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# Effect of SAQ Training on Vital Capacity and Peak Expiratory Flow Rate among School Students of Rural Area

Anindya Bhowmik<sup>1</sup>, Sandeep Kumar<sup>2</sup>

<sup>1</sup>Ph.D Scholar, <sup>2</sup>Professor & HOD, Department of Physical Education,  
Swami Vivekanand Shubharti University, Subhartipuram, Meerut, U.P., India

## Abstract

The aim of the present study was to find out the effect of SAQ training on vital capacity and peak expiratory flow rate among the school students of rural area. To achieve the purpose of the study 40 boy students of 12 to 16 years aged group were randomly selected from the rural area. Tentulmuri Mahammad Muslim MSK in Tentulmuri, Kharagpur-II Block, Paschim Medinipur district, in West Bengal state in India was selected as rural area of the study. The participant's were divided into two groups SAQ group and Control group, where were 20 participants in each group. SAQ group underwent SAQ training programme for 16 weeks duration, three alternative days in a week. The selected variables vital capacity and peak expiratory flow rate were measured by wet spirometer and Wrights peak flow meter. Before and after 16 weeks of experimental training the pre test and post test data was collected and pair t test was used to analyze the date. The data was calculated by Microsoft Office Excel 2007 software. The level of significant was set at 0.05. The finding was the vital capacity and peak expiratory flow rate significantly improved after 16 weeks experimental training programme.

**Keywords:** SAQ Training, Vital Capacity, Peak Expiratory Flow Rate, School Student, Rural Area.

## Introduction

The metabolic activities within the cells of human body conduct by the atmospheric oxygen. The atmospheric oxygen enters in human body by the proper respiratory functioning. The increasing of lungs capacity means the development of the functional activity of respiration likes reduce the tidal volume and increase the inspiratory capacity and reserve volume, functional residual capacity, expiratory reserve volume, residual volume vital capacity and also total lungs capacity.<sup>(1)</sup> The current society is fully dependent on science and technology, so it is extreme challenge of human being to maintain their health and fitness. In this concept,

the physical exercise is the main key to free from this suffers.<sup>(2)</sup> Whereas the regular physical exercise help to strengthen respiratory capacity.<sup>(3-6)</sup> The obesity is one of the major problems in modern society. The previous studies find regular physical exercise also effective on increase pulmonary function of healthy adults.<sup>(7,8)</sup>

The term SAQ is derived from the first letters of both of the transitional Speed, agility and Quickness. SAQ exercises modern training system produces integrated effects of many physical capacities of any athletes within a single training programme.<sup>(9-14)</sup> The saq training was significant to improve dynamic balance ability when it was conducted among the children of 7-11 years old.<sup>(15)</sup> The key of SAQ training is quick and rapid body movement in preselected direction. When these exercise method was applied upon sports persons of several ages, it was bring the extreme physiological benefit.<sup>(16-21)</sup> Some researcher were classified the saq drill exercise in without equipments and with equipments and their findings was the both method were significant to increase the physiological variables to the subjects.<sup>(21)</sup> These exercise method also useful to develop physical capacity of adapted children.<sup>(22)</sup>

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### Corresponding Author:

**Anindya Bhowmik**

Ph.D Scholar, Department of Physical Education,  
Swami Vivekanand Shubharti University,  
Subhartipuram, Meerut 250005, U.P, India, Vill+P.O.  
Krishnapriya, P.S. Pingla, Dist- Paschim Medinipur,  
PIN- 721140 (W.B.), India  
e-mail: anindyak4@gmail.com  
Mobile: +91 9474619204

**Statement of the Problem:** The aim of the study was to find out the effect of SAQ training on vital capacity and peak expiratory flow rate among the school students of rural area.

**Objective of the Study:**

1. To find out the effect of SAQ training on vital capacity among the school students of rural area.
2. To find out the effect of SAQ training on peak expiratory flow rate among the school students of rural area

**Hypothesis:** There will be significant different of SAQ training on vital capacity and peak expiratory flow rate among the school students of rural area.

**Method**

**Subjects:** The aim of the study was to find out the effect of SAQ training on vital capacity and peak expiratory flow rate among the school students of rural area. To achieve the aim of the study total 40 participants were randomly selected from a rural area high school. Tentulmuri Mahammad Muslim MSK in Tentulmuri, Kharagpur-II Block, Paschim Medinipur District, in West Bengal, West Bengal in India was selected the rural are a school of the present study. The participant’s age were ranged from 12 to 16 years.

**Design of the study:** Pre test and post test control group designed as applied in this study. The all participants were assigned into two groups SAQ group

and Control Group. Where 20 subjects in each groups. The SAQ group was underwent an experimental SAQ training programme for 16 weeks and control group did not underwent any special training programme during experimental period.

