



ISSN: 2456-0057

IJPNPE 2023; 8(2): 321-323

© 2023 IJPNPE

www.journalofsports.com

Received: 01-08-2023

Accepted: 05-09-2023

Digvijaysinh Gohil

Research Scholar, Shri Govind
Guru University, Godhra,
Gujarat, India

Dr. Dipak K Sheth

Research Guide, SMCR, Arts
College, SGGU, Godhra,
Godhra, Gujarat, India

The effects of plyometric training, circuit training and circuit breaker programmes on physiological components of Tribal students

Digvijaysinh Gohil and Dr. Dipak K Sheth

Abstract

The word 'training', in its broad sense, refers to any organized and systematic instructional process, which aims at enhancing man's ability with regard to physical, psychological and intellectual aspects. The purpose of the investigation was to study and compare the effects of plyometrics, circuit training and circuit breaker programmes Physiological Variables of Tribal Students. For the purpose of the study 100 male Tribal Students from The Birsa Munda Tribal University, Rajpipla were randomly selected as the subjects for the study. All the subjects were randomly assigned to four groups: three experimental groups viz: plyometric training group (Group A), circuit training group (Group B), and circuit breaker programme group (Group C) and the fourth group served as the control group, each consisting of 25 subjects.

The study was confined to the following Physiological variables Resting heart rate, Exercise heart-rate and Respiratory rate.

Keywords: Plyometric training, circuit training, circuit breaker programme, resting heart rate, exercise heart-rate, respiratory rate

Introduction

The word 'training', in its broad sense, refers to any organized and systematic instructional process, which aims at enhancing man's ability with regard to physical, psychological and intellectual aspects. In the field of sports, training is a process, which involves preparation of a sportsperson to attain highest level of sports performance. To improve sports performance, one has to, regularly and systematically, perform a variety of exercises. Mere execution of an exercise does not ensure improvement of performance. Actual effect of exercise depends upon several factors of which the important ones are training load, means of recovery, assessment of loading and performance capacity, sports equipment, nutrition, psychological characteristics and methods adopted for imparting theoretical instruction. If these factors are disregarded, the usefulness of the physical exercise decreases and the sportsperson does not realize optimal benefit.

The purpose of the investigation was to study and compare the effects of plyometrics, circuit training and circuit breaker programmes on physiological variables of Tribal Students.

Delimitations

1. The study was delimited to 100 Tribal students of 18-25 years of age from Birsa Munda Tribal University, Rajpipla, Gujarat.
2. The study was confined to the following Physiological variables
 1. Resting heart rate
 2. Exercise heart-rate
 3. Respiratory rate

It was hypothesized that there would be no significant difference in the effects of plyometrics, circuit training and circuit breaker programme on Physiological variables of Tribal Students. For the purpose of the study 100 male Tribal Students from The Birsa Munda Tribal University, Rajpipla were randomly selected as the subjects for the study.

Corresponding Author:

Digvijaysinh Gohil

Research Scholar, Shri Govind
Guru University, Godhra,
Gujarat, India

It was ascertained from the health examination reports maintained by university that all the subjects were medically fit. All the subjects were randomly assigned to four groups: three experimental groups viz: plyometric training group (Group A), circuit training group (Group B), and circuit breaker programme group (Group C) and the fourth group served as the control group, each consisting of 25 subjects

Resting heart rate was assessed by the number of heart beats per minute by palpation at the carotid artery, when the subject was under physical and mental rest.

Exercise heart rate was assessed by the number of heart beats per minute, by palpation at the carotid artery, immediately after the exercise.

Resting respiratory rate was assessed by the number of respiratory movements per minute, when the subject was under physical and mental rest.

Random group design was employed in this study. Both subjects as well as the experimental treatments were randomly assigned to the three experimental groups and one control group, consisting of 25 subjects each. The subjects were administered the initial test which was followed by 12 weeks of plyometric, circuit, and circuit breaker training programme and after 12 weeks final scores on the criterion variables was recorded.

The training programme for the experimental groups were administered thrice a week on alternate days. The Plyometric training programme consisted of single leg hopping, bounding, Plyometric pushups, medicine ball throw, depth jumps, box drill and sit ups on Mondays, Wednesdays and Fridays. The circuit training programmed involved step ups, push ups, sit ups, double knee jumps, squat thrust skipping and interval running on Tuesdays, Thursdays and Saturday. The circuit breaker programmed consisted of jump rope, step ups, shuttle run, pushups, jump ups, side jumps and sit-ups on Mondays, Wednesdays and Fridays. To find out the significance differences between pre-test and post-test means among the experimental groups and the control group in selected physiological variables analysis of covariance was applied. The differences in the paired adjusted final means among the groups were tested following the post hoc analysis. The level of significance chosen to test the hypothesis was 0.05.

The mean values of the pre-test Resting heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 81.000, 79.720, 80.920 and 80.840 respectively. The calculated F value of pre-test is 0.479, which is not significant at 0.05 levels. The post-test mean of Resting heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 73.280, 73.120, 74.960 and 80.480 respectively. The calculated F- value of post-test is 16.548, which is significant at 0.05 levels. The adjusted mean of Resting heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 73.228, 73.243, 74.919 and 80.450 respectively. The calculated F-value of adjusted mean is 16.401, which is significant at 0.05 levels.

As the value of calculated ANCOVA is significant, the LSD post-hoc test was used.

