



EFFECT OF HIGH INTENSITY INTERVAL TRAINING AND MODERATE INTENSITY CONTINUOUS TRAINING ON BALANCING ABILITY AMONG COLLEGE WOMEN ATHLETES

V. Lakshmi Prabha* & I. John Parthiban**

* Ph.D Research Scholar (Part Time), Department of Physical Education, H. H. The Rajah's College (Autonomous), (Affiliated to Bharathidasan University), Pudukkottai, Tamil Nadu, India

** Director of Physical Education, H. H. The Rajah's College (Autonomous), (Affiliated to Bharathidasan University), Pudukkottai, Tamil Nadu, India

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Abstract:

The study's objective was to measure how college-aged female athletes' balancing skills responded to both moderate-intensity continuous training and high-intensity interval training. 45 (N=45) female athletes from different Arts and Science Colleges in the Coimbatore District of Tamilnadu, India, were selected at random to serve as subjects for this study. They were split into three groups of fifteen each at random, meaning that there were fifteen total. High-Intensity Interval Training (HIIT) was performed on Group I, Moderate-Intensity Continuous Training (MICT) was performed on Group II, and Group III served as the control. For twelve weeks, the training period was restricted to three days per week. The study's dependent variable, balancing ability, was assessed using the Stoke Stand Test. Each person was evaluated for the selected dependent variable both prior to and immediately following the experimental period. The data gathered from the experimental groups and control group before and after the experimental period were statistically assessed using the dependent 't'-test and analysis of covariance (ANCOVA). When the 'F' ratio for adjusted posttest means was determined to be significant, the paired mean differences were determined using Scheffe's Post hoc test. The degree of confidence was set at 0.05 for every scenario. The High-Intensity Interval Training (HIIT) group outperformed the Moderate-Intensity Continuous Training (MICT) and Control groups in terms of improving the development of balance ability.

Key Words: High-Intensity Interval Training, Moderate-Intensity Continuous Training, Balancing Ability

Introduction:

The word "training" has been used in human speech since the beginning of time. It alludes to the act of preparing to do something. This process always takes a few days, but occasionally it takes months or even years. The term "training" is commonly used in sports. Physical activity is seen by some professionals as the cornerstone of sports training, especially those in the field of sports medicine. Increasing one's level of fitness is the goal of training [1]. It has been demonstrated that high-intensity interval training (HIIT) improves general health, builds lean muscle, and increases endurance. HIIT workouts alternate between short work intervals (70 to 90 percent of one's maximum heart rate) and rest intervals (60 to 65 percent of one's maximum heart rate).

High-intensity interval training (HIIT) is a type of exercise that alternates short bursts of intense activity with less taxing recovery periods. Other names for it include high-intensity intermittent exercise (HIIE), sprint interval training (SIT), or Tabata (named for the professor who studied this type of training in Olympic speed skaters) [2].

Any kind of cardiac exercise can be used to create an HIIT program. Sessions usually last five to thirty minutes, with intervals ranging from five seconds to eight minutes. The high-intensity interval should be performed between 80 and 95 percent of your maximal heart rate. You should keep your heart rate between 40 and 50 percent of your maximum during the recovery period. High-intensity and recovery periods then alternate until the end of the workout [3].

The practice of doing low-to-medium-intensity exercises nonstop for more than 20 minutes is known as continuous training. Usually used to prepare the body for lengthy workouts like triathlons and marathons, this type of training can also be helpful for less serious competitors. It increases general fitness and endurance by allowing the body to use its aerobic energy stores. The primary benefits of consistent training are fat burning, muscle growth, and an increase in maximal aerobic capacity. Almost any exercise can be done continuously. Even though the most common types of exercise are often swimming, cycling, and running, the mode of exercise is much more important. The most important aspect of this kind of training is the amount of time spent performing the task [4].

Constant training helps athletes lose weight and improve their cardiovascular fitness in addition to increasing their endurance. Despite what many people think, losing weight typically doesn't require explosive energy bursts. Typical After a few months, moderately intense workouts that are good enough to be considered continuous training usually result in consistent weight loss. Moderate intensity continuous exercise is defined as 60-65 percent of VO₂max for 30 minutes, 70-75 percent of maximum heart rate for 50 minutes, and 65 percent of peak power output for 40 minutes [5].

