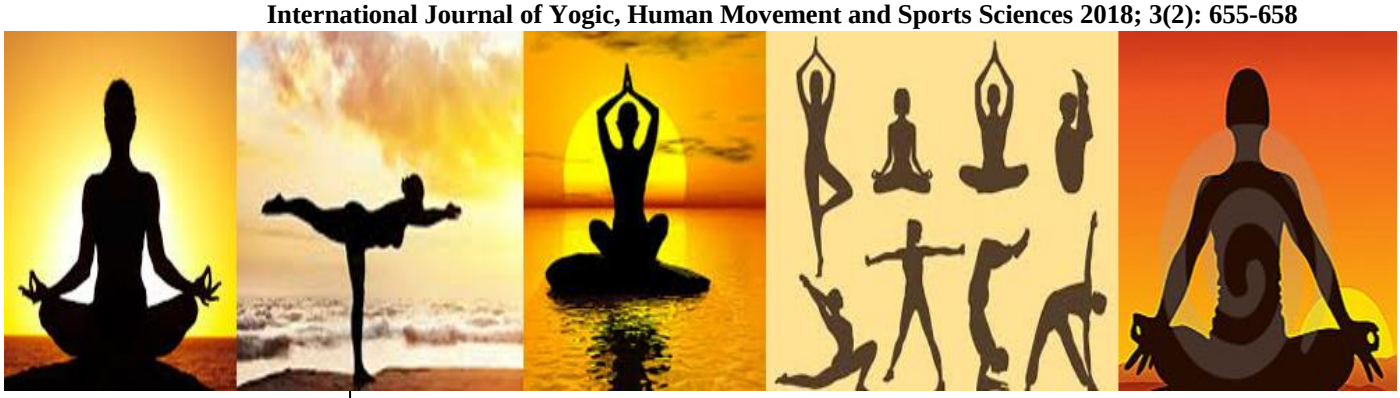
International Journal of Yogic, Human Movement and Sports Sciences 2018; 3(2): 655-658



ISSN: 2456-4419
Impact Factor: (RJIF): 5.18
Yoga 2018; 3(2): 655-658

www.theyogicjournal.com
Received: 16-05-2018
Accepted: 17-06-2018

Praveen Mathew
Ph.D Scholar, Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India

Dr. N Prem Kumar
Associate Professor, Dept. of Physical Education, Annamalai University Chidambaram, Tamil Nadu, India

Correspondence
Praveen Mathew
Ph.D Scholar, Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India

Effect of SAQ training and detraining induced adaptation on skill performance of badminton players

Praveen Mathew and Dr. N Prem Kumar

Abstract
The intention of this study was to examine the effect of SAQ training and detraining induced adaptation on skill performance of badminton players. To achieve the purpose of this study, twenty male badminton specialization students from the Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu, India were selected as subjects and they were divided into two equal groups of ten each. The experimental group performed SAQ training and the second group acted as control. After the completion of twelve-weeks training period the subjects of group I and II were physically detrained for thirty days. The pre and posttest data on over head clear shot performance was statistically analyzed by applying the analysis of covariance (ANCOVA). The data collected on post experimentation and during detraining were statistically analyzed by using two way (3 x 4) factorial ANOVA with last factor repeated measures. Statistical analysis produced significant improving in over head clear shot performance due to SAQ training and significant decline during detraining period.

Keywords: SAQ training, detraining, over head clear shot and badminton players

Introduction
Concerning badminton athletes' physical characteristics, several factors contribute to the success in the sport, including technique and tactics, psychological preparation and game strategy (Chint *et al.,* 1995) [1]. It is a sport modality which requires both aerobic and anaerobic energy systems and such characteristic is directly related to both short and long rallies, as well as game duration. Badminton athletes must have great physical capacity, especially speed, aerobic strength and power. It requires a high degree of skill, maneuverability and total body agility in order to gain good court position and compete with one's opponent on both offensive and defensive maneuvers. Since court games often involve condition bouts of play at a vigorous rate, a high level of anaerobic endurance and also good jumping ability is of great importance (Jenson & Fisher, 1983) [2].

Studies have pointed out the importance characteristics for different sports. However, few studies in the literature have investigated the skill performance of badminton players. The changing nature of game demands better skill and increased physical abilities. SAQ training program should be tailored to meet the needs and goals of the players and should incorporate a variety of exercises performed at a sufficient intensity to enhance the development and maintenance of game performance. From the availability of the literatures it was observed that the SAQ training program are improved the physical qualities of players. When properly performed, SAQ training can provide significant functional benefits and improvement in overall game performance.

