The Effect of an Aerobic Exercise Program on General Health and Hepatic Enzymes Among Incarcerated Addicts

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Abstract: The purpose of this study was to examine the effectiveness of an aerobic training on general health and hepatic enzymes among incarcerated addicts. 30 addicts were selected to participate in this study and were assigned to experimental and control groups (n=15). General health was measured using GHQ-28 general health questionnaire. The exercise protocol involved 8 weeks of aerobic exercise (three sessions per week and each session lasting 45 minutes). The analysis of data showed that there is no significant difference between the two groups in any of the research variables in the pretest. In order to determine the effect of the independent variable on the dependent variable, t-test for correlated samples was applied and the pretest and the posttest were compared. The results of these comparisons revealed that aerobic exercises – as an eight-week exercise program –had a significant positive relationship only with the psychological characteristics of subjects. Subjects in the experimental group obtained higher scores in the general health test due to aerobic exercises. On the other hand, the results showed that although some changes were observed in the physiological indices in the posttest score of the subjects due to aerobic exercise, these changes did not have significant difference with the pretest. Thus, other studies must be carried out to examine the effects of medical interventions along with sports. Moreover, analyzing other psychological variables in addicts is recommended.

Key words: Aerobic Exercise, General Health, Hepatic Enzymes, Incarcerated Addicts

INTRODUCTION

The younger generation constitutes more than half of the population of Iran and without doubt determines the future of the country. Nowadays, addiction to narcotics is one of the complicated problems of human societies and our society too is severely confronted with this damage to the youths (Asadollahi 2005). Naturally, we have to pay attention to the fact that from prognostic and therapeutic perspectives, young people require specialized interventions due to their specific age-related and psychological characteristics. Lack of dividing treatment programs based on age, focusing treatment on the youth, and lack of specific centers more than ever necessitate the need for specialized therapeutic procedures.

According to the view of World Health Organization (WHO), general health is a condition that indicates physical and psychological health and convenience as well as social welfare and does not merely imply lack of diseases and physical defects. Addiction to narcotics and its prevalence among the younger generation can weaken their affective links with the society and result in improper imitation, sense of shame, disorderly life, potential for perversion and consequently committing crimes; and the personal effects of addiction are lack of self-respect, negative self-concept, indecision, and lack of precision in deed and word which is one of the main results of depression and anxiety. Physical pains, pleasure seeking, curiosity, lack of emotional relations, failure in a romantic relationship, and psychological issues are some of the personal factors for engaging in drug abuse among the youths (Forueddin, 2006).

Studies have shown that physical exercise leads to general health and short-term and long-term psychosomatic improvements. Physical education and sports are considered as positive factors for bringing about changes in the sense of self-respect. Physical activities and aerobic exercises in particular reduce depression, anxiety and stress and increase strength and mental health. Moreover, physical fitness programs are means for achieving general health and creating relation and link between exercise groups (Shahidi, 1991). Norvell and Martin (1997) are of the opinion that aerobic exercises considerably put into focus the body and physical components. De Geus et al. (1993) discussed the significance of affective factors – and on top of that the pleasure seeking component – in relation to aerobic exercise, while Cheung and Spear (1994) emphasize on the importance of psychological factors in tendency toward aerobic exercise in today’s stressful societies.

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Considering the prevalence of addiction among the youth and the rarity of studies regarding sports and treatment of addiction, the present research has been carried out to study the effect of aerobic exercises on the general health of addicts. In order to reveal the effects of sports and physical activity on the physical characteristics of addicts, hepatic enzymes including aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphates (ALP) were measured and analyzed as physiological factors.

**Research Methodology:**
The present research is semi-empirical and 30 incarcerated addicts (Gorgan Central Prison) with the age range of 20-30 comprised the subjects of the research and were divided into an experimental group and a control group.

