE AND POST TEST OF COMBINATION OF CORE STABILITY AND PERIODIZED RESISTANCE CIRCUIT TRAINING ON FLEXIBILITY OF HOCKEY PLAYERS

Variables	Test	Mean	S. D	S.E.M	M.D	T-Ratio
Flexibility in Centimeters	Pre-test	15.81	1.85	0.219	8.22	37.49
	Post-test	24.03	1.74			

0.05 level of significance (2.09)

Table 3 displayed the results of ‘t’ value of Flexibility (37.49). The obtained tabulated t value was 2.09 statistically significant difference at the 95 % confidential level, D.F. (1, 19). It was found that statistically significant at 0.05 level of confidence. It was observed that the mean gains and losses made from pre and post-test were showed significant improvement in Flexibility, thus the formulated hypothesis No 3 is accepted.

Table-4. THE TABULATION SHOWS THE MEAN VALUES BETWEEN PRE AND POST TEST OF CONTROL GROUP ON FLEXIBILITY OF HOCKEY PLAYERS

Variables	Test	Mean	S. D	S.E.M	M.D	T-Ratio
Flexibility in Centimeters	Pre-test	15.77	1.84	0.003	0.01	1.45
	Post test	15.78	1.84			

0.05 level of significance (2.09)

Table 4 displayed the results of ‘t’ value of Flexibility (1.45). The obtained tabulated t value was 2.09 statistically significant difference at the 95 % confidential level, D.F. (1, 19). It was found that statistically significant at 0.05 level of confidence. It was observed that the mean gains and losses made from pre and post-test were showed significant improvement in Flexibility, thus the formulated hypothesis No 4 is accepted.

Figure.1

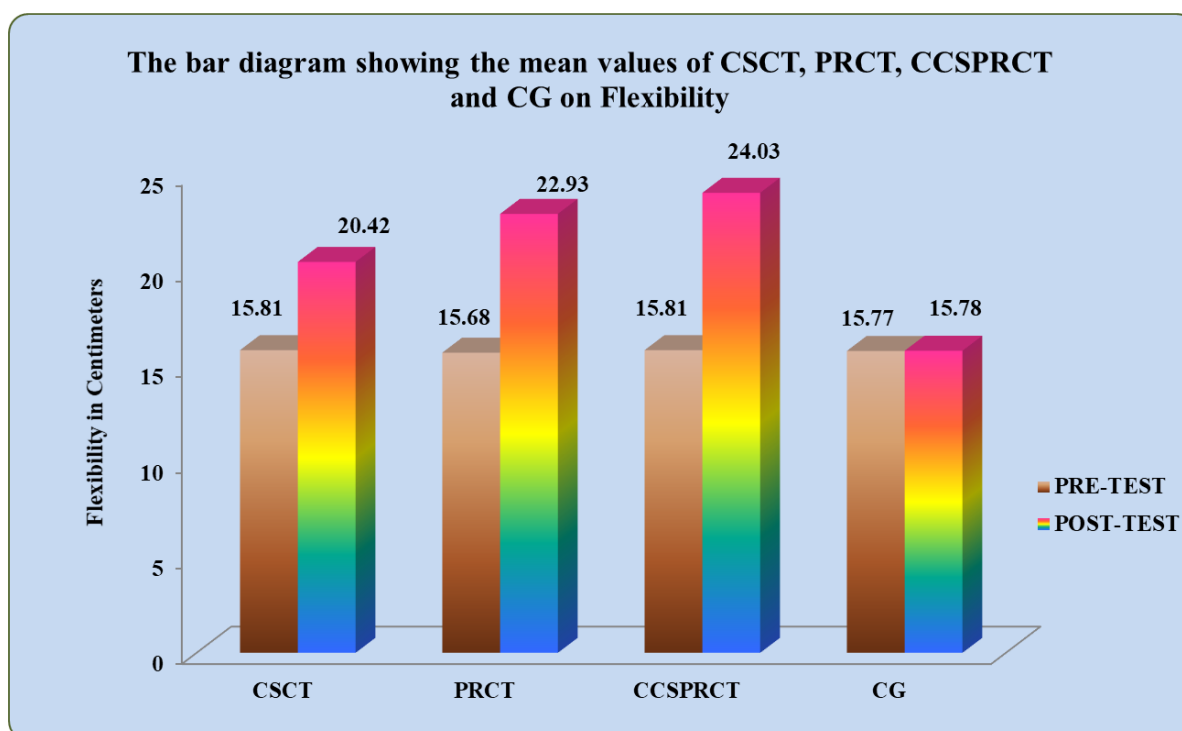


Table-5. ANALYSIS OF VARIANCE ON PRE-TEST MEAN VALUES AMONG THECSCT, PRCT, CCSPRCT AND CG ON THE DEVELOPMENT OF FLEXIBILITY AMONGHOCKEY PLAYERS

Variables	Source of Variance	Sum of Squares	DF	Mean Square	F	Sig.
Flexibility in Centimeters	Between	0.23	3	0.075	0.02	1.00
	Within	237.76	76	3.128		

0.05 level of significance (3.16)

Table 5 viewed that the obtained ‘F’ value for the CSCT, PRCT, CCSPRCT AND CG of Hockey Players on Flexibility (0.02). The obtained tabulated f value was 3.16 statistically significant differences at the 95 % confidential level and the degrees of freedom (3, 76). It was found that statistically show insignificant. So, the treatment was successful.

