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Effect of speed agility and quickness (SAQ) training on selected skill related fitness and physiological variables among intercollegiate basketball players

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Abstract

The purpose of the study was to find out the effect of speed, agility and quickness training on selected skill related fitness and physiological variables among intercollegiate basketball players. To achieve the purpose of the study only male basketball players were selected from Rabindranath Tagore University, Madhya Pradesh and their age ranged between 18 to 24 years. The selected thirty subjects were randomly divided into two equal groups of fifteen subjects and they were divided into two equal groups, each group consisted of fifteen subjects. Group I underwent speed, agility and quickness training for three days per week for six weeks and Group II acted as control group who did not participate in any special training apart from their regular curricular activities. The subjects were tested on selected criterion variables such as speed, agility, explosive power in terms of horizontal distances, resting pulse rate and breath holding time at prior to and immediately after the training period. The selected criterion variables such as speed was measured by conducting 50 meters dash, agility was measured by using shuttle run, explosive power in terms of horizontal distances was measured by using standing broad jump, resting pulse rate was measured by counting the pulse rate per minute at resting condition and breath holding time was assessed by holding the breath for maximum duration in seconds respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. The results of the study showed that there was a significant difference between SAQ training group and control group on skill related fitness like explosive power in terms of horizontal distances. There was a significant difference between SAQ training group and control group on selected physiological variable such as breath holding time also there was a significant improvement on selected criterion variables such as skill related fitness like, speed, agility, explosive power in terms of horizontal distances, resting pulse rate and breath holding time due to SAQ training. The results of the present study that systematically designed speed, agility and quickness training developed the performance standard as the selected criterion variables. Hence it is concluded from the results of the study that systematically and scientifically designed speed, agility and quickness training may be given due recognition and be implemented properly in the training programmes of all the disciplines in order to achieve maximum performance.

Keywords: speed agility and quickness (saq) training, Skill-Related Fitness, physiological variables and basketball players

Introduction

Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavors. Today athletes prepare themselves for a goal through training. The word training has been a part of human language since ancient times. It denotes the process of preparation for some tasks. This process invariably extends to number of days and even months and years. The term training is widely used in sports. Training means are various physical exercises and other objects methods and procedures, which are used for the improvement maintenance and recovery of performance capacity and performance readiness. These basic training procedures will serve better when utilized with modifications suited to the individual. The best training programme is that which increase the desired quality at a higher rate without causing unwanted effects. The major objective in training is to cause biological adaptation in order to improve performance in a specific task. To enhance physiological

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Improvement effectively and to bring about a change, specific exercises and overload must be followed. By exercising at a level about normal, a variety of training adaptations take place in the body that makes it functions more efficiently. Numerous training procedures are in practice to improve each and every physical and motor fitness quality at various levels.

SAQ (an acronym for 'speed, agility and quickness') is the title of a system patented by a company called 'SAQ International', which works in the UK with top football teams like West Ham United and the Rugby Football Union, and internationally with the likes of the Miami Dolphins American Football team and the New South Wales Waratahs rugby team in Australia.

Jason ('the Whiz') Robinson has two of the fleetest feet seen on a rugby player and, although blessed with innate ability to dance rings around his opponents, he has also honed his agility through the use of such SAQ drills as the 'foot ladder'. This type of rope ladder, a key component of SAQ training, is placed flat on the playing surface in order to develop foot speed and improved foot-ground contact.

There are numerous permutations of ways for athletes to step and run through the ladder, which can challenge the fast twitch fibers of even the fleetest athletes. 'One foot in, one foot out' (left, right, left into each rung) is not too difficult; 'two in, two out' (two feet one after the other into each gap) is more challenging; but backwards and sideways combinations definitely need to engage the brain as well as the feet. It's a bit like learning to waltz against the high-speed rhythm of Garage music!

