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## Influence of pranayama before plyometric training in selected physiological variables among college level male players

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### Abstract

The present research was designed to find out the influence of pranayama practice before plyometric training in selected physiological variables among College level male players. To achieve the purpose of the study 30 male players were selected various games from Vellore Institute of Technology, Chennai, Tamil Nadu, India. The subjects was randomly assigned to two equal groups (N=15). Group-I underwent pranayama Practices before plyometric training (PPBPT) and group - II was acted as control group (CG). The pranayama practices before plyometric training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of twelve weeks. The control group was not given any sort of training except their routine work. The selected physiological variables of vital capacity (wet spirometer), resting pulse rate (radial pulse) and breath holding time (holding breath test for time) were measured. Before and after training period the data collected from the subjects was statistically analyzed with 't' test to find out significant improvement if any at 0.05 level of confidence. The result of the vital capacity, resting pulse rate and breath holding time speculated significant improvement due to influence of pranayama Practices after plyometric training with the limitations of ( diet, climate, life style ) status and previous training. The result of the present study coincide findings of the investigation done by different experts in the field of sports sciences. Influence of pranayama practices before plyometric training significantly improved vital capacity, resting pulse rate and breathe holding time of male players.

**Keywords:** Plyometric training, vital capacity, resting pulse rate and Breath holding time

### Introduction

Pranayama is an ancient system of breathing practices, physical exercises and postures, and meditation intended to integrate the practitioner's body, mind, and spirit. It originated in India several thousand years ago, and its principles were first written down by a scholar named Patanjali in the second century B.C. The various physical and mental disciplines of pranayama were seen as a method for individuals to attain union with the divine. In the contemporary West, however, pranayama is more often regarded as a beneficial form of physical exercise than as a philosophy or total way of life. The term "plyometrics" was born in the late 1970s in the United States thanks to the work of Fred Wilt (1920-1994), a long-distance runner and member of the U.S. Olympic Team in 1948 and 1952. This training focuses on learning to move from a muscle extension to a contraction in a rapid or "explosive" manner, such as in specialized repeated jumping. Plyometric are primarily used by athletes, especially martial artists, sprinters and high jumpers, to improve performance, and are used in the fitness field to a much lesser degree.

### Aim of the study

The aim of the study is to find out the influence of pranayama practice before plyometric training in selected physiological variables among College level male players.

### Hypothesis

It is hypothesized that there was a significant difference on experimental group of selected physiological variables through pranayama practice before plyometric training.

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### Significant of the study

This study was helpful to the coaches to take this training as initial device for developing physiological variables and performance of the players in respective games and sports. This study shows the positive effect on vital capacity, resting pulse rate and Breath holding time of college level male players.

### Methods

#### Experimental approach to the problem

In order to address the hypothesis presented herein, we selected 30 College various games students from Vellore Institute of Technology, Chennai, Tamil Nadu, India. The subjects were randomly assigned in to two equal groups namely, Pranayama practices before Plyometric Training Group (PPBPTG) (N = 15) and Control group (CG) (n=15). The respective training was given to the experimental group the 3 days per weeks (alternate days) for the training period of twelve weeks. The control group was not given any sort of training except their routine.

**Table 1:** Criterion variables and tests

S. No	Criterion Variable	Test	Unit of Measurement
1.	Vital capacity	Wet spirometer	Cub.ml
2.	Resting pulse rate	Radial Pulse	Beats per minute
3.	Breath Holding Time	Breath holding test	Seconds

### Training programme

The training programme was lasted for 45 minutes for a session in a day, 3 days in a week for a period of 12 weeks duration. This 45 minutes included 5 minutes warm up, 16 minutes pranayama practices (Dirga Pranayama 'Three Part Breath', Nadi Sodhana, 'Alternate Nostril Breathing', Shitali Pranayama 'Cooling Breath', Ujjayi Pranayama 'Ocean Breath', Bhramari Pranayama 'Humming Bee Breath', Bhastrika Pranayama 'Bellows Breath', Viloma Pranayama 'Against the Wave'), plyometric training for 20 minutes and 4 minutes warm down. Every three weeks of training 5% of intensity of load was increased from 65% to 80% of work load. The volume of plyometric training is prescribed based on the number of sets and repetitions. The equivalent in pranayama practices after plyometric training is the length of the time each action in total 3 day per weeks (Monday, Wednesday and Friday).

