EFFECT OF CONTINUOUS AND INTERMITTENT AEROBIC TRAINING ON SELECTED PSYCHO-PHYSIOLOGICAL PARAMETERS IN COLLEGE MALE

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AN ABSTRACT

In the hope of controlling body weight more and more people have turned to exercise to increase their energy expenditure. Over the last decade, it became apparent that the amount of exercise, especially exercise intensity, needed to produce health benefits is considerably less than the amount needed to improve physical fitness. The amount of exercise necessary for health benefits is considerably less than the amount needed to become physically fit. It is thought that lifestyle physical activity will fare better than more vigorous structured exercise programs in motivating the majority of the public to become regularly physically active.

Current physical activity guidelines endorse the notion that the recommended amount of daily physical activity can be accumulated in short bouts performed over the course of a day. Although intuitively appealing, the evidence for the efficacy of accumulated exercise is not plentiful. For other health outcomes such as adiposity, blood lipids and psychological well-being, there is insufficient evidence to determine whether accumulated exercise is as effective as the more traditional continuous approach. Physical activity plays a pivotal role in gaining and maintaining physical fitness through improvements in functional capacity, muscular strength and endurance, flexibility and body composition. (Pollock et al 1995)

The scientific evidence demonstrating the beneficial effects of exercise is indisputable, and the benefits of exercise far outweigh the risks in most adults. A program of regular exercise that includes cardio-respiratory, resistance, flexibility, and neuro-motor exercise training beyond activities of daily living to improve and maintain physical fitness and health is essential for most adults.
Additional studies on aerobic (continuous and intermittent) training are needed to more fully elucidate the effects, particularly with respect to varying training characteristics (e.g., exercise intensity, work interval duration, rest interval duration) in diverse populations various psycho-physiological parameters. This study proposed, therefore, an integrative analysis, from physiological to psychological adaptations, to two aerobic training modalities (continuous versus intermittent) yielding similar mechanical work and training duration.

The objective of the study was to find out the effect of 30 minutes continuous aerobic workout and 15 minutes high intensity intermittent aerobic workout on selected psycho-physiological parameters namely- Self Esteem, General well-being, Body weight, Body Mass Index (BMI), Basal Metabolic Rate (BMR), Resting Heart Rate(RHR), Resting Blood Pressure(RBP), Body Composition, VO2 Max, Peak flow rate (PFR), Vital Capacity(VC), Conicity Index, Waist-to-Hip- Ratio(WHR) of sedentary male subjects. Further, the study also compared the effect of two methods of training namely: Continuous aerobic training and Intermittent aerobic training on selected psycho-physiological parameters for a total duration of twelve weeks.

For the purpose of the study, 80 male subjects were initially selected on the basis of the consent to participate in the study. The age group of the subjects ranged from 17 years to 24 years. However, following the administration of initial testing only 66 subjects reported for the training program that commenced on the 14th –september-2011. The subject selected were the students from Maharaja Surajmal Institute, C-4, Janak Puri, New Delhi-110058 (Indraprastha University).

After researching the literature and discussion with experts in the specialized field following psycho-physiological variables were selected for the purpose of the study. These were- Self Esteem, General Well-Being, Body Weight, Body Mass Index (BMI), Basal Metabolic Rate (BMR), Resting Heart Rate (RHR), Resting Blood Pressure (RBP), Body Composition (Body Fat %), VO2 Max, Peak flow rate (PFR), Vital Capacity (VC), Conicity Index, Waist-to-Hip- Ratio(WHR).

The study was formulated as an experimental design of twelve weeks training to find out the effect of two different methods of aerobic training on selected psycho-physiological parameters. Sixty-six (66) male subjects who were selected for the training were randomly assigned to three different groups namely—Continuous Aerobic Training as Experimental group -1, Intermittent Aerobic Training as Experimental group-II & Control group (Not exposed to any training). Continuous Aerobic Training group consisted of 25 subjects, Intermittent Aerobic Training group
consisted of 26 subjects and Control group consisted of 15 subjects. The data was collected prior to the start of training session (Pre-training data), after fourth week, eighth week, and finally after completion (Post- training data) of twelfth week of training on various psycho-physiological variables selected for the purpose of study for all the groups. Continuous Aerobic Training Group and Intermittent Aerobics Training Group were given 3 days training per week. The training programme lasted for twelve weeks. However, it is placed on record that one subject out of a total of 25 subjects in continuous training group did not report for the training after three weeks of training due to medical reason and hence was eliminated from the training programme. The control group was not exposed to any training programme. The training programme of these experimental groups commenced from 14\textsuperscript{th} September, 2011 and concluded on 9\textsuperscript{th} December, 2011. Subjects in continuous aerobic training group performed continuous aerobic training for 30 minutes, while subjects in intermittent aerobic training group performed 15 minutes high intensity bouts with a combination of moderate workout between the bouts.