Table- 6. ANALYSIS OF VARIANCE ON POST TEST MEAN VALUES AMONG THE CSCT, PRCT, CCSPRCT AND CG ON THE DEVELOPMENT OF FLEXIBILITY AMONG HOCKEY PLAYERS

Variables	Source of Variance	Sum of Squares	DF	Mean Square	F	Sig.
Flexibility in Centimeters	Between	806.28	3	268.761	97.33	0.00
	Within	209.86	76	2.761		

0.05 level of significance (3.16)

Table 6 viewed that the obtained ‘F’ value for the CSCT, PRCT, CCSPRCT AND CG of Hockey Players on Flexibility (97.33). The obtained tabulated f value was 3.16 statistically significant differences at the 95 % confidential level and the degrees of freedom (3, 76). It was found that statistically show insignificant. So, the treatment was successful.

Table-7. ANALYSIS OF CO-VARIANCE ON PRE AND POST TEST MEAN VALUES AMONG THE CSCT, PRCT, CCSPRCT AND CG ON THE DEVELOPMENT OF FLEXIBILITY AMONG INTER COLLEGIATE HOCKEYPLAYERS

Variables	Source of Variance	Sum of Squares	DF	Mean Square	F	Sig.
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Flexibility Centimeters	in	Between	809.24	3	269.748	214.82	0.00
		Within	94.18	75	1.256		

0.05 level of significance (3.16)

Table 7 viewed that the obtained 'F' value for the CSCT, PRCT, CCSRPT AND CG of Hockey Players on Flexibility (214.82). The obtained tabulated f value was 3.16 statistically significant differences at the 95 % confidential level and the degrees of freedom (3, 76). It was found that statistically show insignificant. So, the treatment was successful.

Table-8. THE SCHEFFE'S POST HOC TEST FOR THE DIFFERENCES BETWEEN ADJUSTED POST TEST MEANS OF CSCT, PRCT, CCSRPT AND CG AMONG INTER COLLEGIATE HOCKEY PLAYERS ON FLEXIBILITY

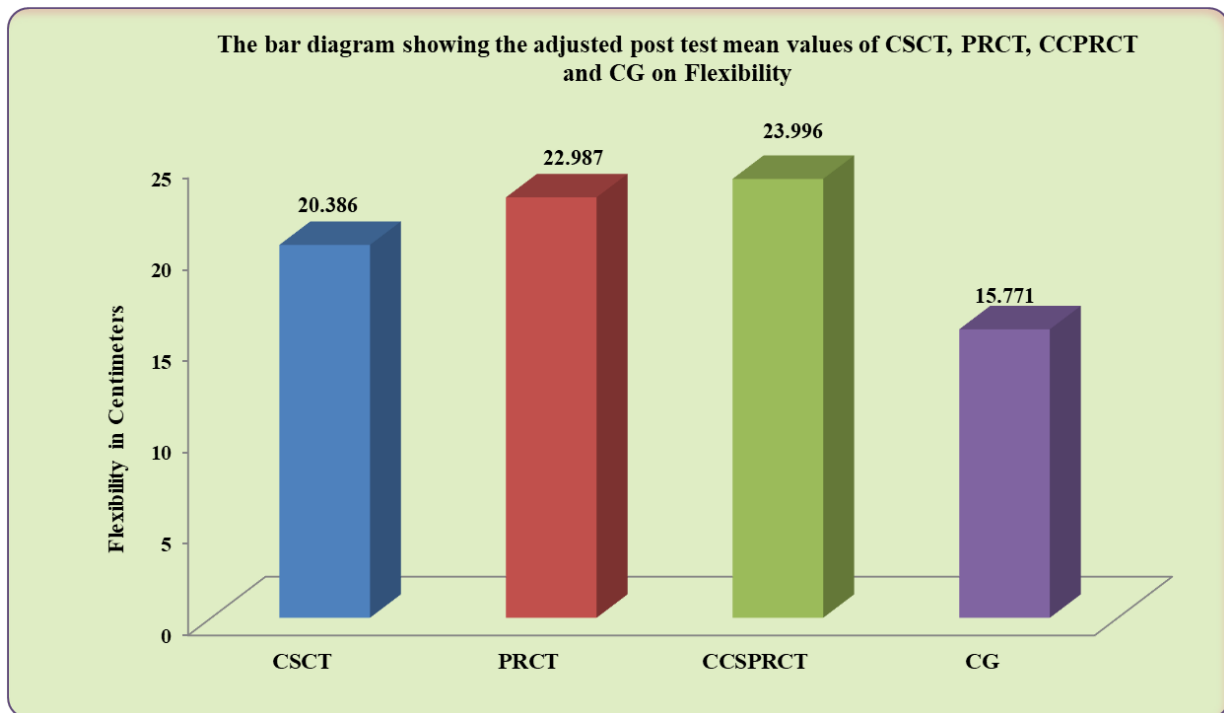
CSCT	PRCT	CCSRPT	CG	Mean Differences	Confidence Interval Value
20.386	22.987	---	---	2.601	0.998
20.386	---	23.996	---	3.610	0.998
20.386	---	---	15.771	4.615	0.998
---	22.987	23.996	---	1.009	0.998
---	22.987	---	15.771	7.216	0.998
---	---	23.996	15.771	8.225	0.998

