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# INFLUENCE OF STEP AEROBICS AND RESISTANCE VEST TRAINING ON SELECTED ANTHROPOMETRIC VARIABLES AMONG ATHLETES

**P. Sugumaran* & Dr. K. Chandrasekaran****

* Ph.D Research Scholar, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu

** Chairperson, Professor & Head, Department of Physical Education, School of Education, Madurai Kamaraj University, Madurai, Tamilnadu

**Abstract:**

*The purpose of the study was to find out the influence of step aerobics and resistance vest training on selected anthropometric variables among athletes. To achieve the purpose of the present study, forty five athletes from PMT College, Madurai district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 28 years. The subjects were divided into three equal groups of fifteen athletes each. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen athletes each. The groups were assigned as step aerobic exercises, resistance vest training and control group in an equivalent manner. The group I underwent step aerobic exercises, group II underwent resistance vest training, group III acted as a control group. The two experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. The variable to be used in the present study was collected from all subjects before they have to treat with the respective treatments. It was assumed as pre-test. After completion of treatment they were tested again as it was in the pre-test on all variables used in the present study. This test was assumed as post-test. Analysis of covariance (ANCOVA) was applied and whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study. Thus based on the result, it was concluded that the step aerobics and resistance vest training methods would provide better means and methods for developing the anthropometric variables that are needed for better athlete.*

**Key Words:** Step Aerobics, Resistance Vest Training, Hip Girth & Thigh Girth, Athletes

**Introduction:**

Step aerobics is distinguished from other forms of aerobic exercise by its use of an elevated platform (the step). The height can be tailored to individual taste by inserting risers under the step. Step aerobics classes are offered at many gyms and fitness centers which have a group exercise program. Step aerobics can also be involved in dancing games, such as Dance Revolution or In the Groove. Even so, the dynamics of the idea are more complicated than implied by the definition. Aerobics can be viewed as an intricate system of bodily supply and demand. That is, the body needs energy for any kind of activity and the need is filled by burning off the foods that we eat. Oxygen is the spark the fuel needs to burn regardless aerobics is the word in general use (Keneddy & Newton, 1997). The fact is that Cooper (1969) codified and organized what fitness means to many people. He is generally credited with being one of the main forces of the current fitness craze. The majority medical opinion is that aerobic programs strengthen heart muscle, increase the efficiency of lungs and offer other wonderful benefits

A weighted vest is simply a vest that is either made from a heavy material, or equipped with small pockets that can be filled with tiny sand bags, small steel bars, or other weighted objects. The general purpose of a weighted vest is to add extra weight for body-weight exercises, walking, distance running or speed, agility and quickness drills. When it comes to performance, research has shown that using this type of extra load during sprinting or speed work requires your lower-body muscles to generate more force against the ground, and can lead to improvements in strength, power, and acceleration during running, as well as increased strength and efficiency during speed, power, and agility drills (Rantalainen et al. 2012).

**Methodology:**

The purpose of the study was to find out the influence of step aerobics and resistance vest training on selected anthropometric variables among athletes. To achieve the purpose of the present study, forty five athletes from PMT College, Madurai district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 28 years. The subjects were divided into three equal groups of fifteen athletes each. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen athletes each. The groups were assigned as step aerobic exercises, resistance vest training and control group in an equivalent manner. The group I underwent step aerobic exercises, group II underwent resistance vest training, group III acted as a control group. The two experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. The variable to be used in the present study was collected from all subjects before they have to treat with the respective treatments. It was assumed as pre-test. After completion of treatment they were tested again as it was in the pre-test on all variables used in the present study. This test was assumed as post-test. Analysis of covariance (ANCOVA) was applied and whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

Table 1: Variables and Test Items

| S.No | Variables | Tests |
|---|---|---|
| 1 | Hip Girth | Anthropometric Tape |
| 2 | Calf girth | Anthropometric Tape |

**Results:**

Table 2: Computation of Analysis of Covariance of Mean of Step Aerobics Training, Resistance Vest Training and Control Groups on Hip girth (SAG, RVTG & CG)

| | SAG | RVTG | CG | Source of Variance | Sum of Squares | Df | Means Squares | F-ratio |
|---|---|---|---|---|---|---|---|---|
| **Pre-Test Means** | 85.78 | 85.36 | 85.45 | **BG** | 1.425 | 2 | 0.713 | 0.90 |
| | | | | **WG** | 32.955 | 42 | 0.785 | |
| **Post-Test Means** | 78.73 | 79.10 | 85.48 | **BG** | 431.782 | 2 | 215.891 | 360.71* |
| | | | | **WG** | 25.137 | 42 | 0.599 | |
| **Adjusted Post-Test Means** | 78.75 | 79.08 | 85.47 | **BG** | 428.280 | 2 | 214.140 | 351.29* |
| | | | | **WG** | 24.993 | 41 | 0.610 | |