A detailed descriptive statistics with respect to mean and standard deviation was calculated for interpretation of data. For the purpose of evaluating the effect of two different methods of aerobic training namely: continuous aerobic training and intermittent aerobic training, two way repeated measures ANOVA was employed. In order to find out the change in pre and post effect comparison as a result of Continuous and Intermittent aerobic training group and Control group, one way ANOVA was employed after obtaining transform scores by subtracting Post training scores from Pre training scores for all the variables in the study. The level of significance was set at 0.05 levels for interpreting the results.
CONCLUSIONS

In light of the limitations and as a result of exposing the subjects to two different training methods namely: Continuous and Intermittent Training groups and comparing it with the control group, and also comparing the four different stages of testing time for the total duration of twelve weeks of training program the following conclusions were drawn in relation to its effect on various psycho-physiological parameters:

1. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and Control group, Intermittent and Control groups, on Body weight. Further, there were significant differences obtained on body weight during 8th week testing time (testing time 3) onwards whereas, no significant differences were observed at the 4th week testing time (testing time 2).

2. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Body Mass Index (BMI). Further, there were significant differences obtained on body mass index during 8th week testing time (testing time 3) onwards whereas, no significant differences were observed at the 4th week testing time (testing Time 2).

3. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and Control group, Intermittent and Control groups, in Basal Metabolic Rate (BMR). Further, there were no significant differences obtained at different stages of testing time on Basal metabolic rate (BMR).

4. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Resting Blood Pressure (systolic). However, there were significant differences obtained at different stages of testing time on Resting Blood Pressure (systolic).

5. There were significant differences obtained between Continuous and Intermittent training groups, however there were no significant differences obtained between Continuous and control group, Intermittent and control groups, on Resting Blood Pressure (Diastolic). However, there were significant differences obtained at different stages of testing time on Resting Blood Pressure (diastolic).

6. There were significant differences obtained between Continuous and control group, Intermittent and control groups however, there were no significant differences obtained between Continuous and Intermittent training group, on Maximal Oxygen Consumption
Further, there were significant differences obtained on VO2 Max. at different stages of testing time.

7. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Peak Flow Rate (PFR). However, there were significant differences obtained as a result of Twelve Weeks of Aerobic Training (testing time) on Peak Flow Rate (PFR) at different stages of testing time except between fourth and eighth week testing time.

8. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Vital Capacity (VC). However, there were significant differences obtained on Vital Capacity (VC) at different stages of testing time except between fourth and eighth week testing time.

9. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Body Composition (body fat %). However, there were significant differences obtained on body fat % at different stages of testing time.

10. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, Aerobic Training programme in Waist-Hip Ratio (WHR). However, there were significant differences obtained on Waist-Hip Ratio (WHR) between fourth week and twelfth week of testing time, whereas no significant differences were observed in remaining stages of testing time.

11. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Conicity Index (CI). However, there were significant differences obtained on Conicity index between pre testing and twelfth week of testing, fourth week and eighth week, fourth week and twelfth week, and eighth week and twelfth week of testing time, whereas no significant differences were observed between pre-testing and fourth week testing and pre-testing and eighth week testing time.

12. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and Control group, Intermittent and Control groups, in Resting Heart Rate (RHR). However, there were significant differences obtained at different stages of testing time on Resting Heart rate.
13. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, Intermittent and control groups, in Psychological Well Being (PWB). However, there were significant differences obtained as a result of Twelve Weeks of Aerobic Training at different stages of testing time on Psychological Well Being (PWB).

14. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group, and Intermittent and control groups, in Psychological Distress (PD). However, there were significant differences obtained at different stages of testing time on Psychological Distress (PD) between pre-testing and fourth week testing, pre-testing and twelfth week testing, and eighth and twelfth week testing.

15. There were no significant differences obtained between Continuous and Intermittent training groups, Continuous and control group however, significant differences were obtained between Intermittent and control groups, in Self Esteem (SE). Further, there were significant differences obtained on Self Esteem (SE) between pre and twelfth week, and fourth week and twelfth week whereas, no significant differences were observed during remaining stages of training.

16. There were no significant differences obtained between three groups of training namely: Continuous training, Intermittent training and Control group on Basal Metabolic Rate parameter.

17. There were significant differences obtained between three groups of training namely: Continuous training, Intermittent training and Control group on psycho-physiological parameters of Self Esteem, General well-being, Body weight, Body Mass Index (BMI), Resting Heart Rate (RHR), Resting Blood Pressure (RBP), Body Composition, VO2 Max, Peak flow rate (PFR), Vital Capacity (VC), Conicity Index, Waist-to-Hip- Ratio (WHR) were found to be significant.

18. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Body Weight variable.

19. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Body Mass Index variable.
20. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Resting Heart Rate variable.

21. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Resting Blood Pressure (Systolic) variable.

22. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Resting Blood Pressure (Diastolic) variable.

23. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Oxygen Consumption (VO2 Max) variable.

24. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Peak Flow Rate variable.

25. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Vital Capacity variable.

26. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Body Composition (body fat %) variable.

27. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Waist-Hip-Ratio variable.

28. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous
and intermittent group did not reflect any significant differences with respect to improvement of performance on Conicity Index variable.

29. There were no significant mean differences in Continuous group with Intermittent and Control group and Intermittent with Control group. However, statistically speaking, the improvement in all groups did not reflect any significant differences with respect to improvement of performance on Basal Metabolic Rate variable.

30. There were significant mean differences in Continuous with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Psychological Well Being variable.

31. There were significant mean differences in Continuous with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Psychological Distress variable.

32. There were significant mean differences in Continuous with Control and Intermittent with Control group. However, statistically speaking, the improvement in the Continuous and intermittent group did not reflect any significant differences with respect to improvement of performance on Self Esteem variable.