EFFECT OF SAQ TRAINING VERSES SPRINT INTERVAL TRAINING ON AGILITY OF MEN BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study is to investigate the relative effect of SAQ training verses sprint interval training on selected bio-motor abilities and skill performance of men basketball players. To achieve the purpose of the study, forty five male inter-collegiate level basketball players from various colleges affiliated to Achariya Nagarjuna University, Andrapradesh, India were selected as subjects. The basketball players who represented inter collegiate level competitions are only selected as subjects. Their age ranged from 18 years to 23 years. The selected subjects were randomly assigned into three equal groups of 15 subjects each. Group-I underwent SAQ training, group-II underwent sprint interval training and group-III acted as control. The research design of the study was pre and post test random group design. In order to nullify the initial mean differences the data collected from the three groups prior to and post experimentation on agility was statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since, three groups are involved, whenever the obtained 'F' ratio value in the adjusted post test mean is found to be significant, the Scheffe's test is applied as post hoc test to determine the paired mean differences, if any. The result of the study reveals that due to the effect of SAQ training and sprint interval training the agility of the subjects was significantly improved. It was also concluded that SAQ training is significantly better than sprint interval training groups in improving agility of men basketball players.

Key Words: SAQ training, sprint interval training, agility.

INTRODUCTION

Basketball has gained worldwide popularity and fascinated players and spectators with its dynamic characteristics as a team sport (Hoffman & Maresh, 2000). It is one of the most vigorous games and requires a great variety of athletic traits. In the game of basketball all the movements are involved like passing, throwing, changing the direction quickly, and sudden stop, jumping for rebound, feinting, maneuvering the opponent while going for offensive move and guarding the opponents in the defensive. All these require rapid movements demanding frequent changes in direction. For one to respond to such situation a player should possess good motor fitness and skill qualities.

It is a highly competitive game and it demands high physical qualities, thus making the conditioning of players a complex process. The next step is to investigate methods that produce the integral effects that can be used in the conditioning of basketball players. But, few studies have investigated the training methods that produce the integral effects on various abilities. Within the context of randomized intermittent, dynamic and skilled movement type sports, to which basketball undoubtedly belongs, the integrated effects are wanted. The problem is to decide which type of conditioning should be implemented to improve bio-motor and sill performance of basketball players.

For both elite and recreational basketball players, proper training optimizes game performance, but also decreases the likelihood for injury, prevents over-training and provides greater satisfaction. The importance given to training by today's elite and recreational players striving for their personal best performance has demanded research on how best to train for a given sports. Scientists of exercise physiology have responded to these needs, and numerous studies have been conducted on optimal training practices and on practices detrimental to improved performance.

To provide efficient training programme for basketball players ranging from amateur to professional, athletic trainers, basketball team coaches, sport physicians, strength and conditioning coaches should have a thorough knowledge on bio-motor qualities, physical characteristics and physiological attributes of basketball players. This kind of information is highly required for coaches that will enable them to help their players to acquire a repertoire of skills required for achievement in team basketball. To maximize basketball coaching sessions the clear

understanding of the bio-motor, cognitive content and skill demands of the drills planned and manipulating volume and intensity throughout the competitive season is important. Effective conditioning programmes for basketball players can be effectively developed by coaches and trainers. SAQ training and sprint interval training are well-proven training methods and vital necessary for basketball players but most of the basketball players are not concentrating on these training and its importance.

In order to assess the training impact on agility among men basketball players, the investigator selected SAQ training and sprint interval training as the independent variable. Information related to the impact of SAQ training and sprint interval training among basketball players is scanty. So the present study is planned.

METHODOLOGY

Selection of Subject and Variable

To achieve the purpose of the study, forty five male inter-collegiate level basketball players from various colleges affiliated to Achariya Nagarjuna University, Andrapradesh, India were selected as subjects. The basketball players who represented inter collegiate level competitions are only selected as subjects. Their age, height and weight ranged from 18 years to 23 years, 168 cm to 177 cm, 58 kg to 76 kg respectively. The selected subjects were randomly assigned into three equal groups of 15 subjects each. Group-I underwent SAQ training, Group-II underwent sprint interval training and group-III acted as control. The selected dependent variable agility was assessed by using shuttle run test.

