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AN 8-WEEK HIGH-INTENSITY INTERVAL TRAINING PROGRAM'S IMPACT ON FEMALE ATHLETES' VITAL CAPACITY

kumar A.[1*], Deka R.[2], Singh A.[3]

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[1*] Ajay kumar, Research Scholars, Department of Physical Education, Punjabi University, Patiala, Punjab, India.

[2] Rupshikha Deka, Research Scholars, Department of Physical Education, Punjabi University, Patiala, Punjab, India.

[3] Amarpreet Singh, Assistant Professor,, Department of Physical Education, Punjabi University, Patiala, Punjab, India.

The experimental study was conducted to evaluate the effect of 8 weeks of high-intensity interval training vital capacity of female athletes. The present study was conducted on sixteen (n=16) female athletes from Punjabi University, Patiala. All subjects ranged aged 18-26 were selected in terms of purposive samples under the sampling method of non-probability sampling.The required data were collected through the administration of standardized instruments for the measurement of selected variables. Pre-Test data was collected to measure the primary status of vital capacity before subjects underwent 8 weeks of planned training intervention. Post-Test data was collected after training intervention to evaluate the effect of high-intensity interval training on the vital capacity of female athletes. For analysis and interpretation of data statistical tools were applied e.g., Paired 't', to find out the difference, and compare mean, standard deviation and standard error mean. The result shows that 8 weeks of high-intensity interval training remarkably increase vital capacity in female athletes.

Keywords: High-Intensity Interval Training (HIIT), Female Athlete, Vital Capacity

Corresponding Author

Ajay kumar, Research Scholars, Department of Physical Education, Punjabi University, Patiala, Punjab, India.

Email: dekarupshikha@gmail.com

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Introduction

Sports performance is not related to any one aspect, all the factors are so enormously related to attaining the top position. The sports, we enjoy and participate in today have looked a lot different from the times they were invented. So many concepts have been changed with the application of the research done by the scientists i.e. changes in apparatus, training methods, and inventions of new techniques and training methods. Now day's people are taking interest in sports for fitness, as well as, as a career. Generally, we consider a person who competes in one or more sports that involve physical strength, speed, or endurance. Athletes may be professionals or amateurs. High-intensity interval training (HIIT) programs have become increasingly important in recent years. HIIT is a form of interval training, a cardiovascular exercise strategy that features short, intense bursts of exercise followed by a period of recovery – allowing the trainee to keep reaching your maximum training zone again and again shocking his body and driving physiological transformative change (Laursen P. B. & Jenkins D. G. (2002). Being a part of various sports athletes required a higher level of physiological fitness e.g., vital capacity, stroke volume, and many other physiological variables. Vital capacity is a very important physiological variable for performance.

High-Intensity Interval Training

High-intensity interval training (HIIT) programs have become increasingly important in recent years. HIIT is a form of interval training, a cardiovascular exercise strategy that features short, intense bursts of exercise followed by a period of recovery – allowing the trainee to keep reaching your maximum training zone again and again shocking his body and driving physiological transformative change(Hottenrott, K., Ludyga, S., & Schulze, S, 2012).

Vital capacity

Vital capacity (VC) refers to the maximal volume of air that can be expired following maximum inspiration. It is the total tidal volume, inspiratory reserve volume, and expiratory reserve volume (VC = V + IRV + ERV). Vital capacity may be measured as inspiratory vital capacity (IVC), slow vital capacity (SVC), or forced vital capacity (FVC). The FVC is similar to VC, but it is measured as the patient exhales with maximum speed and effort (David S, Sharma S, 2019).

Objective of the Study

To find out the effect of 8 week's HIIT on the Physiological variable- Vital Capacity of female athletes of Punjabi University, Patiala.

Methodology

Participants

The present study was conducted on female athletes at Punjabi University, Patiala. All subjects were selected in terms of purposive samples under the sampling method of non-probability sampling. The study was confined to the 18-26 years of age group. A total of twenty (N=16) female athletes were selected as subjects of 8 weeks of High-intensity interval training intervention on selected variables. All subjects were selected as the sample which voluntarily consented and agreed to undergo the planned training program after clearly explaining the nature of the study.