Methodology:

In the Coimbatore District of Tamil Nadu, India, 45 (N=45) female athletes who were enrolled in different arts and science colleges participated in the study. At random, they were split up into three groups of fifteen individuals each, or n=15. Group-I received High-Intensity Interval Training (HIIT), Group-II received Moderate-Intensity Continuous Training (MICT), and Group-III received Control. The training program lasted for twelve weeks, three days a week. To assess the dependent variable, such as balancing ability, Schell and Leelarthaepin [6] used the Stoke Stand Test: Each person was evaluated for the selected dependent variable both prior to and immediately following the experimental period.

Analysis of the Data:

Using the data gathered from the experimental groups and control group on selected variables before and after experimentation, analysis of covariance (ANCOVA) was utilized to assess any differences, if any, among the adjusted posttest means on individual criterion variables. In order to find any matched mean differences, they employed the Scheffe's test as a post hoc test whenever they discovered that the f-ratio value for the simple effect was significant. In every instance, the significance level was set at 0.05.

The covariance analysis on balancing ability for the pre, post, and adjusted test results for the Control group, High-Intensity Interval Training (HIIT), and Moderate-Intensity Continuous Training (MICT) is summarized in table 1.

Table 1: Computation of Analysis of Covariance of Pre Test, Post Test and Adjusted Post Test on balancing ability of Experimental Groups and Control Group

Test	HIIT Group	MICT Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Mean Before the Test	34.07	35.2	34.67	Between Groups	9.64	2	4.82	0.06
				Within Groups	3152.67	42	75.06	
Mean After the Test	46.07	59.8	35.4	Between Groups	4488.71	2	2244.36	27.19*
				Within Groups	3466.93	42	82.55	
Adjusted Post-Test Mean	46.45	59.43	35.39	Between Sets	4341.58	2	2170.79	43.13*
				Within Sets	2063.41	41	50.33	

* Significant at 0.05 level of confidence

Table value for df (2, 42) at 0.05 level = 3.22 Table value for df (2, 41) at 0.05 level = 3.23

The balancing ability means prior to test values for the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups are 34.07, 35.20 and 34.67 respectively, as indicated in table 1. At the 0.05 level of confidence on balancing ability, the obtained "F" ratio of 0.06 for the pretest mean is less than the table value of 3.22 for degrees of freedom 2 and 42, which is necessary for significance.

Following the balancing ability test, the means for the groups that participated in High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control are 46.07, 59.80 and 34.40 respectively. At the 0.05 level of confidence on balancing ability, the obtained "F" ratio of 27.19 for the post mean is higher than the table value of 3.22 for degrees of freedom 2 and 42, which is necessary for significance.

For the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups, the adjusted posttest means of balancing ability are 46.45, 59.43 and 35.39 respectively. At the 0.05 level of confidence on balancing ability, the pre-test mean's obtained "F" ratio of 43.13 is less than the table value of 3.22 for degrees of freedom 2 and 42, which is necessary for significance.

The study's findings showed a significant difference in the adjusted post-test means for balancing ability between the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups. Since three groups are compared, Scheffe's test is used to determine the paired mean difference, which is shown in Table 2, whenever the adjusted post-test "F" ratio is determined to be significant.

Table 2: Scheffe's test for the Difference between Paired Means on balancing ability

High-Intensity Interval Training (HIIT) Group	Moderate-Intensity Continuous Training (MICT) Group	Control Group	Mean Difference	Confident Interval Value
46.45	59.43	---	12.98	6.58
46.45	---	35.39	11.07	
---	59.43	35.39	24.04	

* Significant at 0.05 level of confidence.

According to Table 2, the mean difference values between the groups that participated in High-Intensity Interval Training (HIIT) and Moderate-Intensity Continuous Training (MICT), High-Intensity Interval Training (HIIT) and Control, and Moderate-Intensity Continuous Training (MICT) and Control are 12.98, 11.07 and 14.04 respectively. These mean differences are higher than the 0.05 level of confidence's 5.47 confidence interval on balancing ability.

There was a significant difference between the groups that participated in High-Intensity Interval Training (HIIT) and Moderate-Intensity Continuous Training (MICT), High-Intensity Interval Training (HIIT) and Control, and Moderate-Intensity Continuous Training (MICT) and Control, according to the study's findings.

The aforementioned data also show that the Moderate-Intensity Continuous Training (MICT) group outperforms the Control group and the High-Intensity Interval Training (HIIT) group.

Figure 1 shows the pre and post mean values for the balancing ability of the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups.