Training Programme

After the initial measurements the specially designed training programme was given to the subjects of the experimental groups named as SAQ (speed, agility and quickness) and sprint interval training. The training sessions were conducted three days a week i.e. (Monday, Wednesday, and Friday) over a period of twelve weeks. Each experimental session was of 30-45 minutes duration excluding warm-up and warm-down. The SAQ training was administrated to the experimental group, which include speed, agility, and quickness drills. The experimental group undertook three SAQ training sessions a week. Sessions were progressively structured to gradually increase intensity over each of the 12 weeks. To fix the training load for the sprint interval groups the subjects were examined for their exercise heart rate in response to different work bouts, for proposed repetitions and sets, alternating with active recovery based on work-rest ratio. The subject's training zone was computed using Karvonen formula and it was fixed at 70%HRmax to 95%HRmax for sprint interval training.

Collection of the Data

The pretest data was collected prior to the training programme and posttest data was collected immediately after the twelve weeks of SAQ training and sprint interval training, from the experimental groups and a control group.

Statistical Technique

The data collected from the three groups prior to and post experimentation on selected dependent variable was statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups are involved, whenever the obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 for significance.

RESULT

The pre and post test data collected from the experimental and control groups on agility is statistically analyzed by analysis of covariance and the results are presented in table–I.

Table – I: **Analysis of Covariance on Agility of Experimental and Control Groups**

	SAQ Training Group	Sprint Interval Training Group	Control Group	S o V	Sum of Squares	df	Mean Squares	'F' ratio
Pre test Mean	10.25	10.24	10.13	B	0.145	2	0.073	0.18
SD	0.58	0.55	0.76	W	17.015	42	0.405	
Post test Mean	9.36	9.76	10.16	B	4.784	2	2.392	6.99*
SD	0.41	0.55	0.75	W	14.357	42	0.342	
Adjusted Post test Mean	9.33	9.73	10.23	B	6.055	2	3.027	42.93*
				W	2.891	41	0.071	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 2 and 42 is 3.23 and degree of freedom 2 and 41 is 3.22)

**Significant at .05 level of confidence*

Table-I shows that the pre-test means and standard deviation on agility of SAQ training, sprint interval training and control groups are 10.25 ± 0.58, 10.24 ± 0.55 and 10.13 ± 0.76 respectively. The obtained 'F' ratio value 0.18 of agility is less than the required table value of 3.23 for the degrees of freedom 2 and 42 at 0.05 level of confidence, which proved that the random assignment of the subjects were successful and their scores in agility before the training were equal and there was no significant differences.

The post-test means and standard deviation on agility of SAQ training, sprint interval training and control groups are 9.36 ± 0.41, 9.76 ± 0.55 and 10.16± 0.75 respectively. The obtained 'F' ratio value 6.99 of agility is greater than the required table value of 3.23 for the degrees of freedom 2 and 42 at 0.05 level of confidence. It implies that significant differences existed between the three groups during the post test period on agility.

The adjusted post-test means on agility of SAQ training, sprint interval training and control groups are 9.33, 9.73 and 10.23 respectively. The obtained 'F' ratio value 42.93 of agility is greater than the required table value of 3.22 for the degrees of freedom 2 and 41at 0.05 level of confidence. Hence, it is concluded that significant differences exist between the adjusted post test means of SAQ training, sprint interval training and control groups on agility of the basketball players.

Since, the obtained 'F' ratio value in the adjusted post test means on agility of the basketball players is found to be significant, the Scheffe'S test is applied as post hoc test to find out the paired mean difference, and it is presented in table-II.

