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Effects of Twelve Weeks Saq Equipment Training on Selected Physiological Variables among School Athletes

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Abstract

The purpose of the study was to determine the effect of 12 weeks SAQ equipment training on selected physiological variables among school athletes with the random sampling. Thirty school athletes were randomly selected from Jawahar Navodaya Vidyalaya, Longowal, Sangrur, Punjab and their age ranged from 14-17 year represent as the subjects. The subjects were assigned into two groups, SAQ equipment training group (N=15) and control group (N=15). The following selected physiological variables were resting pulse rate, blood pressure, resting respiratory rate, peak expiratory flow rate and maximum breath holding capacity. The exercises were followed in progression of speed, agility, quickness exercise for the 1 to 6 weeks and combination of speed, agility, and quickness, combination of Speed and quickness, combination of Agility and quickness exercise for the 7 to 12 weeks. The training programme was scheduled from 3:30pm-5:30pm per day for twice a week (Monday and Thursday). The control group was trained with own game related training only, without any other specific training Programme for twelve weeks. To compare the mean difference between the data, t test was computed with the help of SPSS Software and level of significance chosen was 0.05. The results of the study showed that SAQ equipment training has a positive impact on physiological variables (resting pulse rate, systolic blood pressure, diastolic blood pressure, resting respiratory rate, peak expiratory flow rate and maximum breath holding capacity). No significant was found between pre-test and post-test of control group on physiological variables.

Keywords: Speed, Agility and Quickness, School Athlete.

Introduction

The creation of new records shows a continuous upward trend and improvement in the standards of sports performances. The acquisition of new standard may be attributed to better understanding of the human organism in relation to physical, mental and motor performance qualities that underline success in any sports endeavor, besides intensive research in the areas of training methods, exercise physiology, sports medicine, biomechanics, sports psychology, sports sociology and many other areas related and specific to sports *(Carpenter, 1938*). In the field of sports, training is the process of progressive exercise or work that improves the potential to achieve optimum fitness and performance level. Success in any arena is the result of planning, hard work and commitment and athletic training is no exception. In training an athlete who excels in particular activity and usually have followed a well designed training programme. All successful athletes are trained individuals who excel in a particular physical activity and usually have followed a well designed, long term training program ***Bompa (2000)***. Sport training is a systematic process extending over a long period. For best results the system of training has to be based and conducted on scientific facts and lines. Where it is not possible, the training has to be based on the result of successful practice which has withstood the test of time. Sports science has still not been able to provide a scientific base for all the aspects and elements of training. Many things are still based on the results of successful practice, which on deeper analysis is also a method of science to prove or disprove a theory. Moreover, the principle characteristic of a science is the existence of a systemized body of knowledge. The science of sports training has its own systemized body of knowledge and hence is a science in itself ***(Singh, 1991).***

Speed, agility, and quickness (SAQ) training has become a popular way to train athletes. Several training methods use in sports for improving the athletes fitness level and performance example- circuit

training, resistance training, continuous training, strength training, interval training in this sequence SAQ training method is also the training method for athlete. SAQ stands for Speed, Agility, and Quickness. SAQ Training plays an important role in motor co-ordination, acceleration, balance, agility and reaction development at all ages and at all levels. Speed, agility and quickness (SAQ) training has become a popular way to train athletes. With the continually increasing need to promote athletic ability, this type of training has proved to enhance the practical field abilities of participants in a wide variety of sports. Speed, agility, and Quickness training may be used to increase speed or strength, or the ability to exert maximal force during high-speed movements. Some benefits of speed, agility, and quickness training include increases in muscular power in all multilane movements, brain signal efficiency, kinesthetic or body spatial awareness, motor skills; and reaction time ***Brown et al. (2005).*** For the physiological system of the body to be fit, the system must function well enough to support the scientific activity that the individual is performing. Moreover, different activities make different demands upon the organism with respect to circulatory, respiratory, metabolic, neurological and temperature-regulating functions. Physiological fitness is specific to activity ***Laurence & Augustus (1976)***. Physiological variables are the parameters that measure the function of physiological systems of the individual. During the physical activity our all body system are involved like respiratory system, circulatory system, nervous system, muscular system. In human being a variety of physiological functions such as heart rate, cardiac output, breath holding time, blood pressure vital capacity and VO_2 max show distinct changes in the course of training.