* Significant at 0.05 level of confidence

Table 8 shows the adjusted post hoc test mean values of CSCT group, PRCT group, CCSRPT group and CG. The mean difference required for the confidential interval to be significant was 0.958. To Comparing the CSCT group and PRCT group, the mean differences between the two groups were 2.601. Hence PRCT group were showed better improvement on Flexibility. To Comparing the CSCT group and CCSRPT group, the mean differences between the two groups were 3.610. Hence CCSRPT group were showed better improvement on Flexibility. To comparing the CSCT group and CG, the mean differences between the two groups were 4.615. Hence CSCT group were showed better improvement on Flexibility. To Comparing the PRCT group and CCSRPT group, the mean differences between the two groups were 1.009. Hence CCSRPT group were showed better

improvement on Flexibility. To comparing PRCT group and CG, the mean differences between the two groups were 7.216. Hence PRCT group showed better improvement on Flexibility. To comparing CCSPRCT group and CG, the mean differences between the two groups were 8.225. Hence CCSPRCT group showed better improvement on Flexibility. Finally,CCSPRCT group showed better than the PRCTgroup,CSCTgroup and CG on Flexibility.

Figure. 2



RESULTS AND DISCUSSION

This study confirms that improvement in core stability and periodised resistance training on flexibility of hockey players on coach rated Hockey skills in relation to selected physical fitness variables.

The core stability circuit traininggroup, periodized resistance circuit training group and combination of core stability and periodized resistance circuit traininggroupsignificantly showed improvement inflexibilityfrom pre-test to post test. The Flexibilityincreased in the CSCT group from pre-test (15.81 ± 1.6) to post test (20.02 ± 1.34); PRCT group from pre-test (15.68 ± 1.77) to post test (22.93 ± 1.68);CCSPRCTgroup from pre-test (15.81 ± 1.85) to post test (24.03 ± 1.74) and there was no change in control group from pre-test (15.77 ± 1.84) to post test (15.78 ± 1.84). The Flexibilitysignificantly showed improvement from pre-test to post test in their Treatment groups and there were no changes in control group.

The present study demonstrated that an increase in Flexibility of 29.16 %, 46.24 %, 51.99 %, 0.06 % was estimated with Sit and Reach test for the core stability circuit training group, periodized resistance circuit training group and combination of core stability and periodized resistance circuit training group and Control group respectively. The combination of core stability and periodized resistance circuit training group significantly showed improvement in Flexibility by 51.99% better than the PRCT46.24%, CSCT29.16% and Control group 0.06 %. The periodized resistance circuit training group improved in Flexibility by 46.24% better than the CSCT29.16% and Control group. The core stability circuit training group improved in Flexibility by 29.16% better than the Control group.

Results

1. The result of the study showed that core stability circuit training group showed significantly improvement on Flexibility of hockey players.
2. The result of the study showed that periodized resistance circuit training group showed significantly improvement on Flexibility of hockey players.
3. The result of the study showed that combination of core stability and periodized resistance circuit training group showed significantly improvement on Flexibility of hockey players.
4. The result of the study showed that combination of core stability and periodized resistance circuit training group showed significantly better improvement than periodized resistance circuit training group and core stability circuit training group on Flexibility of hockey players.
5. The result of the study showed that periodized resistance circuit training group showed significantly better improvement than core stability circuit training group on Flexibility of hockey players.
6. The result of the study showed that core stability circuit training group showed significantly better improvement than Control Group on Flexibility of hockey players.

CONCLUSIONS

1. It was concluded that core stability circuit training group showed significantly improvement on Flexibility of hockey players.
2. It was concluded that periodized resistance circuit training group showed significantly improvement on Flexibility of hockey players.

3. It was concluded that combination of core stability and periodized resistance circuit training group showed significantly improvement on Flexibility of hockey players.
4. It was concluded that combination of core stability and periodized resistance circuit training group showed significantly better improvement than periodized resistance circuit training group and core stability circuit training group on Flexibility of hockey players.
5. It was concluded that periodized resistance circuit training group showed significantly better improvement than core stability circuit training group on Flexibility of hockey players.
6. It was concluded that core stability circuit training group showed significantly better improvement than Control Group on Flexibility of hockey players.

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