Selection of variable

In consultation with the experts in the field, minutely gleaning through the literature available and considering the feasibility criteria in mind, especially the availability of the instrument. The following Physiological variable was selected for the present study.
01. Vital Capacity.

Criterion Measures

Enclosed as Annexure 01

Procedures
01. Vital capacity

Purpose: -To determine the vital capacity of female athletes.

Equipment: - Spirometer (Medicaid Systems Pvt. Ltd).

Test administration: - before the test, the researcher gives the instructions and explains the technique of the test to the subjects. The test was conducted in the sitting position. The researcher recorded the personal data of the subject like name, age, sex, height, and weight in the computer before the test. The subject was asked to take in as deep a breath as possible and when the lungs were full, quickly position the mouthpiece on the mouth and exhaled all the air into the mouthpiece as hard and fast bending forward, till all the

Air within the control was expelled. The exhaled air shows the graph on the computer screen. Care was taken to prevent air from escaping either through the nose or around the edges of the mouthpiece and also ensure that a second breath was not taken by the subject during the test. In case of doubt, the test was repeated. The mouthpiece was sterile by the antiseptic after the use by each subject.

Scoring:- Each subject underwent three test runs, with the best of those three trials being used to determine a score.

Results

After the collection of data, statistical procedures were applied to evaluate the effect of 8 weeks of high-intensity interval training on the vital capacity of female athletes of Punjabi University, Patiala

Table 2: Mean and Standard Deviation of Vital Capacity (Vc) Variableof Female Athletes.

Enclosed as Annexure 02

Figure 1: Statistically show that the mean and standard deviation of the pre-test of 8 weeks of high-intensity interval training

Enclosed as Annexure 03

Table 2 and Figure 1, Statistically show that the mean and standard deviation of the pre-test of 8 weeks of high-intensity interval training for vital capacity of Female 1 athletesis3.4119 ± 0.1867whereasinthe caseof the post-test mean and the standard deviation is 4.0419 ± 0.1670 respectively. The calculated t-value (19.606) is more than the tabulated t-value (1.753) at a 00.05 level of significance. So, it indicates that there was a significant difference between the pre-test and post-test for vital capacity when the training of 8 weeks HIIT was given to Female athletes.

Discussion and Findings

The finding of the present study indicates that there is a significant difference between the Pre-Post test outcome before and after the intervention of 8 weeks HIIT program. The study of Gangwar V. John N. A. Verma M. K. John J. Gangwar R. S. &Jasrotia R. B (2020) justified that the HIIT program is beneficial for cardiopulmonary health and for enhancing respiratory muscle strength which leads to improved vital capacity. Physical activity can help to prevent diseases and increase The quality of life and longevity. Furthermore, HIIT programs effectively help to increase vital capacity which leads to improved performance.

Annexure

Annexure 01

Criterion Measures

Criterion Measures

Physiological Parameters			
Sr. no.	Testing Technology	Variable	Unit of Measures
1.	Spirometer	Vital capacity	Liters

Annexure 02

Table 2: Mean and Standard Deviation of Vital Capacity (Vc) Variableof Female Athletes.

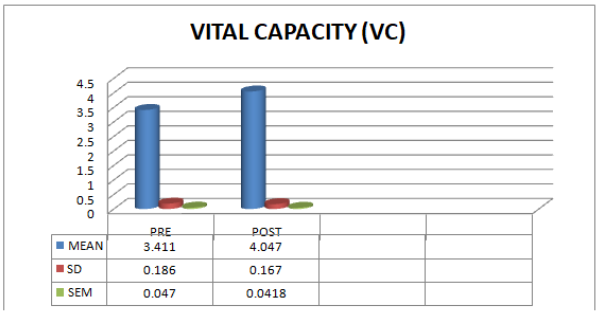
GROUP	N	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN	t-VALUE
PRE	16	3.411	0.186	0.047	19.60
POST	16	4.047	0.167	0.0418	

Level of Significance 0.05 df =15

Tabulated't'-valueat0.05 is 1.753

Annexure 03

Figure 1: Statistically show that the mean and standard deviation of the pre-test of 8 weeks of high-intensity interval training



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