These drills, like many of the speed-enhancing techniques mentioned in this article, are designed to optimize neuromuscular patterning and condition. Like any other physical attribute, speed can be trained and improved through repetition and overload. SAQ techniques never lose sight of this overall goal and the playing requirements of various sports. Depending on their emphasis, the drills are designed either to develop absolute speed and agility or to develop these attributes under the conditions of fatigue that players experience during a match.

The meaning of human Physiology is the study of body function. In physiology we study how our organs, systems, tissues, cells and molecules within cells work and how their function are put together to maintain our internal environment. Physiology is the study of how human body functions. Physiologists study the various characteristic of living things. Their studies range from the most basic unit of organism, the cell, to the more complex organs and organ systems such as the brain and respiratory systems.

In physiology we study how different parts of organs of an organism work together to achieve a particular function in our body, for example the digestion of food involves the action of hormones and their chemicals produced by the stomach, liver and pancreas, muscle contraction occur through the action of chemical messages produced by nerves that supply the muscles. If we learn how the body functions normally, then we can understand what happens when organs function abnormally and we can take care of our body. With training and conditioning the heart becomes more efficient and is able to circulate more blood. The heart rate changes indicate a decreasing load on the cardiovascular adaptation to exercise.

Methodology

Selection of subjects

To achieve the purpose of the study only male basketball players were selected from Rabindranath Tagore University, Madhya Pradesh, and their age ranged between 18 to 24 years. The selected thirty subjects were randomly divided into two equal groups of fifteen subjects each, out of which group - I (n = 15) underwent SAQ training and group - II (n = 15) remained as control. All the subjects have declared that they have no ailments of any sort and were taking medicines for treatment after a general medical checkup done on them. The physician confirmed this and the subjects were given clearance to take part in the physical training. They were also informed that they were free to opt out of the study at any time if they feel any discomfort or difficulty in continuing the training programme.

Selection of variables

The general purpose of the SAQ (speed, agility and quickness) training is to develop speed, agility and quickness. In this study, the effects of SAQ training programme on selected variables have been examined. Millions of youngsters are practicing various games and sports regularly. Often, these young players experience the disadvantage of lacking sufficient fitness and lacking in executing powerful movements. Hence, the investigator has chalked out the training schedule, which would study the influence on the following variables.

Dependent variables

I. Skill related fitness variable

1. Explosive power

II. Physiological variables

1. Breath holding time

2. Independent variables

1. Experimental group- Speed, agility and quickness training group
2. Control group- No training

3. Experimental design

The experimental design used for the study was similar to random group design involving thirty subjects, who were divided into two equal groups such as SAQ training group and control group of fifteen subjects each.

This study consisted of one independent variable such as SAQ training. Among the two selected groups, group - I was treated with SAQ training and group - II acted as control group. Both the groups were tested prior (pre-test), and after six weeks (post test) on explosive power in terms of vertical distances and breath holding time. This study was aimed at finding out the effects of training on selected criterion variables.

Results and discussions:

Results on explosive power

The data collected prior and after the experimental period on explosive power of speed, agility and quickness training group and control group were analysed and presented in Table - I.

Table 1: Analysis of covariance on explosive power between speed agility and quickness (saq) training group and control group among intercollegiate basketball players (In centimeters)

Mean	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	'F' ratio
Pre- test Mean	1.1507	1.1553	B	0.0001	1	0.001	0.205
S.D.	0.02658	0.02973	W	0.022	28	0.007	
Post-test Mean	1.2193	1.1567	B	0.029	1	0.029	23.148*
S.D.	0.03807	0.03309	W	0.036	28	0.001	
Adjusted Post-test Mean	1.221	1.155	B	0.033	1	0.033	48.16*
			W	0.019	27	0.001	

* Significant at .05 level of confidence. (Table value required for significant at .05 level of confidence with DF 1 and 28 and 1 and 27 are 4.20 and 4.21).

