



Effect of Speed Based Circuit Training and Cross Training on Performance Variables Among Inter Collegiate Basketball Players

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ABSTRACT

Basketball, a game aerobic-cum-anaerobic in nature, demands overall fitness to excel in performance. To develop the overall fitness, players are trained with different training modules during the course of pre-season and in-season. Meanwhile, the recent research studies claim that rather than training with an individual mode, the specific speed based circuit training would yield highly positive results and facilitate the effective performance of a player. Training programmed for improving skill performance Dribbling, Passing and Shooting. The idea of the study was to find out the enhancing Performance variables among inter collegiate basketball players through speed based circuit training and cross training. To achieve the purpose of the study, 60 inter collegiate basketball players would randomly selected from Coimbatore District, Tamilnadu and their age ranged between 18 and 25year. All Performance variables were assessed by standard tests; Dribbling by zig zag dribble, Passing by throw accuracy and Shooting by speed goal shoot test through johnson basketball test. Speed based circuit training and Cross training group (n = 60) would undergone for a period of 12 weeks. The results revealed that there was a significant difference found on the criterion variables. The difference was found by speed based circuit training and cross training given to the experimental group I, experimental group II and control group on Dribbling, Passing and Shooting of inter collegiate basketball players.

Keywords: Speed Based Circuit Training, Cross Training, Dribbling, Passing and Shooting and Basketball Players.

INTRODUCTION

Basketball is one of the fastest games in which high level of conditioning and coordinative abilities with technical and tactical potentials are essential to perform every skill at desired or required level. A programmed called particular speed based circuit and cross training comprises performance training created expressly to improve athletic performance. Training programmed for improving as speed, endurance, flexibility, mobility, and agility. They may also dribbling, passing and shooting techniques and strategies. Basketball, game played between two teams of five players each on a rectangular court, usually indoors and outdoors. Each team try to score by tossing the ball through the opponent's goal, an elevated horizontal hoop and net called a basket (Shoenfelt, 1991). Basketball, a game played with continuous flow of activity, has always been considered as a game of precision, timing, accuracy and agility. Although only 15% of the playing time in a basketball game has been described as of high intensity, these actions are likely to determine the outcome of a contest. Basketball player must have tremendous cardiovascular endurance to run up and down the court time after time for four quarters of play, but players will also need to be able to execute explosive bursts of speed, explosive jumps and explosive movements for agility, time after time. Such an ability to perform explosively, regardless of extreme cardiovascular fatigue, is called "strength-endurance". Consequently, a player needs this kind of particular speed based circuit training and cross training for success in sports. Thus, the present study has been carries out to study the Effect of speed based circuit training and cross training on performance variables among inter collegiate basketball players. Both speed-based circuit training and cross training can be effective components of a well-rounded fitness program. However, it's important to tailor your training approach to your specific fitness goals and individual preferences. Always consult with a fitness professional or trainer to ensure that your workouts are safe and effective.

METHODOLOGY

The idea of the study was to find out the speed based circuit training and cross training on performance variables among inter collegiate basketball players. To achieve the purpose of the study, twenty inter collegiate basketball players would randomly selected from affiliated collegiate from Bharathiar University, Coimbatore District, Tamilnadu and their age ranged between 18 and 25year. All performance variables were assessed by standard tests; Dribbling by zig zag dribble, Passing by throw accuracy and Shooting by speed goal shoot test through johnson basketball test. Total number of subject 60 divided into three equal group Speed based circuit training group, Cross training group and control group (n = 20) would undergone for a period of twelve weeks.

CRITERION MEASURES

The subjects of Speed based circuit training group, cross training group and control group would assessed on the selected variables by the standardized test items before and after the training period of twelve weeks.

Table –I

S.NO.	VARIABLES	TESTS	UNIT OF MEASUREMENT
PERFORMANCE VARIABLES			
1	Dribbling	Zig zag dribbling (Johnson basketball ability test)	Seconds
2	Passing	Throw for accuracy (Johnson basketball ability test)	Points
3	Shooting	Field goal speed test (Johnson basketball ability test)	Counts

TRAINING PROGRAMME

The total duration of speed based circuit training and cross training for three alternative days. During the training period 90 min the subject were treated with speed based circuit training group(Monday, Wednesday, Friday) and cross training group (Tuesday, Thursday, Saturday) for three alternative days per week.

Experimental Group I Speed Based Circuit Training Group (SBCTG), Experimental Group II Cross Training Group (CTG), Control Group III not engaged in any specific training program. Training Duration One and half hour (90 minutes), Preparation / warm-up -10 minutes, Training for specific components -60 minutes, Distributed rests -10 minutes, Relaxation / Cool-down -10 minutes. Training session Per week three alternative days a week only in the morning total length of training twelve weeks training load progression every four weeks.