Method and Procedure

The subjects for the present study were consisting of thirty (30) school athletes of Jawahar Navodaya Vidyalaya, Longowal, Sangrur, Punjab. After preparing the list of subject's age ranged from 14-17 year, the investigator checked the health record of these subjects maintained by the school to ensure that the subjects were medically fit to undergo the different types of training programme. The subjects were assigned into two groups, SAQ equipment training group (N=15) and control group (N=15). The exercises were followed in progression of speed, agility, quickness exercise for the 1 to 6 weeks and combination of speed, agility and quickness, combination of speed and quickness, combination of agility and quickness exercise for the 7 to 12 weeks. The training programme was scheduled from 3.30pm-5:30pm per day for twice a week (Monday and Thursday). Measurements for variables were taken at the initial (pre-test) and at the end of experimental training period after 12 weeks (post-test). During data collection period, the subjects were not allowed to participate in any competition except daily training schedule.

Fig-1: SAQ Equipment Training Group

Fig-2: Control Group

The selected physiological variables were resting pulse rate, systolic blood pressure, diastolic blood pressure, resting respiratory rate, peak expiratory flow rate, maximum breath holding capacity of the study were measured in the units of beats /minute, mmhg, mmhg, breath/minute, litters, $1/10^{th}$ of Second respectively. To compare the mean difference between pre-test and post-test, 't' test was computed with the help of SPSS software and level of significance chosen was 0.05.

Data Analysis and Results

For the variables, the statistical analysis revealed that significant differences between the pre-test and post-test of experimental group and control group regarding resting pulse rate, systolic blood pressure, diastolic blood pressure, resting respiratory rate, peak expiratory flow rate, maximum breath holding capacity among school athletes has been given in table 1 and table 2.

Table-1
Mean Values, Standard Deviation (± SD) and 't' Values of Selected Physiological Variables among School Athletes (Experimental Group)

Variable	Experimental Group (N=15)		`t`
	Pre- test Mean ± SD	Post – test Mean ± SD	
Resting pulse rate	74.27 ±5.34	71.33 ±4.88	8.88
Systolic blood pressure	122.67 ±4.95	118.33 ±4.08	5.25
Diastolic blood pressure	80.67 ± 5.30	76.67 ± 3.09	3.60
Resting respirator rate	18.53 ± 1.36	16.13 ± 1.30	9.43
Peak expiratory rate	334.00 ± 53.69	374.00 ± 62.66	6.11
Maximum breath holding capacity	32.47 ± 9.79	35.53 ± 9.60	8.26

't'$_{0.05}$ (14) = 2.14

Table 1 showed the pre-test and post-test mean values, Standard Deviation (± SD) of experimental group on resting pulse rate (RPR) 74.27, ± 5.34 and 71.33 , ± 4.88, systolic blood pressure (SBP) 122.67, ± 4.95 and 118.33, ± 4.08 , diastolic blood pressure (DBP) 80.67, ± 5.30 and 76.67, ± 3.09 , resting respiratory rate (RRR) 18.53, ± 1.36 and 16.13, ± 1.30, peak expiratory flow rate (PEFR) 334.00, ± 53.69 and 374.00, ± 62.66, maximum breath holding capacity (MBHC) 32.47, ± 9.79 and 35.53, ± 9.60. Analysis of data revealed that significant differences between pre-test and post-test of experimental group, since the computed values of 't' on resting pulse rate (RPR) 8.88, systolic blood pressure (SBP) 5.25, diastolic blood pressure (DBP) 3.60, resting respiratory rate (RRR) 9.43, peak expiratory flow rate (PEFR) 6.11, maximum breath holding capacity (MBHC) 8.26 were greater than calculated 't' value 2.14.