Detraining refers to the cessation of regular physical training. The effects of stopping training are quite minor compared with those from immobilization. In general, greater the gains during training, the greater the losses during detraining is simply because the well-trained person has more to lose than the untrained person. Detraining causes muscle atrophy, which is accompanied by losses in muscular strength and power. However muscles require only minimal stimulation to retain these qualities during the periods of reduced activity (Wilmore & Costill, 1994) [5]. The aim of the present study was to assess the effectiveness of SAQ training and detraining impact on skill performance of badminton players.

Methodology

To achieve the purpose of the study, twenty male badminton specialization students from the Department of Physical Education, Annamalai University, Chidambaram, Tamilnadu, India were selected as subjects and they were divided into two equal groups of ten each at random. The age of the subjects ranged from 20 to 23 years. The selected subjects were randomly assigned to one of the two groups. The experimental group performed SAQ training and group-II acted as control. Further, the researcher was interested in finding out the detraining impact on skill performance. The data on over head clear shot performance was collected by administering GSC Badminton Clear Test. Pretest data were collected prior to the training programme and posttest data were collected immediately after the twelve-weeks of training programme from both the experimental and control groups. During the detraining period the data were collected once in ten days for 30 days from both the experimental and control groups.

Training Protocol

After the initial measurements the specially designed training programme was given to the subjects of the experimental group-I named as SAQ (speed, agility and quickness) training. The training commenced with one week of general physical conditioning for the experimental groups, so that the subjects were ready physically and mentally to take on specific load administrated to them for the purpose of the study. After one week of conditioning the training was administrated to the experimental group, which includes speed, agility, and quickness drills. The SAQ training sessions were supervised by experienced coaches. The experimental group undertook six SAQ training sessions a week. Sessions were progressively structured to gradually increase intensity over each of the 12 weeks. The load intensity was kept low to moderate in first week and increased progressively in proceeding week moderate to high. The density was adjusted according to intensity because it is inversely related to intensity. The repetition and sets were increased progressively from first week to proceeding week. After the completion of twelve-weeks training period the subjects of group I and II were physically detrained for thirty days.

Statistical Technique

The data collected from the two groups prior to and post experimentation on skill performance was statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Whenever the obtained F ratio value was found to be significant for adjusted posttest means, the Scheffe's test was applied as post hoc test. The data collected on post experimentation and during detraining were statistically analyzed by using two way (3 x 4) factorial ANOVA with last factor repeated measures. The simple effect and the Scheffe's test were used as follow up and post hoc test. The analysis of data on skill performance was presented in table-1 to 5.

Results

The mean and standard deviation values on overhead clear shot of SAQ training and control groups at five different stages of tests have been analyzed and presented in table-I

Table 1: The Mean and Standard Deviation on Overhead Clear Shot of Pre, Post Tests and Three Cessations of SAQ Training and Control Groups

Groups		Pre Test	Post Test	First Cessation	Second Cessation	Third Cessation
SAQ Training Group	Mean	28.40	44.10	43.40	40.70	38.10
	SD	1.07	1.19	1.19	1.33	1.19
Control Group	Mean	28.60	28.30	28.40	28.70	28.50
	SD	0.96	0.94	1.42	1.05	1.08

The pre test, post test, first, second and third cessation mean values of experimental and control groups on overhead clear shot are graphically represented in the figure – 1.