Figure 2 shows a graphic representation of the Adjusted Post mean values for balancing ability for the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups.

Figure 1: The Pre and Post Test Mean Values of Experimental Groups and Control group on balancing ability (In Seconds)

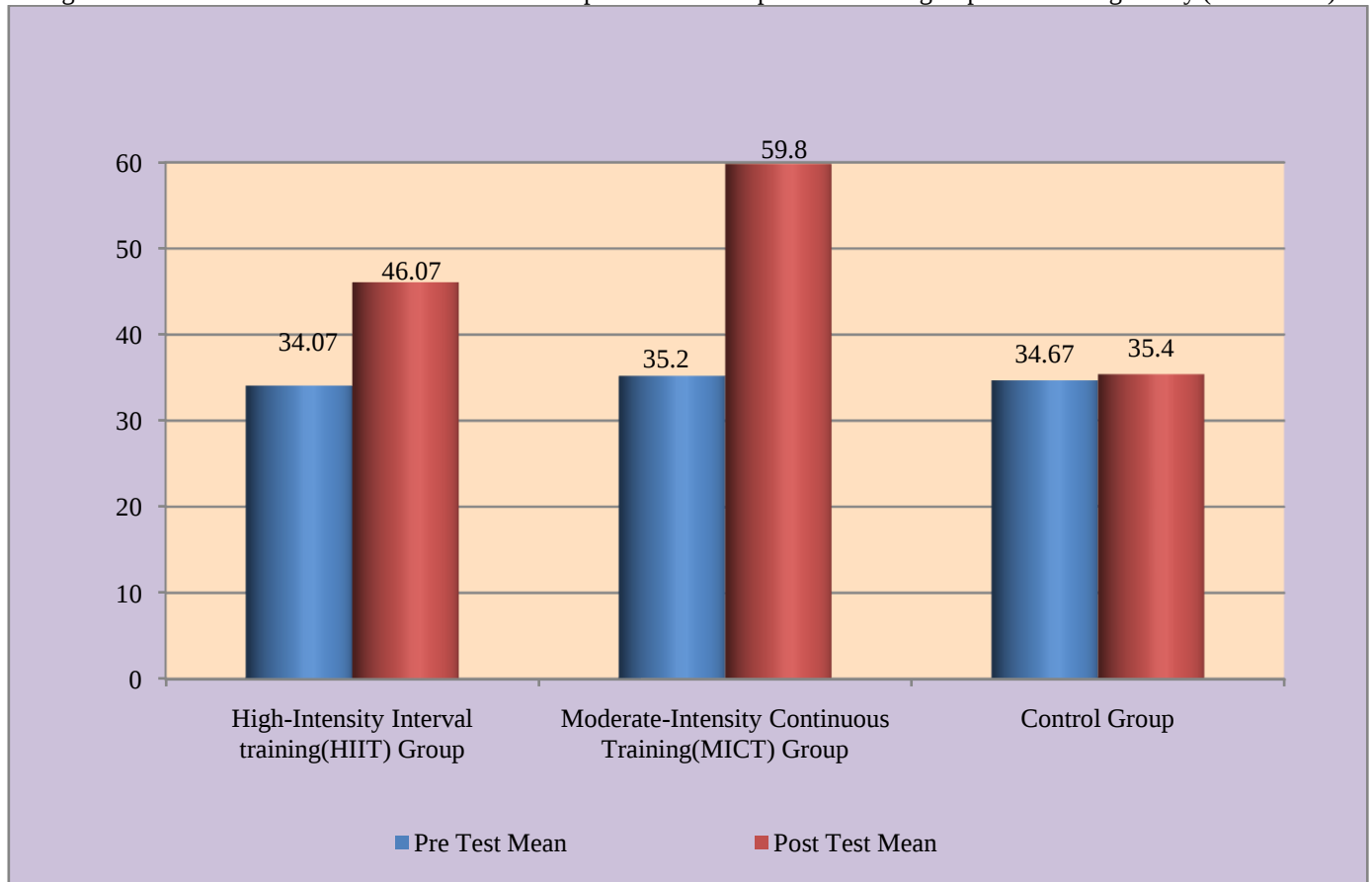
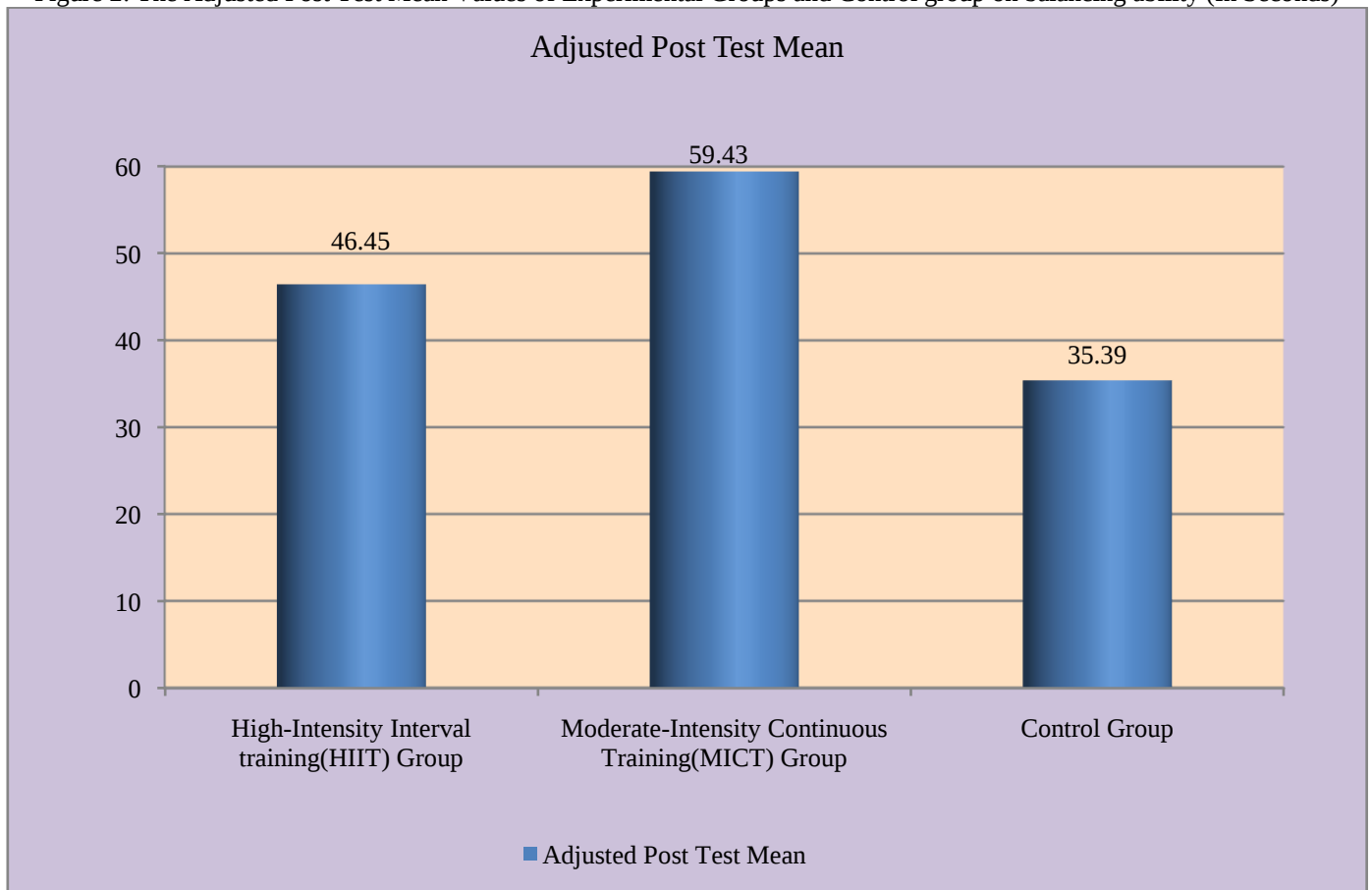


Figure 2: The Adjusted Post Test Mean Values of Experimental Groups and Control group on balancing ability (In Seconds)



Conclusions:

These conclusions were reached after the data was analyzed.

- There were notable variations in the balancing ability of the High-Intensity Interval Training (HIIT), Moderate-Intensity Continuous Training (MICT), and Control groups.

- The experimental groups' ability to balance was noticeably enhanced by High-Intensity Interval Training (HIIT) and Moderate-Intensity Continuous Training (MICT).
- In terms of balancing ability, the Moderate-Intensity Continuous Training (MICT) group outperformed the Control group and the High-Intensity Interval Training (HIIT) group.

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