**Variables and Measurement**

**Vital Capacity:** Vital Capacity was measured by Wet Spirometer. The spirometer was six liter container, filled with water upto one inch from the top and was counter balanced by a chain, which passed over free running pulley. The spirometer was placed on a table. The participant took deep breathed as possible, then he placed the mouth piece in between his lips and breathed out gradually and consistently until the most extreme volume of air was ousted, without taking in another breath. During breath out there was confirm that the exhaled air not escape through the nose and other sides. Dial of spirometer was followed to record the data, within three appropriate trails highest score was recorded in ml,

**Peak Expiratory Flow Rate:** Peak Expiratory Flow Rate was measured by Wrights Peak Flow Meter. The participant was held the instrument in his hands and took deep breathed as possible. Then he placed the mouth piece in between his lips and breathed out forcefully without taking in another breath. During breath out there was confirm that the exhaled air not escape throw the nose and other sides. Within three appropriate trails highest score was recorded.

**Training Schedule**

**Table 1: (SAQ Training Schedule for 16 weeks)**

Sl. No	SAQ Drills	Duration	Rest Between Each Drill	Total Duration
Warm-Up		10 Minutes	-	-
1	Leader Drill (Straight Run Quick Steps)	3 Minutes	1 Minutes	60 Minutes
2	Leader Drill (Two Foot Run)	3 Minutes		
3	Lateral Run Drill	3 Minutes		
4	L Drill	3 Minutes		
5	T Drill	3 Minutes		
6	M Drill	3 Minutes		
7	Slalom Weave Drill	3 Minutes		
8	Run Shuffle Shuffle Run Drill	3 Minutes		
9	Box or Four Cones Drill	3 Minutes		
10	5-10-5 Pro Agility Drill	3 Minutes		
Cool Down		10 Minutes	-	-

SAQ training schedule was 16 weeks duration, three alternative days in per weeks. Every training session was 60 minutes duration, was conducted at play ground of respective school.

**Statistical Procedure:** The pair t test was applied to analyze the data and level of significant was set at 0.05 levels. The Microsoft Office Excel 2007 software was used to calculate the data.

### Result

**Table 2: Represented the descriptive statistic of SAQ group**

Variables	N	Pre Test		Post Test		Mean Difference	T value
VC	20	Mean	2525	Mean	2730	205	5.11
		SD	506.66	SD	540.07		
		S.Err	113.29	S.Err	120.76		
PEFR		Mean	244.5	Mean	259.75	15.25	6.89
		SD	39.03	SD	37.95		
		S.Err	8.72	S.Err	8.48		

Abbreviations: VC = Vital Capacity, PEFR = Peak Expiratory Flow Rate, SD = Standard Deviation, S.Err = Standard Error

The result of vital capacity of SAQ training group, the pre test was  $2525 \pm 506.66$  and post test was  $2730 \pm 540.07$ . The mean different was shown as 205 and obtained t value was 5.11. The result of peak expiratory

flow rate of SAQ group, pre test was  $244.5 \pm 39.03$  and post test was  $259.75 \pm 37.95$ . The mean different was 15.25 and obtained t value was 6.89.

**Table 3: Represented the descriptive statistic of control group**

Variables	N	Pre Test		Post Test		Mean Difference	T value
VC	20	Mean	2425	Mean	2435	10	1.46
		SD	525.03	SD	525.43		
		S.Err	117.40	S.Err	117.49		
PEFR		Mean	241	Mean	244	3	1.55
		SD	60.51	SD	56.68		
		S.Err	13.53	S.Err	12.96		

Abbreviations: VC = Vital Capacity, PEFR = Peak Expiratory Flow Rate, SD = Standard Deviation, S.Err = Standard Error.

The result of vital capacity of control group, pretest was  $2425 \pm 525$  and post test was  $2435 \pm 525.43$ . The mean different was shown as 10 and obtained t value was 1.46. The result of peak expiratory flow rate of pre test was  $241 \pm 60.51$  and post test was  $244 \pm 56.68$ . The mean different was 3 and obtained t value was 1.55.

on the athlete’s to improve their physical ability<sup>(17-21)</sup> and neuromuscular ability.<sup>(14,15)</sup> The present study was conducted on school students of rural area. Our study same as the previous studies<sup>(16-21)</sup> that analyzed the effects on physiological variables due to saq training programme among the athletes.

### Discussion

The present study shows that the selected 16 weeks SAQ training programme significantly improved the vital capacity and peak flow rate among the rural area school students. It has no doubt that the saq training is not a low intensity exercise. The quick and rapid body movement is required to find its better benefits. The several studies of saq training were conducted

### Findings:

1. After 16 weeks SAQ training programme vital capacity among the school students of rural area was significantly increased.
2. After 16 weeks SAQ training programme peak expiratory flow rate among the school students of rural area was significantly increased.