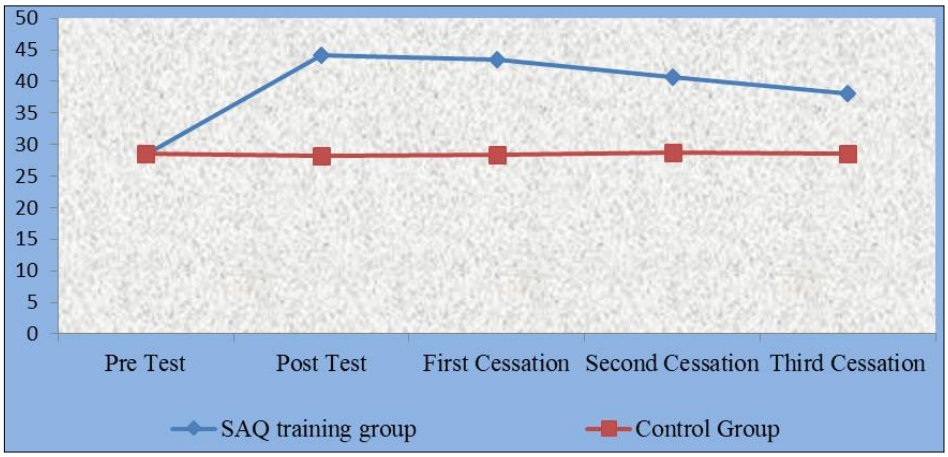


Fig 1: Mean Values of Pre Test, Post Test and Three Cessations of SAQ Training and Control Groups on Overhead Clear Shot

The pre and post test data collected from the experimental and control groups on overhead clear shot was statistically analyzed by ANCOVA and the results are presented in table-2.

Table 2: Analysis of Covariance on Overhead Clear Shot of SAQ Training and Control Groups

	SAQ Training	Control Group	SoV	SS	df	MS	'F' ratio
Adjusted Post test Mean	44.04	28.35	B	1218.15	1	1218.15	1338.98*
			W	15.46	17	0.91	

The required table value for degrees of freedom 1 and 17 is 4.45.
*Significant at .05 level of confidence

The adjusted post-test mean on overhead clear shot of SAQ training and control groups are 44.04 and 28.35 respectively. The obtained 'F' ratio value of 1338.98 for adjusted post test mean on overhead clear shot of experimental and control groups was greater than the required table value of 4.45 for the degrees of freedom 1 and 17 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of SAQ training the overhead clear shot of the subjects was significantly improved.

In order to find out the detraining impact, the data collected from the two groups during post test and three cessation periods on overhead clear shot have been analyzed by two ways factorial ANOVA (2x4) with repeated measures on last factor and the obtained results are presented in table – 3.

Table 3: Two Factors ANOVA on Overhead Clear Shot of Groups at Four Different Stages of Tests

Source of Variance	Sum of Squares	DF	Mean Squares	Obtained "F" ratio
A factor (Groups)	95.06	1	95.06	296.81*
Group Error	5.76	18	0.32	
B factor (Tests)	99.63	3	33.21	48.90*
AB factor (Interaction) (Groups and Tests)	116.43	3	38.81	57.14*
Error	36.67	54	0.67	

(Table values required for significance at 0.05 level with df 1 and 18, 3 and 54 are 4.41 and 2.72 respectively.)

Table – 3 shows that the obtained 'F' ratio value of Interaction A x B (Groups x Different Tests) 57.14 is greater than the table value of 2.72 with degrees of freedom 3 and 54 required for significance at 0.05 level of confidence. The result of the study shows that significant difference exists between groups at each test and also between tests for each group on overhead clear shot. Since the interaction effect is significant, the simple effect test has been applied as follow up test and they are presented in table – 4.

Table 4: Simple Effect Scores of Groups at Four Different Stages of Tests on Overhead Clear Shot

Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Groups at Post test	1248.20	1	1248.20	1862.98*
Groups at First Cessation	1080.45	1	1080.45	1612.61*
Groups at Second Cessation	720.00	1	720.00	1074.62*
Groups at Third Cessation	460.80	1	460.80	687.76*
Tests and Group I	225.47	3	75.15	112.16*
Tests and Group II	0.87	3	0.29	0.43
Error	36.67	54	0.67	

(Table values required for significance at .05 levels with df 1 and 54, & 3 and 54 are 4.03 and 2.79 respectively.)

Table – 4 shows that the obtained 'F' ratio values for groups at post test, first, second and third cessation are 1862.98, 1612.61, 1074.62 and 687.76 respectively, which are higher than the table value of 4.03 with degrees of freedom 1 and 54 required for significance at 0.05 level of confidence. The result of the study indicates that significant difference exists between the paired means of groups at post test, first cessation, second cessation and third cessation on overhead clear shot.

Table – 4 also shows that 'F' values obtained for tests and group-I is 112.16 which is greater than the table value of 2.79 with the degrees of freedom 3 and 54 whereas, for tests and group-II is 0.43 which is lower than the table value of 2.79 with the degrees of freedom 3 and 54 required for significant at 0.05 level of confidence. The result of the study indicates that significant difference exists between various tests of SAQ training group, however no significant difference exists between various tests of control group on overhead clear shot.

