OPEN ACCESS

Volume: 12

Special Issue: 2

Month: February

Year: 2024

E-ISSN: 2582-6190

Impact Factor: 4.118

Received: 16.12.2023

Accepted: 18.01.2023

Published: 14.02.2024

Citation:
Sachin, K., and K. Ivin Jabakumar. "Assessment of High Intensity Interval Training on Selected Physiological Parameters among Volleyball Players Students." *ComFin Research*, vol. 12, no. S2, 2024, pp. 177–80.

DOI:
https://doi.org/10.34293/commerce.v12iS2-Feb.7577

Assessment of High Intensity Interval Training on Selected Physiological Parameters among Volleyball Players Students

K. Sachin
Ph.D. Research Scholar, Department of Physical Education
Ganesar College of Arts & Science (Affiliated to Bharathidasan University, Tiruchirappalli), Ponnamaravathy, Pudukkottai, Tamilnadu, India

K. Ivin Jabakumar
Director of Physical Education, TUK Arts College
(Affiliated to Bharathidasan University, Tiruchirappalli)
Thanjavur, Tamilnadu, India

Abstract

The aim of the research was to investigate how students who play volleyball's resting pulse rate and breath holding time are affected by high intensity interval training. Thirty volleyball players from Karnataka were chosen as subjects for the study. There were two equal groups formed out of them. Every group comprised the fifteen participants. For twelve weeks, Group I received high intensity interval training three days a week. Group II served as the control group and was not subjected to any additional training beyond their usual physical education curriculum. The variables that were chosen as criteria were the resting pulse rate and the breath holding time. Before and right after the training programme, all of the participants in the two groups were tested on a few chosen dependent variables, such as breath holding time and resting pulse rate, using bend-knee sit-ups and Cooper's 12-minute run/walk test, respectively. To determine whether there was a significant difference between the groups, the analysis of covariance was employed. The significance level for testing the 'F' ratio derived from the analysis of covariance was set at the.05 level of confidence, which was deemed suitable.There was a significant difference between high intensity interval training group and control group on breath holding time and resting pulse rate

Keywords: Interval Training, Men Students

Introduction

A well-liked and successful type of exercise is called high-intensity interval training (HIIT), which alternates between quick bursts of intense activity and short rest intervals. The many health and fitness advantages of this training style have drawn a lot of attention in recent years. HIIT workouts generally comprise brief but intense bursts of exercise, ranging from 20 seconds to several minutes, interspersed with active recovery or rest periods. These cycles are carried out for a predetermined number of rounds or amount of time. The work intervals' intensity frequently approaches a person's maximum capacity, taxing their muscular and cardiovascular systems to the breaking point.

The main idea behind high-intensity interval training (HIIT) is to put the body under extreme metabolic stress, which triggers a variety of physiological changes. A major advantage of HIIT is that it can dramatically improve cardiovascular fitness. The heart's efficiency and general cardiovascular endurance are enhanced by HIIT, which raises the heart rate to a maximum and then lets it return to normal. Because of this, it's a great choice for increasing aerobic capacity and burning fat. Furthermore, studies have demonstrated how time-efficient HIIT is. Shorter workouts can yield comparable or even better results than longer, moderate-intensity exercise because of the high intensity of the exercises. Because of this, HIIT is a desirable choice for people with hectic schedules who wish to increase their fitness levels quickly.

Methodology

The aim of the research was to investigate how students who play volleyball's resting pulse rate and breath holding time are affected by high intensity interval training. Thirty volleyball players from Karnataka were chosen as subjects for the study. There were two equal groups formed out of them. Every group comprised the fifteen participants. For twelve weeks, Group I received high intensity interval training three days a week. Group II served as the control group and was not subjected to any additional training beyond their usual physical education curriculum. The variables that were chosen as criteria were the resting pulse rate and the breath holding time. Before and right after the training programme, all of the participants in the two groups were tested on a few chosen dependent variables, such as breath holding time and resting pulse rate, using bend-knee sit-ups and Cooper's 12-minute run/walk test, respectively. To determine whether there was a significant difference between the groups, the analysis of covariance was employed. The significance level for testing the 'F' ratio derived from the analysis of covariance was set at the.05 level of confidence, which was deemed suitable.

