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A Comparative Study of Breath Holding Capacity after Pandemic Situation among Physical Education Students and Yoga Students

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Abstract-

In the present study would assess the Physiological variable differences such as breath holding capacity among Physical Education students and Yoga Students who studied in Chaudhary Bansi Lal University, Bhiwani, Haryana. The total number of subjects for this study were 80 students. (40 Physical Education students and 40 Yoga Students). The data for this proposed study were collected from Department of Physical Education and Sports, Chaudhary Bansi Lal University, Bhiwani, Haryana. The data was collected by use of Stop watch and Nose clipper. The data was analyzed and compared with the help of statistical procedures in which arithmetic mean, standard deviation (S.D.), t-test were employed. Physical Education students and Yoga Students breath holding capacity was found no significantly Difference.

Keywords- Physical Education students, Yoga Students, breath holding capacity.

Introduction

Breath holding is a conscious process retaining breath upon inhalation or exhalation. The length of time a person can hold their breath voluntarily typically ranges from 30 to 90 seconds. This time can increase or decrease due to various factors, such as smoking, underlying medical conditions, or breath training.

A person can practice breath-holding to increase their lung capacity, and there are training guidelines to help individuals learn to hold their breath for longer periods. Training usually takes several months. People may use these training techniques for advanced military training, free diving, swimming, or other recreational activities.

A person needs oxygen for their body to perform vital functions, and holding in a breath prevents new oxygen from entering the body. When people hold their breath, the body is still using oxygen to function and to release carbon dioxide as a waste product. Because carbon dioxide has nowhere to go, its levels within the body increase, eventually triggering the involuntary reflex to start breathing again.

At first, a person may feel a burning sensation in their lungs. If they hold their breath long enough, the muscles in their diaphragm will begin to contract to try to force breathing, which can cause pain. If an individual does not resume their usual breathing pattern, they will lose consciousness, and if they are in a safe location, the body should automatically begin to breathe and start to get the oxygen it needs.

Review Literature

Kris O' Dowd et. al. (2020) studied that COVID-19 has spread rapidly across the globe, greatly affecting how humans as a whole interact, work and go about their daily life. One of the key pieces of personal protective equipment (PPE) that is being utilised to return to the norm is the face mask or respirator. In this review we aim to examine face masks and respirators, looking at the current materials in use and possible future innovations that will enhance their protection against SARS-CoV-2. Previous studies concluded that cotton, natural silk and chiffon could provide above 50% efficiency. In addition, it was found that cotton quilt with a highly tangled fibrous nature provides efficient filtration in the small particle size range. Novel designs by employing various filter materials such as nanofibres, silver nanoparticles, and nano-webs on the filter surfaces to induce antimicrobial properties are also discussed in detail. Modification of N95/N99 masks to provide additional filtration of air and to deactivate the pathogens using various technologies such as low- temperature plasma is reviewed. Legislative guidelines for selecting and wearing facial protection are also discussed. The feasibility of reusing these masks will be examined as well as a discussion on the modelling of mask use and the impact wearing them can have. The use of Artificial Intelligence (AI) models and its applications to minimise or prevent the spread of the virus using face masks and respirators is also addressed. It is concluded that a significant amount of research is required for the development of highly efficient, reusable, anti-viral and thermally regulated face masks and respirators.

Bruno et.al. (2022) Breathing is crucial in life; nevertheless, the healthcare community often overlooks the health potential of breathing techniques. Conscious manipulation of breathing to achieve specific health goals is found in yoga, Qigong and Tai Chi. This paper reviews the value of breathing exercises as a foremost mechanism for promoting, recuperating and maintaining health. Practices involving breathing techniques are described, and their prophylactic or therapeutic characteristics are explored. The main goals of this review are: (i) to summarize the evidence supporting the hypothesis that breathing practices have a significant beneficial impact on human health; (ii) to provide a deeper understanding of traditional biofeedback practices, particularly yoga, Qigong and Tai Chi, and outline their focus on breathing techniques; (iii) to outline specific immune-related responses, relevant for COVID-19 disorders; and (iv) to call for committed attention and action from the scientific community

and health agencies in promoting the implementation of a practical and costless health program based on breathing techniques. This review shows the health potentials of breathing practices and exercises, which, by having a high benefit–cost ratio, could be selected and implemented as a primary standard routine in public health programs.

Mona Alnaggar (2023) During the last decade, the world faced many pandemics, causing medical service providers to struggle with diagnosing, following up with patients, keeping daily records, and eliminating infection spread. All of these factors force us to pay close attention in order to make vital sign measurements safer and easier. Respiration Rate (RR) and Heart Rate (HR) are the most measured signs for patients. Remote photoplethysmography (rPPG) is a video-based technique for HR monitoring so that telehealth can be easier. This paper proposes a new methodology for RR and HR estimation depending on non-contact techniques. The proposed architecture relies on monitoring the patients using a camera to view a video stream from which we can extract the rPPG waveform from individuals' faces. The motion and color in the video are first magnified using Eulerian Video Magnification (EVM) and then analyzed in two stages, one for HR estimation and the other for RR estimation. For HR estimation, MediaPipe Face Mesh is employed to annotate the boundaries of the most suitable Region of Interest (ROI) from the face image in both RGB and HSV color modes. Then, the integral image for R and V channels, respectively, are computed. The proposed method is based on measuring fluctuations in the value resulting from the integral image, and can therefore extract HR. Whilst for RR estimation, MediaPipe Pose solution is used to annotate the position of specific landmarks on the chest, and then tracking the changes of these landmarks' positions with time. The performance of the proposed method is evaluated using COHFACE dataset. In HR experiments, the Mean Absolute Error (MAE) is 2.05 and 2.03 BPM (Beats per Minute), and the Pearson Correlation Coefficient (PCC) is 0.91 and 0.86 for RGB and HSV frames, respectively. In RR experiments, the MAE was 1.62 BrPM (Breaths per Minute) and the PCC is 0.45.