Table – V showed that the pre-test values of explosive power for speed, agility and quickness training group and control group were 1.507 and 1.1553 respectively. The obtained 'F' ratio value of 0.205 for pre-test score of speed, agility and quickness training group and control group on explosive power was less than the required table value of 4.20 for significance with df 1 and 28 at .05 level of confidence.

The post-test mean values of explosive power for speed, agility and quickness training group and control group were 1.2193 and 1.1567 respectively. The obtained 'F' ratio value of 23.148 for post-test scores of speed, agility and quickness training group and control group was more than the required table value of 4.20 for significance with df 1 and 28 at .05 level of confidence.

The adjusted post-test mean values of explosive power for speed, agility and quickness training group and control group were 1.221 and 1.155 respectively. The obtained 'F' ratio value of 48.16 for adjusted post-test scores of speed, agility and quickness training and control groups was more than the required table value of 4.21 for significance with df 1 and 27 at .05 level of confidence.

The result of this study showed that there was a significant difference among speed, agility and quickness training group and control group on explosive power in terms of horizontal distances.

The mean values of speed, agility and quickness training group and control group on explosive power in terms of horizontal distances are graphically represented in figure - 3.

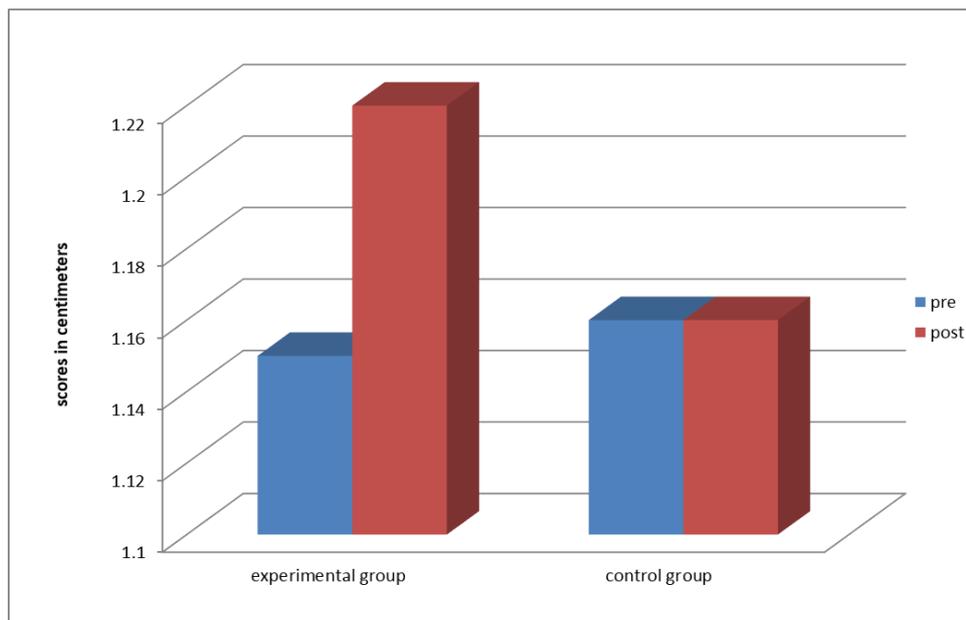


Figure I: Bar Diagram Showing the Mean Values of Experimental Group and Control Group on explosive power (In centimeters)

Results on breath holding time

The data collected prior and after the experimental period on breath holding time of speed, agility and quickness training

group and control group were analysed and presented in Table - II.

Table II: Analysis of covariance on breath holding time between speed agility and quickness (saq) training group and control group among intercollegiate basketball players (in seconds)

Mean	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	'F' ratio
Pre- test Mean	42.73	41.47	B	12.033	1	12.03	1.50
S.D.	3.127	2.503	W	224.67	28	8.024	
Post-test Mean	45.73	41.60	B	128.13	1	128.13	14.79*
S.D.	2.987	2.898	W	242.53	28	8.662	
Adjusted Post-test Mean	45.337	41.997	B	79.408	1	79.408	13.88*
			W	154.38	27	5.718	

* Significant at .05 level of confidence. (Table value required for significant at .05 level of confidence with df 1 and 28 and 1 and 27 are 4.20 and 4.21).