Figure 3: Illustrations of Blood Pressure, Peak Expiratory Flow Rate, Resting Respiratory Rate and Resting Pulse Rate Measurement

Table 2
Mean Values, Standard Deviation (± SD) and 't' Values of Selected Physiological Variables among School Athletes (Control Group)

Variable	Control Group (N=15)		`t`
	Pre- test Mean ± SD	Post – test Mean ± SD	
Resting pulse rate	74.80 ± 4.38	74.53 ± 3.96	0.55
Systolic blood pressure	121.67 ± 5.23	120.67 ± 4.58	1.00
Diastolic blood pressure	77.53 ± 3.02	77.87 ± 2.95	.92
Resting respirator rate	18.33 ± 1.23	18.40 ± 1.12	.22
Peak expiratory rate	349.33 ± 49.06	352.00 ± 40.92	.81
Maximum breath holding capacity	34.53 ± 7.45	34.27 ± 6.05	.38

't'$_{0.05}$ (14) = 2.14

Table 2 showed the pre-test and post-test mean values, Standard Deviation (± SD) of control group on resting pulse rate (RPR) 74.80, ± 4.38 and 74.53, ± 3.96, systolic blood pressure (SBP) 121.67, ± 5.23 and 120.67, ± 4.58, diastolic blood pressure (DBP) 77.53, ± 3.02 and 77.87, ± 2.95, resting respiratory rate (RRR) 18.33, ± 1.23and 18.40, ± 1.12, peak expiratory flow rate (PEFR) 349.33, ± 49.06 and 352.00, ± 40.92, maximum breath holding capacity (MBHC) 34.53, ± 7.45and 34.27, ±6.05. Analysis of data revealed that no significant differences between pre-test and post-test of control group, since the computed values of 't' on resting pulse rate (RPR) 0.55, systolic blood pressure (SBP)1.00, diastolic blood pressure (DBP) 0.92, resting respiratory rate (RRR) 0.22, peak expiratory flow rate (PEFR) 0.81, maximum breath holding capacity (MBHC) 0.38 were less than calculated 't' value 2.14.

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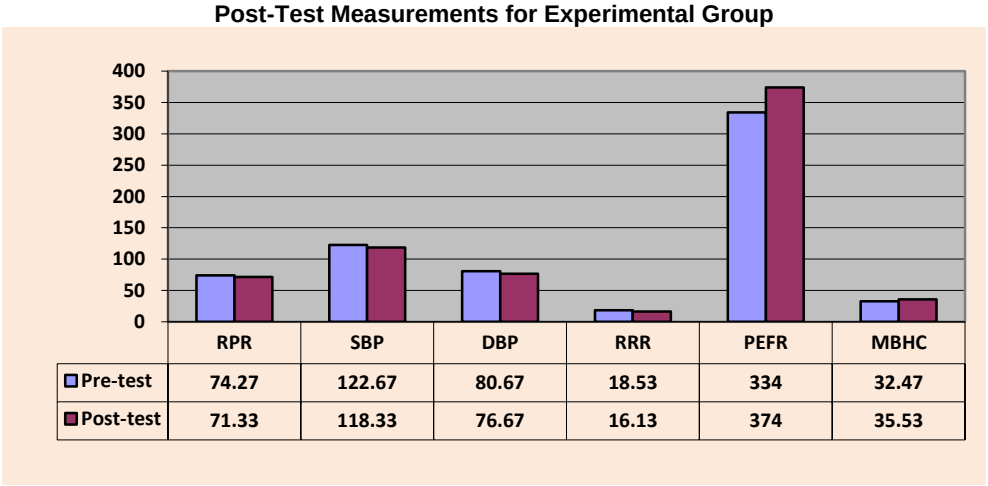
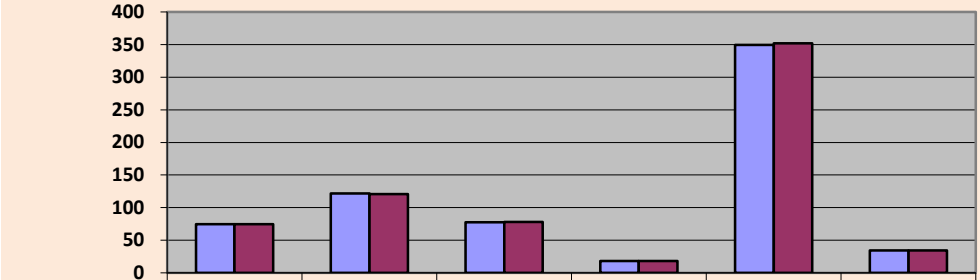
Fig-4
The Graphical Representation of Mean Scores of Pre-Test and Post-Test Measurements for Experimental Group