Method

For the purpose of the investigation, the sample for the total number of subjects for this study were 80 students (40 Physical Education students and 40 Yoga Students). The data for this proposed study were collected from CBLU University, Haryana. To test the breath holding capacity of the subjects, they were divided into two groups i.e. Physical Education students and Yoga Students to perform according to researcher guidance. Breath Holding Capacity was measured of every individual with the help of Stop Watch and Nasal Clip.

To examine the hypothesis of the study that there will be no significant difference in the breath holding capacity of Physical Education students and Yoga Students, descriptive statistics and t-test analysis was employed for the present data.

DESCRIPTIVE STATISTICS OF BREATH HOLDING CAPACITY

Table no.1 indicates the values of descriptive statistics of the Physical Education Students and Yoga Students for Breath Holding Capacity, which shows that the mean and S.D. values of Physical Education Students and Yoga Students were 43.9±3.11 and 48.11±3.26 respectively. S.E.M values of the Physical Education Students and Yoga Students were found to be 0.26 and 0.29 respectively.

Table No. 1

Descriptive Statistics of Physical Education Students and Yoga Students (in seconds)

Variable	Group	N	Mean	Std. Deviation	S.E.M
Breath Holding Capacity	Physical Education Students	40	43.9	3.11	0.26
	Yoga Students	40	48.11	3.26	0.29

Table No. 2

T-test description Breath Holding Capacity of Physical Education Students and Yoga Students

Variable	Groups	df	t-value	Sig.
Breath Holding Capacity	Physical Education Students-Yoga Students	79	0.335	0.068

The t-test value of breath holding capacity of Physical Education Students and Yoga Students is shown in table no. 2 As shown in the table the Physical Education Students were significantly similar of breath holding capacity (t=0.335, p>0.05) than the Yoga students. There was no significant difference in physiological variable breath holding capacity between Physical Education students and Yoga Students.

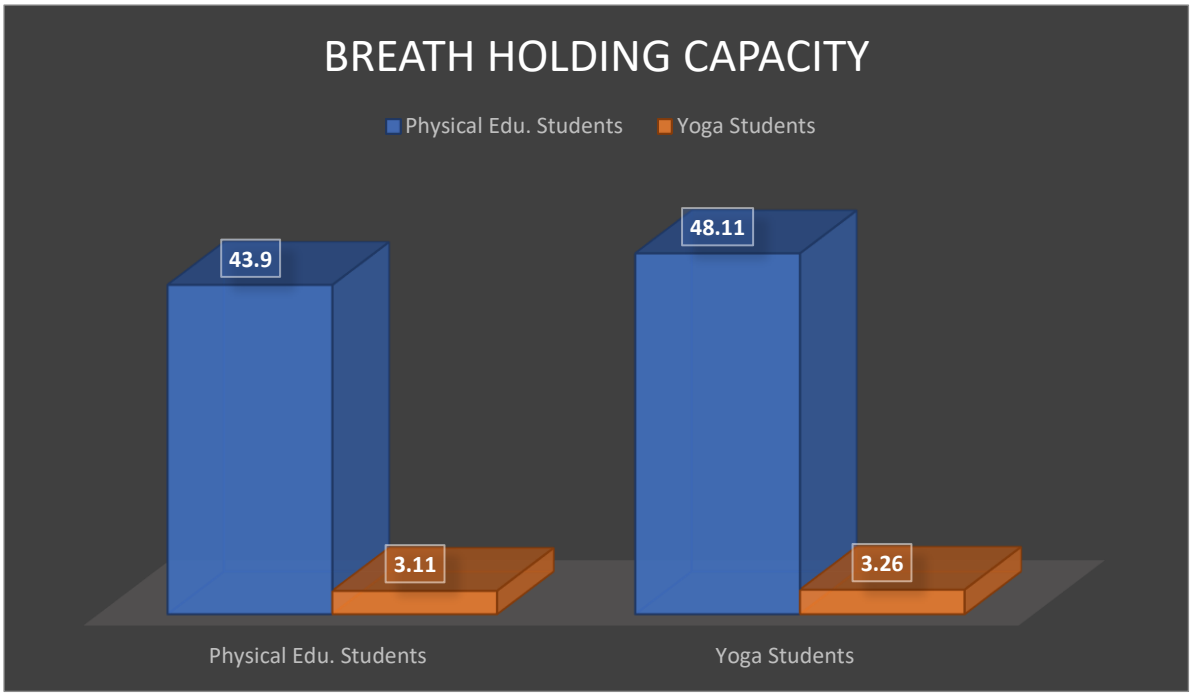

Figure No. 1: Bar diagram showing the mean value of breath holding capacity among Physical Education students and Yoga students

Conclusion-

- It is concluded that there is no major difference between Physical Education students and Yoga students in terms of Breath holding Capacity. The scores of both the groups (Physical Education students and Yoga students) were similar.
- Physical Education students and Yoga students have good breath holding capacity, but Yoga students have higher breath holding capacity than Physical Education students. But There is no major difference in breath holding capacity among Physical Education students and Yoga students.

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