Table – II showed that the pre-test values of breath holding time for speed, agility and quickness training group and control group were 42.73 and 41.47 respectively. The obtained 'F' ratio value of 1.50 for pre-test score of speed, agility and quickness training group and control group on breath holding time was less than the required table value of 4.20 for significance with df 1 and 28 at .05 level of confidence.

The post-test mean values of breath holding time for speed, agility and quickness training group and control group were 45.73 and 41.60 respectively. The obtained 'F' ratio value of 14.79 for post-test scores of speed, agility and quickness training group and control group was more than the required table value of 4.20 for significance with df 1 and 28 at .05

level of confidence.

The adjusted post-test mean values of breath holding time for speed, agility and quickness training group and control group were 45.337 and 41.997 respectively. The obtained 'F' ratio value of 13.88 for adjusted post-test scores of speed, agility and quickness training and control groups was more than the required table value of 4.21 for significance with df 1 and 27 at .05 level of confidence.

The result of this study showed that there was a significant difference among speed, agility and quickness training group and control group on breath holding time.

The mean values of speed, agility and quickness training group and control group on breath holding time are graphically represented in figure - II.

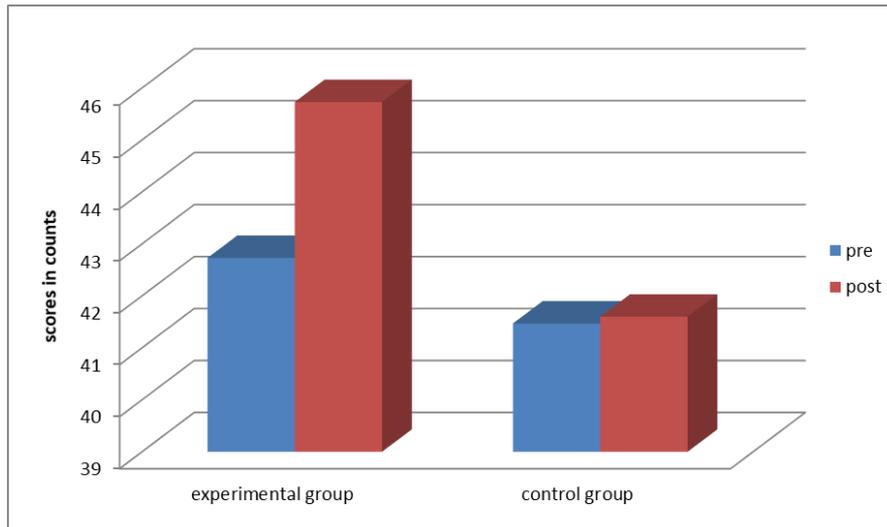


Figure II: Bar Diagram Showing the Mean Values of Experimental Group and Control Group on breath holding time (In Seconds)

Discussion on findings

The results of the study showed that there was a significant difference between speed, agility and quickness training group and control group on selected criterion variables such as explosive power in terms of horizontal distances and breath holding time. Point out the speed, agility and quickness training increased power. The results of the present study that systematically designed speed, agility and quickness training developed the performance standard as the selected criterion variables. Hence it is concluded from the results of the study that systematically and scientifically designed speed, agility and quickness training may be given due recognition and be implemented properly in the training programmes of all the disciplines in order to achieve maximum performance.

Conclusions

Based on the results of the study, the following conclusions were drawn:

1. There was a significant difference between SAQ training group and control group on skill related fitness like, speed, agility and explosive power in terms of horizontal distances.
2. There was a significant difference between SAQ training group and control group on selected physiological variables such as, resting pulse rate and breath holding time.
3. There was a significant improvement on selected criterion variables such as skill related fitness like, speed, agility, explosive power in terms of horizontal distances, resting pulse rate and breath holding time due to SAQ training.

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