Since, the obtained 'F' ratio value in the simple effect 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 – 5.

Table 5: Scheffe's Test for the Differences among Paired Means of SAQ Training Group with Different Tests on Overhead Clear Shot

Post test	First cessation	Second cessation	Third cessation	Mean difference	Confidence interval
44.10	43.40			0.70	0.71
44.10		40.70		3.40*	0.71
44.10			38.10	6.00*	0.71
	43.40	40.70		2.70*	0.71
	43.40		38.10	5.30*	0.71
		40.70	38.10	2.60*	0.71

*Significant at .05 level of confidence

Table – 5 shows that the mean differences between post test and second cessation, post test and third cessation, first and second cessation, first cessation and third cessation, second cessation and third cessation of resistance training group are 3.40, 6.00, 2.70, 5.30 and 2.60 respectively, which are higher than the confidence interval value 0.79. However the mean difference between post test and first cessation value is 0.70 on overhead clear shot which are lower than the confidence interval value of 0.71 at 0.05 level of confidence.

Hence it was concluded that the improved overhead clear shot performance of the participants were sustained only for 10 days during determining period, there after it was started decline towards the base line.

Discussion

The results of the study demonstrated significant improvement in overhead clear shot skill performance due to speed, agility and quickness training. In one study, Rosch *et al.*, (2000) [4] 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. The SAQ (speed, agility and quickness) training method should be a useful component of fitness training (Pearson, 2001) [3]. Hence this form of training is thought to encourage the adaptation of movement mechanics, length and frequency of steps, and increased hip height in the pursuit of increased speed, agility and quickness (Pearson, 2001) [3].

These findings support the contention that the SAQ programme should be a part of routine badminton training. The extent to which SAQ training features in both pre-season and in-season training needs to be further investigated as it appears anecdotally that SAQ training, for many teams, is not undertaken to the extent that it should be. Research suggests that appropriate SAQ training will improve badminton players' agility and condition them to cope with the actual demands of the game. The SAQ training appears to be an effective way of improving quickness and acceleration along with skill performance in badminton players and would therefore be a good method for coaches to incorporate into their conditioning programs.

The result of the study also reveals that the badminton skill performance of SAQ training group decreased significantly due to detraining. But the significant decrease started after the second cessation toward the base line. Zatsiorsky (1995) [6] stated that many training improvements are lost within several weeks, even days, if an athlete stops exercising. During the competition period, elite athletes cannot afford complete passive rest for more than three days in a row (typically only 1 or 2 days). The reduction or cessation of training brings about substantial losses in adaptation effects. However, athletes to a certain extent can sustain the acquired training benefits over time without extensively training them continually. De-adaptation, as well as adaptation, takes time. If athletes exclude a given group of exercise from training protocols, they gradually lose the adaptation. So the coaches, physical fitness experts and athletes might be focus on detraining.

Conclusion

The results of the study produced significant improvement in overhead clear shot badminton skill performance due to speed, agility and quickness training. Hence, the results of this study can be considered important in terms of competitive badminton performance. Badminton coaches could use this information in the process of planning the in-season training. It is also observed in the present study that in the detraining period, no significant decrease in overhead clear shot performance was observed during first cessation period thereafter gradual decline of badminton skill performance for SAQ training group was found. Hence, it is suggested that the badminton players must resume training within ten days during detraining period.

References

1. Chint M, Wongt A, Sot R, Siu O, Steininger K. Sport Specific Fitness Testing of Elite Badminton Players. Br J Sports Med. 1995; 29:153-157.
2. Jenson, Fisher. Scientific Basis of Athletic Conditioning, New Jersey: Prentice Hall, Inc. 1983, 305-306.
3. Pearson A. Speed, Agility and Quickness for Soccer. London, United Kingdom: A & C Black, 2001.
4. Rosch D, Hodgson R, Peterson TL, Graf-Baumann T, Junge A, Chomiak J *et al*. Assessment and Evaluation Of Football Performance. The American Journal of Sports Medicine. 2000; 28(5):S29-S29.
5. Wilmore Jack H, Costill David L. Physiology of Sports and Exercise, Champaign: Human Kinetics, 1994.
6. Zatsiorsky Vladimir M. Science and Practice of Strength Training, Champaign: Human Kinetics, 1995, 123.