Table 2 reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on hip girth were 85.78 for experimental group – I, 85.36 for experimental group – II and 85.45 for control group. The obtained 'F'-ratio 0.90 was

lesser than the table 'F'-ratio 3.21. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. The post-test means were 78.73 for experimental group – I, 79.10 for experimental group – II and 85.48 for control group. The obtained 'F'-ratio 360.71 was higher than the table 'F'-ratio 3.21. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means were 78.75 for experimental group – I, 79.08 experimental group – II and 85.47 for control group. The obtained 'F'-ratio 351.29 was higher than the table 'F'-ratio 3.22. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. It was concluded that there was a significant mean difference among step aerobics training group, resistance vest training group and control group, in developing hip girth of the athletes.

Figure 1: Adjusted Post Test Differences of the Step aerobics training, resistance vest training and Control Groups on Hip girth (SAG, RVTG & CG)

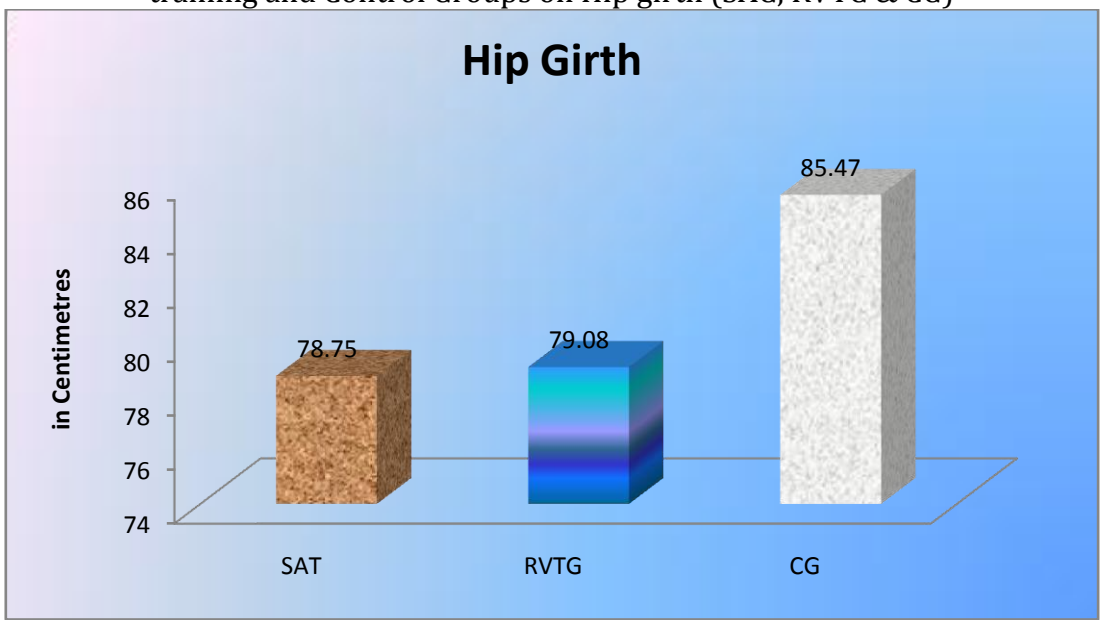


Table 3: The Scheffe's Test for the Differences between the Adjusted Post Test Means on Hip girth

| Adjusted Post-Test Means | | | Mean Difference | Required CI |
|---|---|---|---|---|
| Step Aerobics Training | Resistance Vest Training | Control Group | | |
| 78.75 | 79.08 | --- | 0.33 | 0.72 |
| 78.75 | --- | 85.47 | 6.72* | |
| --- | 79.08 | 85.47 | 6.39* | |

** Significant at 0.05 level of confidence*

Table 3 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.72. It was observed that the step aerobics training group significantly improved hip girth better than the control group. The resistance vest training group significantly improved hip girth better than the control group.