### Statistical analysis

The collected data before and after training period of 12 weeks on the above said variables due to the effect of pranayama Practices before plyometric training was statistically analyzed with 't' test to find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. ( $p < 0.05$ ).

**Table 2:** Computation of 't' ratio on selected physiological variables of college level male players on experimental group and control group

Group	Variables	Mean	N	Std. Deviation	Std. Error Mean	T-Ratio	
Experimental Group	RPR	Pre Test	72.93	15	0.96	0.24	7.23*
		Post Test	70.40	15	1.45	0.37	
	BHT	Pre Test	30.06	15	3.01	0.77	5.42*
		Post Test	34.06	15	3.75	0.96	
	VC	Pre Test	4.17	15	0.33	0.08	5.42*
		Post Test	4.52	15	0.24	0.06	
Control Group	RPR	Pre Test	72.86	15	2.06	0.53	0.71
		Post Test	72.60	15	2.47	0.63	
	BHT	Pre Test	30.13	15	2.47	0.63	0.48
		Post Test	30.40	15	2.82	0.72	
	VC	Pre Test	4.28	15	0.23	0.06	2.01
		Post Test	4.34	15	0.27	0.06	

\*significant level 0.05 level degree of freedom (2.14, 1 and 14)

Table 2 reveals the computation of mean, standard deviation and 't' ratio on selected physiological variables namely vital capacity, resting pulse rate and breath holding time of experimental group. The obtained 't'- ratio on vital capacity, resting pulse rate and breath holding time were 7.23, 5.42 and 5.42 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained 't' values were greater than the table value it was found to be statistically significant. Further the table reveals the computation of mean, standard deviation and 't' ratio on selected physiological variables namely vital capacity, resting pulse rate and breath holding time of control group. The obtained 't' ratio on vital capacity, resting pulse rate and breath holding time were 0.71, 0.48 and 2.01 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained 't' values were lesser than the table value it was found to be statistically not significant.

### Discussions and Findings

The present study experiment the influence of twelve weeks pranayama practices before plyometric training on the

selected physiological variables of the college level various games players. The results of this study indicated that pranayama practices before plyometric training is more efficient to bring out desirable changes over the vital capacity, resting pulse rate and breath holding time of the college level various games players. The finding of the present study had similarity with the findings of the investigators referred in this study. Raja *et al.*, (2013) <sup>[5]</sup> evaluated aerobics exercise on training cessation helped to increase resting heart rate and breath hold timing. The forced vital capacity decreases due to the training cessation on aerobics exercises of high fat intake young men in Chennai. These adaptations are reflected in improvements in the key parameters of aerobic fitness, namely the VO<sub>2</sub>max, exercise economy, the lactate/ventilator threshold and the CP which will influence the oxygen uptake kinetics. Dawans *et al.*, (2014) <sup>[6]</sup> a 12-week endurance exercise program significantly reduced the reactivity to a psychosocial stressor in terms of cortisol, heart rate (HR), and heart rate variability (HRV). Sivaraman *et al.*, (2014) <sup>[7]</sup>. It also improves cardiac efficiency as indicated by significant decrease in pulse rate & highly significant increase in 40 mmHg endurance time. Keerthi *et al.*, (2013) <sup>[8]</sup> the

Pranayama procedures the only respiratory parameter that will reduce is the rate of respiration and all the other parameters including volumes and capacities will increase depending on the regularity of practice. Pushparajan *et al.*, (2015) <sup>[9]</sup> investigation indicates that twelve weeks of power pranayama practice and significantly reduce the resting pulse rate and significantly can increase the vital capacity among middle aged men. Rahul *et al.*, (2015) <sup>[10]</sup> conclude that pranayama exercises have positive effect on the selected physiological variables resting pulse rate, maximum breath holding. From of result of the present study, it is speculated that the improvement in the vital capacity of the subjects may be due to the improvement in breath holding time are reduction in resting plus rate, further, the planned Programme pranayama practices after endurance training might have influenced the resting plus rate and breath holding time of the subjects involved in this study.

### Conclusions

1. It was concluded that 12 weeks pranayama practices before plyometric training significantly improved the vital capacity, resting pulse rate and breath holding of the college level various games players.
2. Pranayama practice before plyometric training is one among the most appropriate means to bring about the desirable changes over physiological variables of college level various games players. Hence, suggested that coaches and the experts deal with various games players to incorporate pranayama practices before plyometric training as a component in their training Programme.

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