## Conclusion

As per result of the study, it was conclude that the SAQ training was significant to improve the vital capacity and peak expiratory flow rate among the school students of rural area.

**Ethical Clearance:** The study was ethically approved by the Departmental Academic Integrated Panel of Department of Physical Education of Swami Vivekanand Subharti University, Meerut. The University also approves the present study under the code of practice Governing the ethical conduct of research. The letter of ethical approbation of this study also uploaded in another file.

**Conflict of Interest:** Nil

**Source of Funding:** Self (The study was done by self funded)

## Reference

1. Waugh A, Grant A. Ross and Wilson anatomy & physiology in health and illness, 12 ed. Elsevier evolve, 2014.P.242-72.
2. Bassi R, Sharma S, Sharma A, Kaur D, Kaur H. The effect of aerobic exercises on peak expiratory flow rate and physical fitness index in female subjects .Natl J Physiol Pharm Pharmacol 2015;5:376-381.
3. Mahotra NB, Amatya TM, Rana BSJB, Banstola D. Effects of exercise on pulmonary function tests: a comparative study between athletes and non-athletes in nepalese settings. Journal of Chitwan Medical College 2016; 6(15): 21-23
4. B Chaitra, Maitri V. Effect of aerobic exercise training on peak expiratory flow rate: a pragmatic randomized controlled trial. Int J Biol Med Res. 2011; 2(3): 789-792
5. Khatun A, Bandhapadhy N. Effect of aerobic training and hatha yoga on vital capacity of college female students. International Journal of Academic Research and Development 2016;1(11):44-47
6. Angane EY, Navare AA. Effects of aerobic exercise on pulmonary function tests in healthy adults. Int J Res Med Sci. 2016 Jun;4(6):2059-2063
7. Cheng YJ, Macera CA, Addy CL, Sy FS, Wieland D, Blair SN. Effects of physical activity on exercise tests and respiratory function. Br J Sports Med 2003;37:521-528
8. Angane EY, Navare AA. Effects of aerobic exercise on pulmonary function tests in healthy adults. Int J Res Med Sci. 2016;4(6):2059-2063
9. Kumar J. Effect of S.A.Q. training program on explosive leg strength of soccer players. International Journal of Physiology, Nutrition and Physical Education. 2018; 3(1): 594-95
10. Kaur A. Impact of plyometric and SAQ training on physical fitness indices of handball players. International Journal of Yogic, Human Movement and Sports Sciences. 2018; 3(2): 876-879
11. Balasubramaian K, Kumar, PKS, Doss AA. Effects of speed agility quickness training and plyometric training on selected physical fitness variable among college men Kabaddi players. Internat. J. Phy. Edu. 2014 ;7(1) : 1-6.
12. Diswar SK, Choudhary S, Mitra S. Comparative effect of SAQ and circuit training programme on selected physical fitness variables of school level basketball players. International Journal of Physical Education, Sports and Health. 2016; 3(5): 247-50
13. Veeramani G, Sethu S. Effect of saq training on performance related fitness variables among kho-kho players. International Journal of Physical Education, Yoga and Health Sciences. 2016;3(1):31-33
14. Azmi K, Kusnanik NW. Effect of Exercise Program Speed, Agility, and Quickness (SAQ) in Improving Speed, Agility, and Acceleration. J. Phys.: Conf. 2018; 947:1-5
15. Shapie M N M, Raja N F R R. A case study: the effects of speed, agility and quickness (saq) training program on hand eye coordination and dynamic balance among children. J Phy Fit Treatment & Sports. 2018; 2(4): 001-006
16. Anitha J. Effect of saq training and interval training on selected physiological variables among men handball players. International Journal of Physiology, Nutrition and Physical Education. 2017; 2(1): 455-457
17. Khan DJAA, Sevi R. Effect of saq training on selected physiological parameters among university men students. International Journal of Physical Education, Sports and Health. 2016; 3(6): 119-21
18. Divya K. Effect of different methods of training on physiological variables among school students. Int. J. Adv. Res. 2016;4(9):1057-59
19. Karthikeyan J. Effect of saq training on selected physiological parameters among college men

- students. *Indian Journal of Applied Research*. 2018;8(2):10-11
20. Sanjay, Thour M. Effects of saq training on selected physiological variables among basketball players. *International Journal of Research and Analytical Reviews*.2018;5(4):934-39
21. Singh B, Singh TN. A comparative effect of different SAQ training on selected physiological variables among school athletes. *International Journal of Yoga, Physiotherapy and Physical Education*. 2017;2(6):80-82
22. Ravi M. Srinivasan M. Effect of yogic practice and saq training on selected physical fitness variables of students with hearing impairment. *International Journal of Recent Research and Applied Studies*. 2016;3 12(18):78-83