	RPR	SBP	DBP	RRR	PEFR	MBHC
Pre-test	74.27	122.67	80.67	18.53	334	32.47
Post-test	71.33	118.33	76.67	16.13	374	35.53

Fig-5
The Graphical Representation of Mean Scores of Pre-Test and Post-Test Measurements for Control Group



	RPR	SBP	DBP	RRR	PEFR	MBHC
Pre-test	74.8	121.67	77.53	18.33	349.33	34.53
Post-test	74.53	120.67	77.87	18.4	352	34.27

Discussion

The results of the study regarding the physiological variables- resting pulse rate, systolic blood pressure, diastolic blood pressure, resting respiratory rate, peak expiratory flow rate, maximum breath holding capacity among school athletes reveal that the experimental group namely SAQ equipment training group had significantly improved after the 12 weeks of training and there was no significant difference was existed between pre-test and post-test of control group. The results are in line with that of study earlier conducted by *Prasad & Subramaniam (2014)* reveals that speed and breath holding time had significantly improved after the SAQ training and Plyometric training but there was no significant difference was existed between SAQ training group and Plyometric training group on speed and breath holding time. *Senthikumar (2014)* also concluded that the changes on selected physical, physiological variables, blood lipids and skill performance variables were in favour of combined SAQ and strength training group. And the SAQ training group was better on selected criterion variables namely resting pulse rate, breathe holding time, VO_2 Max, high density lipoprotein, low density lipoprotein, very low density lipoprotein, dribbling ability and shooting ability than strength training group.

Conclusion

On the basis of findings of the study, the following conclusions were framed:

1. The experimental group (SAQ equipment training) showed significant changes on physiological variables of school athletes and no significant change was found in the control group.
2. SAQ equipment training has a positive impact on physiological variables (resting pulse rate, systolic blood pressure, diastolic blood pressure, resting respiratory rate, peak expiratory flow rate, maximum breath holding capacity)
3. No significant was found between pre-test and post-test of control group on physiological variables

References

1. **Bompa, T .O. (2000).** Total Training for Young Champions, USA: Human Kinetics.
2. **Brown, L.E., & Ferrigno, V. A. (2005).** Training for Speed, Agility, Quickness (2nd ed). Champaign: USA: Human Kinetics.
3. **Carpenter, A. (1938).** Strength, Power and Flexibility as Factors Influencing the

Performance of College Women. Research Quarterly, 9 (5), 120.

4. **Laurence, E.M, & Augusts, T.M. (1976).** Physiology of Exercise (7th ed.), Saint Louis: Mosby.
5. **Prasad, R., & Subramaniam, P. K. (2014).** Effects of SAQ Training and Plyometric Training on Selected Motor Fitness and Physiological Variables among Junior Basketball Players. Indian Journal of Research, 3(11), 156-57.
6. **Senthikumar, P. (2014).** Effects of isolated and combined SAQ and Strength training on selected Physical, Physiological, Blood lipids and skill performance variables of intercollegiate men football players. Unpublished Ph.D. Thesis. Bharathiar University, Coimbatore, Tamilnadu, India.
7. **Singh, H. (1991).** Science of Sports Training, New Delhi: DVS Publications.