Table 4: Computation of Analysis of Covariance of Mean of Step Aerobics Training, Resistance Vest Training and Control Groups on Calf girth (SAG, RVTG & CG)

| | SAG | RVTG | CG | Source of Variance | Sum of Squares | Df | Means Squares | F-ratio |
|---|---|---|---|---|---|---|---|---|
| **Pre-Test Means** | 28.32 | 28.64 | 28.83 | **BG** | 1.961 | 2 | 0.981 | 1.36 |
| | | | | **WG** | 30.139 | 42 | 0.718 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Post-Test Means** | 36.65 | 36.48 | 28.42 | **BG** | 663.347 | 2 | 331.674 | 511.31* |
| | | | | **WG** | 27.244 | 42 | 0.649 | |
| **Adjusted Post-Test Means** | 36.64 | 36.48 | 28.43 | **BG** | 634.794 | 2 | 317.397 | 478.82* |
| | | | | **WG** | 27.177 | 41 | 0.663 | |

Table 4 reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on calf girth were 28.32 for experimental group – I, 28.64 for experimental group – II and 28.83 for control group. The obtained 'F'-ratio 1.36 was lesser than the table 'F'-ratio 3.21. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. The post-test means were 36.65 for experimental group – I, 36.48 for experimental group – II and 28.42 for control group. The obtained 'F'-ratio 511.31 was higher than the table 'F'-ratio 3.21. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means were 36.64 for experimental group – I, 36.48 experimental group – II and 28.43 for control group. The obtained 'F'-ratio 478.82 was higher than the table 'F'-ratio 3.22. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. It was concluded that there was a significant mean difference among step aerobics training group, resistance vest training group and control group, in developing calf girth of the athletes.

Figure 2: Adjusted Post Test Differences of the Step Aerobics Training, Resistance Vest Training and Control Groups on Calf girth (SAG, RVTG & CG)

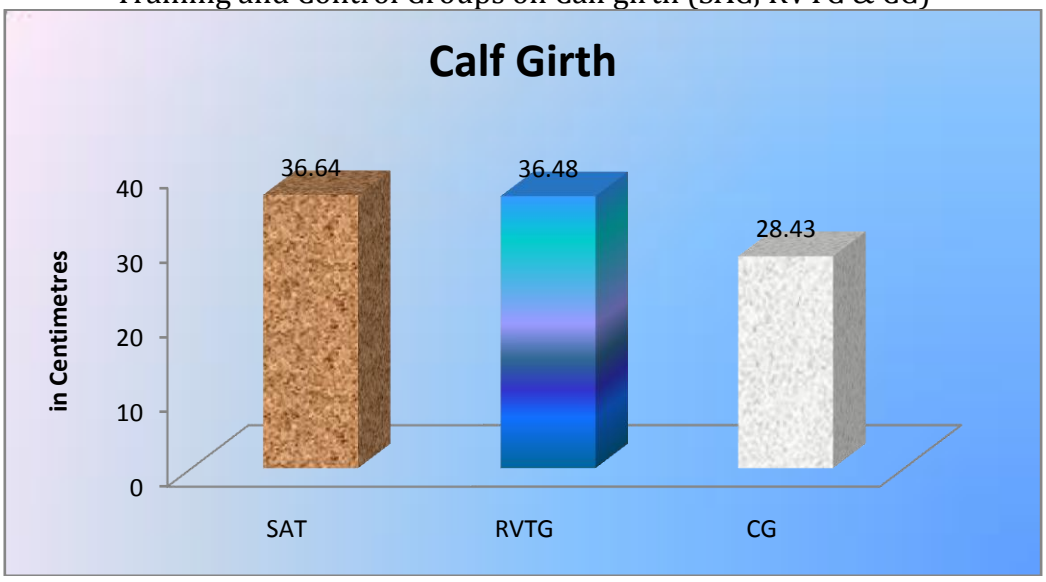


Table 5: The Scheffe's Test for the Differences between the Adjusted Post Test Means on Calf girth

| **Adjusted Post-Test Means** | | | **Mean Difference** | **Required CI** |
|---|---|---|---|---|
| **Step Aerobics Training** | **Resistance Vest Training** | **Control Group** | | |
| 36.64 | 36.48 | --- | 0.16 | 0.75 |
| 36.64 | --- | 28.43 | 8.21 | |
| --- | 36.48 | 28.43 | 8.05 | |

** Significant at 0.05 level of confidence*

Table 5 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.75. It was observed that the step aerobics training group significantly decreased calf girth better

than the control group. The resistance vest training group significantly decreased calf girth better than the control group.

**Conclusions:**

- ✓ Results of the present study explain clearly that in case of anthropometric variables, the observed results significantly favoured the experimental groups namely step aerobics and resistance vest training as compared to control group.
- ✓ Similarly the impact of experimental group was found as significantly higher than control group on hip girth and calf girth.
- ✓ Thus based on the result, it was concluded that the step aerobics and resistance vest training methods would provide better means and methods for developing the anthropometric variables that are needed for better athlete.

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