The adjusted mean difference between of Plyometric Training (Group A) and Circuit Training (Group B) is 0.014 which is not greater than critical difference i.e. 2.369. The adjusted mean difference between of Plyometric Training (Group A) and Circuit Breaker Programme (Group C) is 1.691 which is not greater than critical difference i.e. 2.369. The adjusted

mean difference between of Circuit Training (Group B) and Circuit Breaker Programme (Group C) is 1.677 which is not greater than critical difference i.e. 2.369. While The adjusted mean difference between of Plyometric Training (Group A) and Control group (Group D) is 7.222, The adjusted mean difference between of Circuit Training (Group B) and Control group (Group D) is 7.207, The adjusted mean difference between of Circuit Breaker Programme (Group C) and Control group (Group D) is 5.531, which were significant than the CD i.e. 2.369.

The mean values of the pre-test Exercise heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 124.200, 123.640, 124.920 and 124.000 respectively. The calculated F value of pre-test is 0.125, which is not significant at 0.05 levels. The post-test mean of Exercise heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 115.080, 116.760, 115.080 and 122.240 respectively. The calculated F- value of post-test is 4.969, which is significant at 0.05 levels. The adjusted mean of Exercise heart rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 115.081, 116.731, 115.119 and 122.230 respectively. The calculated F-value of adjusted mean is 4.894, which is significant at 0.05 levels. As the value of calculated ANCOVA is significant, the LSD post-hoc test was used.

The adjusted mean difference between of Plyometric Training (Group A) and Circuit Training (Group B) is 1.650 which is not greater than critical difference i.e. 4.290. The adjusted mean difference between of Plyometric Training (Group A) and Circuit Breaker Programme (Group C) is 0.038 which is not greater than critical difference i.e. 4.290. The adjusted mean difference between of Circuit Training (Group B) and Circuit Breaker Programme (Group C) is 1.612 which is not greater than critical difference i.e. 4.290. While The adjusted mean difference between of Plyometric Training (Group A) and Control group (Group D) is 7.149, The adjusted mean difference between of Circuit Training (Group B) and Control group (Group D) is 5.499, The adjusted mean difference between of Circuit Breaker Programme (Group C) and Control group (Group D) is 7.111, which were significant than the CD i.e. 4.290.

The mean values of the pre-test Resting respiratory rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 17.360, 19.160, 18.680 and 17.640 respectively. The calculated F value of pre-test is 1.327, which is not significant at 0.05 levels. The post-test mean of Resting respiratory rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 13.440, 13.840, 14.160 and 17.720 respectively. The calculated F- value of post-test is 11.285, which is significant at 0.05 levels. The adjusted mean of Resting respiratory rate of Plyometric Training (Group A), Circuit Training (Group B), And Circuit Breaker Programme (Group C) and Control group (Group D) are 13.502, 13.771, 14.126 and 17.762 respectively. The calculated F-value of adjusted mean is 11.452, which is significant at 0.05 levels.

As the value of calculated ANCOVA is significant, the LSD post-hoc test was used.

The adjusted mean difference between of Plyometric Training (Group A) and Circuit Training (Group B) is 0.269 which is

not greater than critical difference i.e. 1.652. The adjusted mean difference between of Plyometric Training (Group A) and Circuit Breaker Programme (Group C) is 0.624 which is not greater than critical difference i.e. 1.652. The adjusted mean difference between of Circuit Training (Group B) and Circuit Breaker Programme (Group C) is 0.355 which is not greater than critical difference i.e. 1.652. While The adjusted mean difference between of Plyometric Training (Group A) and Control group (Group D) is 4.260, The adjusted mean difference between of Circuit Training (Group B) and Control group (Group D) is 3.991, The adjusted mean difference between of Circuit Breaker Programme (Group C) and Control group (Group D) is 3.636, which were significant than the CD i.e. 1.652.

The overall analysis revealed that all the three experimental programmes of 12 weeks duration are effective in positively improving most of the physiological variables of the subjects. The three training programmes had an almost equal effect on the experimental groups with respect to other variables. In all the variables experimental groups exhibited better performance as compared to the control group.

References

1. Hardayal Singh. Science of Sports Training, New Delhi: DVS Publication; c1991.
2. Matveyev. Fundamentals of Sports Training Mosco; Progress Publishers; c1981.
3. Donald Chu A. Jumping in to Plyometrics, Compaign Illinois: Leisure Press; c1992.
4. Richard Tompkins D. Plyometric through the Grade, Track and Field Quarterly; c1994.
5. Johnson L, Nelson K. Practical Measurements for Evaluation in Physical Education; c1990.
6. Barrow HM, Gee RMC. A Practical Approach to measurement in Physical Education Londo: Henry Kimpton Publishers; c1979.
7. Robert Hockey V. Practical Fitness the Pathway to Healthful Living, Saint Louis: The C.V. Mosby Co, 1973.
8. Macbeth, Jon, The Effects of Interval and Continuous Step Training on Attitudes, Cardiovascular Fitness, and Tennis Skill of Beginning Tennis Students, Completed Research in Health, Physical Education and Recreation; c1973.
9. Dobie Dorothy. Effectiveness of a Specific Conditioning Programme on Selected Tennis skills of Women Intercollegiate Tennis players Completed Research in Health, Physical Education and Recreation; c1968.
10. Laing, Diann. The Effects of class Participation in Beginning Tennis, Bowling, Fencing and Golf on the Heart rates of College Women. Completed Research; c1969.
11. Harris Ronnie. A Comparison of the Effects of Different Methods of Training and Detraining of the Strength and Speed of College Men. Completed Research in Health, Physical Education and Recreation; c1971.