Analysis of the Data

Table I
Analysis of Covariance of the Data on Breath Holding Time of Pre and Post Tests Scores of High Intensity Interval Training and Control Groups

Test	High intensity interval training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	41.80	41.33	Between	1.63	1	1.63	0.47
S.D.	1.64	1.34	Within	97.73	28	3.49	
Post Test							
Mean	44.27	41.60	Between	53.33	1	53.33	10.53*
S.D.	1.96	2.03	Within	141.87	28	5.07	
Adjusted Post Test							
Mean	44.06	41.80	Between	37.58	1	37.58	76.81*
			Within	13.21	27	0.49	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The adjusted post-test means for the high intensity interval training group (44.06) and control group (41.80) are displayed in Table I. The adjusted post-test means' "F" ratio of 76.81 for breath holding time is greater than the 3.35 table value for df 1 and 27 needed for significance at the.05 level of confidence. The study's findings showed that the high intensity interval training group and the control group had significantly different adjusted post-test means for breath holding times.

Table II
Analysis of Covariance of the Data on Resting Pulse Rate of Pre and Post Tests Scores of Fartlek

Test	High intensity interval training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	72.60	72.47	Between	0.13	1	0.13	0.14
S.D.	0.88	1.36	Within	27.33	28	0.98	
Post Test							
Mean	69.87	72.20	Between	40.83	1	40.83	12.85*
S.D.	1.02	1.17	Within	88.97	28	3.18	
Adjusted Post Test							
Mean	69.80	72.27	Between	45.68	1	45.68	69.33*
			Within	17.79	27	0.66	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 3.34 and 3.35 respectively).

The adjusted post-test means for the high intensity interval training group (69.80) and control group (72.27) are shown in Table II. The adjusted post-test means' "F" ratio of 69.33 is higher than the 3.35 table value for df 1 and 27 required for significance regarding resting pulse rate at the.05 level of confidence.The adjusted post-test means of the resting pulse rates of the high intensity interval training group and the control group differed significantly, according to the study's findings.

Conclusion

There was a significant difference between high intensity interval training group and control group on breath holding time and resting pulse rate.

References

1. Bartlett, J. D., Close, G. L., MacLaren, D. P., Gregson, W., Drust, B., & Morton, J. P. (2011). High-intensity interval running is perceived to be more enjoyable than moderate-intensity continuous exercise: implications for exercise adherence. Journal of Sports Sciences, 29(6), 547-553.
2. Batacan Jr, R. B., Duncan, M. J., Dalbo, V. J., Tucker, P. S., & Fenning, A. S. (2017). Effects of high-intensity interval training on cardiometabolic health: a systematic review and meta-analysis of intervention studies. British Journal of Sports Medicine, 51(6), 494-503.
3. Buchheit, M., & Laursen, P. B. (2013). High-intensity interval training, solutions to the programming puzzle: part I: cardiopulmonary emphasis. Sports Medicine, 43(5), 313-338.
4. Gibala, M. J., Little, J. P., Macdonald, M. J., & Hawley, J. A. (2012). Physiological adaptations to low-volume, high-intensity interval training in health and disease. The Journal of Physiology, 590(5), 1077-1084.

5. Gillen, J. B., & Gibala, M. J. (2014). Is high-intensity interval training a time-efficient exercise strategy to improve health and fitness? Applied Physiology, Nutrition, and Metabolism, 39(3), 409-412.
6. Laursen, P. B., & Jenkins, D. G. (2002). The scientific basis for high-intensity interval training: optimising training programmes and maximising performance in highly trained endurance athletes. Sports Medicine, 32(1), 53-73.
7. Milanović, Z., Sporiš, G., & Weston, M. (2015). Effectiveness of high-intensity interval training (HIT) and continuous endurance training for VO2max improvements: a systematic review and meta-analysis of controlled trials. Sports Medicine, 45(10), 1469-1481.
8. Shiraev, T., & Barclay, G. (2012). Evidence based exercise—Clinical benefits of high intensity interval training. Australian Family Physician, 41(12), 960-962.
9. Weston, K. S., Wisløff, U., & Coombes, J. S. (2014). High-intensity interval training in patients with lifestyle-induced cardiometabolic disease: a systematic review and meta-analysis. British Journal of Sports Medicine, 48(16), 1227-1234.
10. Weston, M., Taylor, K. L., Batterham, A. M., & Hopkins, W. G. (2014). Effects of low-volume High-intensity Interval Training (HIT) on fitness in adults: a meta-analysis of controlled and non-controlled trials. Sports Medicine, 44(7), 1005-1017.