STATISTICAL TECHNIQUES

The present study were mainly on testing the significant of mean differences among the groups and secondarily with the increase of means in each group from baseline to post test for various measures. The statistical tool used for the criterion measures were tested for significance by applying paired 't' test. All of the statistical analysis tests were computed at 0.05 level of significance (P<0.05).

RESULTS

Table-II

SIGNIFICANCE OF MEAN GAINS /LOSSES BETWEEN PRE AND POST TEST OF SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON DRIBBLING

Variables	GROUP	Pre test Mean and SD	Post test Mean and SD	Mean Diff.	SE	't'- ratio
DRIBBLING	SBCTG	19.10±2.83	21.00±2.18	1.90	0.30	6.10*
	CTG	19.60±3.27	20.50±3.09	0.90	0.12	7.29*
	CG	18.10±2.67	17.75±2.88	0.35	0.20	1.68

*Significant at 0.05 level of confidence

Table-II reveals that the obtained mean values of pre test and post test scores of Dribbling on Speed Based Circuit Training Group were 19.10 and 21.00, Cross Training Group 19.60 and 20.50, Control Group 18.10 and 17.75 respectively; the obtained t ratio was Speed Based Circuit Training Group 6.10, Cross Training Group 7.29 and Control Group 1.68. The required table value is 2.09 at 0.05 level of confidence for the degree of freedom 1 and 19. The obtained t ratio was greater than the table value. It is found to be significant changes in Dribbling of the basketball players. The mean values on Speed Based Circuit Training Group, Cross Training Group and control group are graphically represented in figure-1

Figure-1

FIGURE-1: BAR DIAGRAM SHOWING THE PRE-TEST& POST-TEST SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON DRIBBLING

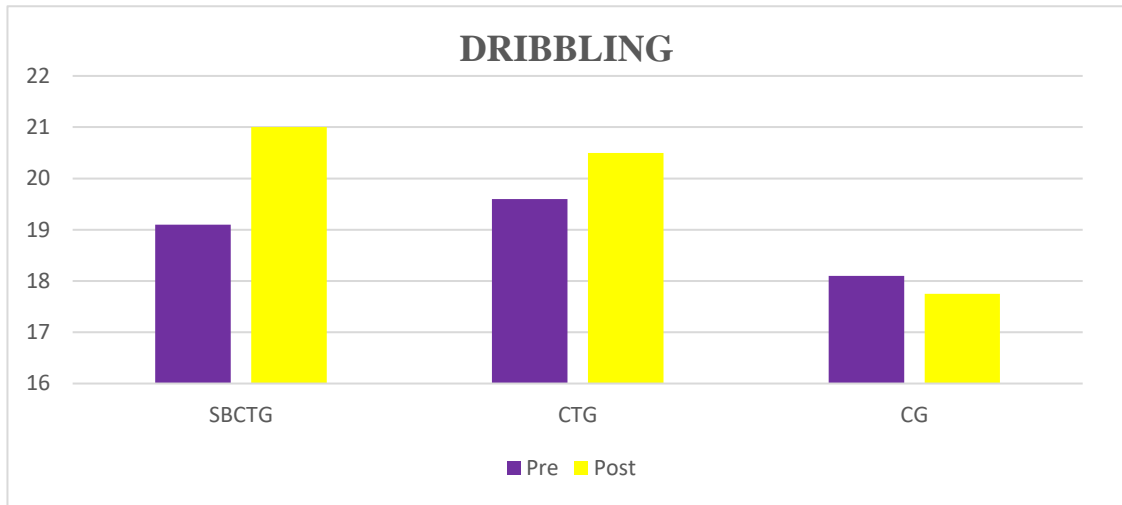


Table-III

SIGNIFICANCE OF MEAN GAINS /LOSSES BETWEEN PRE AND POST TEST OF SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON PASSING

Variables	GROUP	Pre test Mean and SD	Post test Mean and SD	Mean Diff.	SE	't'- ratio
PASSING	SBCTG	12.50±2.76	14.70±2.25	2.20	0.25	8.54*
	CTG	12.20±2.12	15.95±1.99	3.75	0.32	11.60*
	CG	12.35±2.56	12.50±2.54	0.30	0.21	1.37

*Significant at 0.05 level of confidence

Table-III reveals that the obtained mean values of pre test and post test scores of Passing on Speed Based Circuit Training Group were 12.50 and 14.70, Cross Training Group 12.20and 15.95, Control Group 12.35 and 12.50 respectively; the obtained t ratio was Speed Based Circuit Training Group 8.54, Cross Training Group 11.60 and Control Group 1.37. The required table value is 2.09 at 0.05 level of confidence for the degree of freedom 1 and 19. The obtained t ratio was greater than the table value. It is found to be significant changes in Passing of the basketball players. The mean values on speed Based Circuit Training Group, Cross Training Group and control group are graphically represented in figure-2

