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Firdous Ahmed Lone

Lecturer, Youth Services and
Sports, Jammu and Kashmir,
India

Nisar Ahmad Hurah

Research Scholar, Swami
Ramanand Teerth Marathwada
University, Nanded,
Maharashtra, India

Effect of pranayama exercises on vital capacity among handball players

Firdous Ahmed Lone and Nisar Ahmad Hurah

Abstract

Background: In India ancient sages recognized some simple to practice breathing exercises that brought relaxation in body and mind. Various studies have shown that pranayama exercises improve lung functions as well as strengthens the inspiratory and expiratory muscles of respiratory system in human beings. **Objective:** The objective of present study was to examine the effect of pranayama exercises on vital capacity in handball players. **Materials and Methods:** In this study thirty-one (N=31) male national level handball players of Jammu and Kashmir were selected as subjects. The age of subjects ranged from 17 to 19 years. The subjects underwent yoga training in morning session for the period of 7 weeks 40 minutes in a day. The vital capacity was measured before and after 7 weeks of yoga training by using Spiro meter. The one-group pretest-posttest research design was used in this study. **Results:** After analysis of collected data, significant effect of pranayama exercises in yoga training was found on vital capacity in handball players. **Conclusion:** It was concluded that pranayama exercises improves vital capacity significantly.

Keywords: vital capacity, pranayama exercises, handball players

1. Introduction

The word yoga is derived from Sanskrit word 'YUJ' which means to unite, to join, to bring together or to yoke. Yoga recreates harmony within body and mind. Yoga is a process and a goal to reunite individual human spirit with its nature, reunite Atma with Parmatma. Yoga is the way of life where we achieve inner peace of life by leaving behind madness of world. Yogic lifestyle helps in the development of positive health. Yoga is a sort of health insurance and is achieved when we change the perception of stress. The practice of yoga settles body and mind and reduces stress. Through yoga exercises we can switch on parasympathetic nervous system. There are many beneficial effects of increased parasympathetic activity on our body systems, it also frees up our body's inherent healing system known as immune system.

In India ancient sages recognized some simple to practice breathing exercises that brought relaxation to mind and body. These exercises were practices with ease at morning or evening time of the day on an empty stomach. Pranayama exercises are translated as breath control of the prana (breath). The process of pranayama includes Purakha, Kumbhaka and Rechaka. Source of prana is breath and pranayama are the formal practice of controlling the breath, it the expansion of vital energy. Breathing exercises are used in clinical medicine as physiotherapy. It is practiced by people in everyday of life for relaxation by alleviating stress and to regularize breathing stress.

Vital capacity is the maximum amount of air a person can exhale from the lungs after maximum inspiration. It is equal to inspiratory reserve volume plus tidal volume and expiratory reserve volume. A normal individual has vital capacity between 3 to 5 litres. The effect of pranayama exercise on vital capacity in handball players of J and K in winter season has not been studied yet. The present study was carried out to assess the effect of pranayama exercises on vital capacity of handball players.

2. Objective

To examine the effect of pranayama exercises on vital capacity.

Corresponding Author:

Firdous Ahmed Lone

Lecturer, Youth Services and
Sports, Jammu and Kashmir,
India

3. Materials and Methods

In this study thirty-one (N=31) male national level handball players of Jammu and Kashmir were selected as subjects. The age of subjects ranged from 17 to 19 years. The pranayama exercises as yoga training was administrated on selected handball players in morning session for the period of 7 weeks. Every training session has the duration of 40 minutes in a day. The one-group pretest-posttest research design was used in this study. Pre-test was taken before start of training and post-test was taken at the end of training programme. Paired 't' test was used to compare the pre and post test data. Level of significance was kept at 0.05 (P value <0.05) and results were tabulated.

4. Results

The collected data from subjects on vital capacity was statistically examined by analysis while using 't' test and level of significance was fixed at 0.05 level of confidence.

Table 1: Descriptive statistics of pre and post-test data of experimental group in relation to vital capacity.

	N	Mean	Std. Deviation	Std. Error	T value	P value
Pre test	31	527.74	106.03	19.38	8.13	<0.05
Post test	31	593.22	92.44	16.72		

Above table reveals that pre-test and post-test means, standard deviation, standard error and t value on vital capacity of handball players. The tabulated value of t 2.042 was found less than calculated value of t 8.13 at 0.05 level of confidence. It was found that there is significant effect of pranayama exercises on vital capacity in winter season.

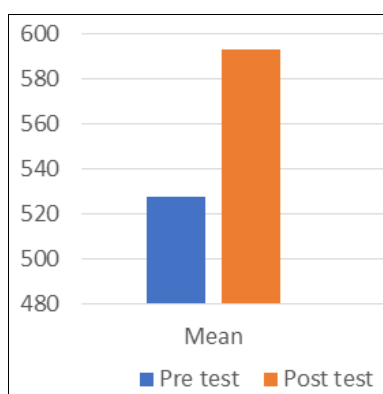


Fig 1: The Graphical representation of mean of pre and post-test of experimental group in relation to vital capacity.

5. Discussion on findings:

Yoga exercises are considered good for maintaining proper health and has profound effect on the lung function of an individual. Pranayama exercises increases lung and thorax, strengthens respiratory muscles and airway resistance (Vinayak P. D. *et al.*). Breathing exercises in yoga have significant effect on vital capacity (Sodhi C. *et al.*). The low intensity continuous training and yoga practice significantly improves vital capacity of mild hypertension college teachers (Jatoh J.) and similar findings were found in the present study as shown by the results. The vital capacity of an individual depends upon the strength of respiratory muscles, lungs and chest wall, thoracic structures, integrity of pleura and airway resistance, age, sex, height and mass. The mean value for vital capacity before pranayama exercise was 527.74 ml and the mean value for vital capacity after exercises was found increased up to 593.22 ml.

6. Conclusion

After analysis of collected data it was found that breathing exercises are executable in winter and will improve vital capacity in handball players. It is advised that pranayama exercise should be done for maintaining vital capacity. Further studies should be carried out in order to establish the fact that whether yoga exercises can improve vital capacity in the players of different games at various level both in male and female players.

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