Table –II: **Scheffe's Post Hoc Test for the Differences among Paired Means of Experimental and Control Groups on Agility**

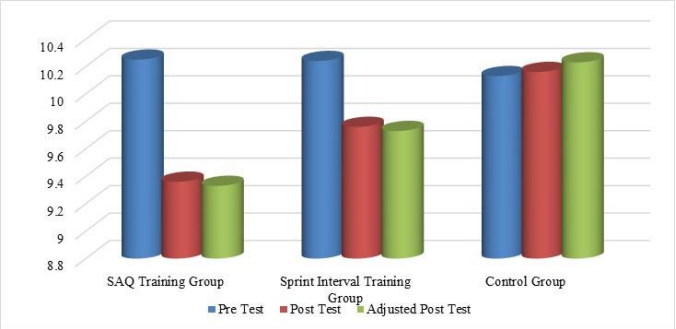
SAQ Training Group	Sprint Interval Training Group	Control Group	Mean Difference	Confidence Interval
9.33	9.73		0.40*	0.25
9.33		10.23	0.90*	0.25
	9.73	10.23	0.50*	0.25

**Significant at .05 level*

From table-II the Scheffe's post hoc analysis proved that significant mean differences exist between SAQ training and sprint interval training groups, SAQ training and control groups, sprint interval training and control groups on agility. Since, the mean differences 0.40, 0.90 and 0.50 are higher than the confident interval value of 0.25 at .05 level of significance. Hence, it is concluded that due to the effect of SAQ training and sprint interval training the agility of the subjects is significantly improved. It is also concluded that SAQ training is significantly better than sprint interval training groups in improving agility.

The pre, post and adjusted post test mean values of experimental and control groups on agility is graphically represented in figure-I.

Figure – I: **Diagram Showing the Mean Values on Agility of Experimental and Control Groups**



DISCUSSION

This study has shown that 12 weeks of SAQ training had positive effects on agility of the basketball players. Players in the experimental group improved their performance significantly. These results demonstrate that specific speed and agility training (SAQ), as part of the overall training process, can be considered a useful tool for the improvement of speed and agility among basketball players. This result is in agreement with Polman et al., (2004) who found that SAQ training was effective in the physical conditioning due to a significant improvement in lateral agility. It seems, therefore, that speed, agility and quickness should be viewed as independent motor abilities, which have limited influence on each other, and thus specific training is required for each (Little & Wiliams, 2006). Agility is one of the key components, which requires high levels of endurance, power performance and agility (Meckel et al., 2012).

Agility has also been shown to be an important fitness component. Jullien et al., (2008) demonstrated that a short-term agility training programme (3 weeks duration) improved agility test results. Logically, given the nature of SAQ training, this type of training should improve agility,

although this would depend on the specific nature of the training and its duration. In one such study, Rosch et al., (2000) concluded that elite players, but not amateurs, were able to adapt their body positions as a result of SAQ training such that they could perform movements with better balance, strength and control without any loss of speed.

Previous studies have reported the beneficial effects of interval training on speed. The results of the present study are also in agreement with the observation by Dupont et al., (2004) who suggested that high intensity interval training can be used as a means to improve sprint performance. Additionally, Cheetham and Williams (1987) have been found 11.1% improvement in peak running speed following high intensity training. Also consistent with previous studies, Edge et al., (2005) observed that, five weeks of high intensity interval training resulted in greater improvement in repeated sprint ability.

Similarly, Dawson et al., (1998) found significant improvement in speed and repeated sprinting performance among male subjects, after six weeks of short sprint training sessions. They also suggested that increases in the proportion of type-II muscle fibers are also possible with this type of training. In addition, Casey et al., (1996) reported that during sprints, type-II muscle fibers are recruited to a large extent to produce high power output as fast as possible.

CONCLUSION

The result of the study reveals that due to the effect of SAQ training and sprint interval training the agility of the subjects was significantly improved. It was also concluded that SAQ training is significantly better than sprint interval training groups in improving agility of men basketball players.

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