Figure-2

FIGURE-2: BAR DIAGRAM SHOWING THE PRE-TEST& POST-TEST SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON PASSING

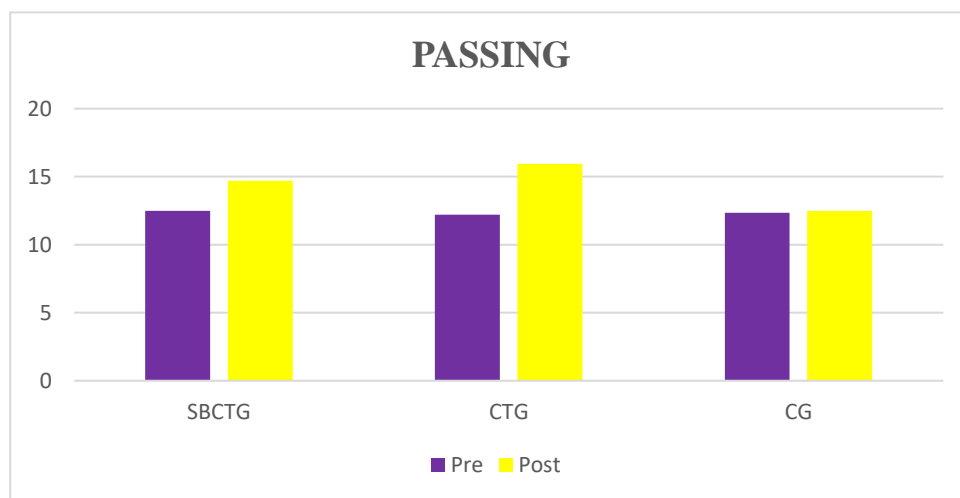


Table-IV

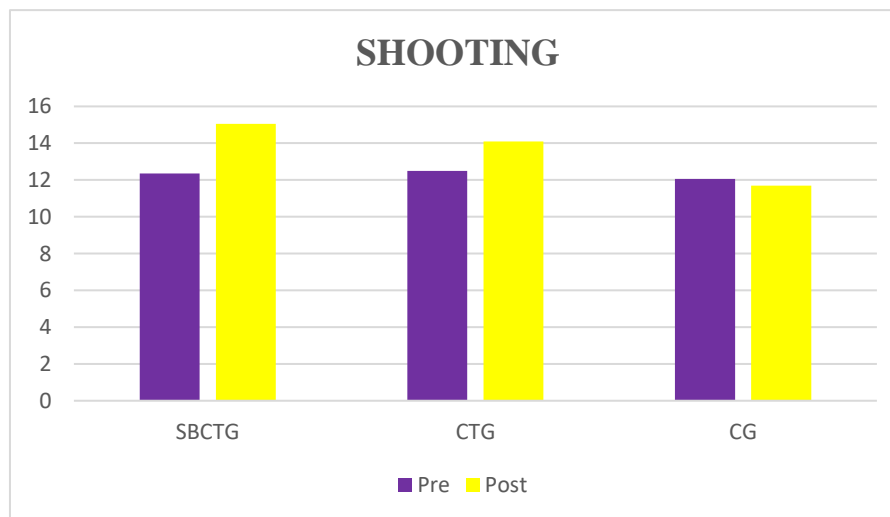
SIGNIFICANCE OF MEAN GAINS /LOSSES BETWEEN PRE AND POST TEST OF SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON SHOOTING

Variables	GROUP	Pre test Mean and SD	Post test Mean and SD	Mean Diff.	SE	't'- ratio
SHOOTING	SBCTG	12.35±2.25	15.05±2.01	2.70	0.29	9.28*
	CTG	12.50±2.64	14.10±2.10	1.60	0.19	8.11*
	CG	12.05±1.85	11.70±1.81	0.35	0.23	1.51

*Significant at 0.05 level of confidence

Table-IV reveals that the obtained mean values of pre test and post test scores of Shooting on Speed Based Circuit Training Group were 12.35 and 15.05, Cross Training Group 12.50 and 14.10, Control Group 12.05 and 11.70 respectively; the obtained t ratio was Speed Based Circuit Training Group 9.28, Cross Training Group 8.11 and Control Group 1.51. The required table value is 2.09 at 0.05 level of confidence for the degree of freedom 1 and 19. The obtained t ratio was greater than the table value. It is found to be significant changes in Shooting of the intercollegiate basketball players. The mean values on Speed Based Circuit Training Group, Cross Training Group and control group are graphically represented in figure-3

Figure-3

FIGURE-3: BAR DIAGRAM SHOWING THE PRE-TEST& POST-TEST SBCTG, CTG , CG OF INTER COLLEGIATE BASKETBALL PLAYERS ON SHOOTING**DISCUSSION ON FINDINGS**

The data analysis shows that a twelve-weeks speed-based circuit training and cross training programme significantly improved performance variables for Dribbling, Passing and Shooting. This could be explained by the development of dribbling and shooting during speed-based circuit training. Cross training increases passing. Regular participation in the speed based circuit training may have improved one's dribbling and shooting because the majority of the stations in the circuit focused on deferent stages speed workout and difficulty of exercise to improve the Dribbling and shooting. Cross training involved engaging in multiple forms of exercise on a regular basis, such as swimming, cycling, and yoga, yoga is a vital role of concentration to the passing. The findings of the present study are in consonance with the results arrived at by **Mohammad Chotemiya et.al., (2021)**, **Kariyawasam A (2019)** **Revanna C et.al.,(2018)**.

CONCLUSIONS

Based on the findings and within the limitation of the study it is noticed that practice of speed-based circuit training helped to improve dribbling and shooting, cross training helped to improve passing of intercollegiate basketball players. It was also seen that there is progressive enhancement in the selected criterion variables of speed based circuit training and cross training after twelve weeks of training programmed. Further, it also helps to improve dribbling, passing and shooting.

It was concluded that individualized effects of Speed Based Circuit Training Group showed a statistically significant positive sign over the course of the treatment period on dribbling and shooting of intercollegiate basketball players.

It was concluded that individualized effects of Cross Training Group showed a statistically significant positive sign over the course of the treatment period on passing of intercollegiate basketball players.

REFERENCES

1. Shekhawat, B. P., & Chauhan, G. S. (2021). Effect of circuit training on speed and agility of adolescent male basketball players. *Int. J. Physiol. Nutr. Phys. Educ*, 6, 1-5.
2. Mallesh, a., & tn, s. (2018). effectiveness of sports specific circuit training and high intensity interval training on aerobic capacity in male basketball players. *Int J Pharma Bio Sci*, 9(2), 340-347.
3. Annasai, F., Nugroho, S., Hartanto, A., & Arianto, A. C. (2023). Circuit training based physical condition training model to increase speed, agility, arm power, and limb muscle power of basketball athletes. *Pedagogy of Physical Culture and Sports*, 27(4), 282-288.
4. Kumar, V. P., & Kalaiselvi, M. (2020). Effects of Varied Surface of Circuit Plyometric Training on Speed and Speed Endurance Performance of School Level Basketball Players. *Indian Journal of Public Health Research & Development*, 11(7), 938-944.
5. Chittibabu, B., & Akilan, N. (2013). Effect of basketball specific endurance circuit training on aerobic capacity and heart rate of high school male basketball players. *International Journal of Physical Education, Fitness and Sports*, 2(4), 22-25.
6. Freitas, T. T., Calleja-González, J., Alarcón, F., & Alcaraz, P. E. (2016). Acute effects of two different resistance circuit training protocols on performance and perceived exertion in semiprofessional basketball players. *The Journal of Strength & Conditioning Research*, 30(2), 407-414.
7. Elkeky, A. A., Esmail, M., & Alkhalidy, F. (2020). The Effect of Using Cross Training on Improving Some of the Physical abilities of Basketball players and its Relationship to the Biochemical Variables. *Journal of Applied Sports Science*, 10(1), 120-133.
8. Alkiki, A. A. A., Esmail, M. A., & Al-Khalidi, F. H. (2020). The Effect of Using Cross Training on Improving Some of the Physical abilities of Basketball players and its Relationship to the Biochemical Variables. *Journal of Applied Sports Science*, 10(1).
9. Qaddoori, R. S. (2022). Cross-training and its effect on endurance of speed and strength for youth basketball players.
10. Gnanachellam, C. J., & Siby, D. (2021). effect of cross training on pulse rate and breath holding capacity of male basketball players. *Elementary Education Online*, 20(5), 6806-6806.
11. Vamvakoudis, E., Vrabas, I. S., Galazoulas, C., Stefanidis, P., Metaxas, T. I., & Mandroukas, K. (2007). Effects of basketball training on maximal oxygen uptake, muscle strength, and joint mobility in young basketball players. *The Journal of Strength & Conditioning Research*, 21(3), 930-936.
12. Hassan Abd El Basset, Fatma. "The Effect of Cross Training on Role of Micro RNA-206 as Indicator of Muscle Hypertrophy for Basketball Players." *Journal of Applied Sports Science* 4, no. 2 (2014): 156-160.