**Material:**
General health was measured using GHQ-28 general health questionnaire (Goldberg and Hillier, 1979). The general health questionnaire has 28 questions assessing four subscales of somatization, anxiety, social dysfunction and depression. The total reliability coefficient of the general health questionnaire was 0.96 and for the subscales of depression, anxiety, somatization and social dysfunction, the coefficients were 0.94, 0.90, 0.89 and 0.78 respectively (Bahmani and Asgari, 2006). Each question has a score from 0 to 4 and thus each subscale receives a score from 0 to 21, with a higher score indicating the critical condition of the individual for that subscale. Blood samples were collected before performing the pretest and after the posttest by a laboratory technician and were sent to laboratory for an analysis of hepatic enzyme variables.

**Method:**
The exercise protocol involved 8 weeks of aerobic exercise (three sessions per week and each session lasting 45 minutes) and in each session, a professional trainer conducted aerobic movements among the subjects. Aerobic movements included rhythms that were not that much complicated so that all the subjects were able to perform them.

**Statistical Tests:**
Descriptive statistics including mean and standard deviation were used to describe research variables and inferential tests such as independent and dependent t-tests were applied to compare the means of the two groups. All the comparisons were made at the significance level of $\alpha = 0.05$.

**Findings:**
The results of t-test for independent samples showed that there is no significant difference between the two groups in any of the research variables in the pretest ($t=0.12, t=0.91, t=0.53, t=0.84, t=0.15, t=0.20, t=0.20$ and $t=0.20$ respectively belong to general health, somatization, anxiety, social dysfunction, depression, aspartate aminotransferase, alanine aminotransferase and alkaline phosphates and $p<0.05$; see Table 1). Thus, the two groups were in a similar condition in the beginning of the research. In order to determine the effect of the independent variable on the dependent variable, t-test for correlated samples was applied and the pretest and the posttest were compared. The results of these comparisons revealed that aerobic exercises – as an eight-week exercise program – had a significant positive relationship only with the psychological characteristics of subjects. Subjects in the experimental group obtained higher scores in the general health test due to aerobic exercises. On the other hand, the results showed that although some changes were observed in the physiological indices in the posttest score of the subjects due to aerobic exercise, these changes did not have significant difference with the pretest ($t=10.25, t=6.14, t=8.81, t=10.46, t=7.25, t=0.61, t=1.01$ and $t=0.94$ respectively belong to general health, somatization, anxiety, social dysfunction, depression, aspartate aminotransferase, alanine aminotransferase and alkaline phosphates and $p<0.05$; see Table 1 and Graph 1). This result signifies the absence of a significant effect of exercises on physiological indices. Moreover, no significant difference was observed between the pretest and the posttest of subjects in the control group who performed no exercises ($t=0.51, t=1.60, t=0.94, t=0.55, t=1.10, t=1.28, t=0.72$ and $t=0.81$ respectively belong to general health, somatization, anxiety, social dysfunction, depression, aspartate aminotransferase, alanine aminotransferase and alkaline phosphates and $p<0.05$; see Table 1).

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<th>Table 1: Mean and standard deviation of the pretest and the posttest results for variables in the research groups</th>
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Discussion and Conclusion:

The purpose of this research was to study the effect of an aerobic exercise program on general health (which per se includes four subscales, i.e., somatization, anxiety, social dysfunction and depression) and the physiological variables – i.e., hepatic enzymes – in young incarcerated addicts. The results of the present research show that the group that performed aerobic exercises experienced improvement in all the psychological disorders present in the general health questionnaire.

In a statement, the International Society of Sport Psychology (ISSP) announced that 30 to 60 minutes of exercise in at least three sessions per week brings about numerous psychological benefits (Jafari, 2001). On the other hand, many research studies have illustrated the effectiveness of sports on psychological characteristics such as depression, anxiety, self-confidence etc. (Atlantis, 2004). The results of the present research is consistent with the previous studies which indicated the positive effect of sports on psychological aspects such as anxiety and depression among different subjects as well as those dealing with incarcerated addicts.

Salmon (2000) emphasized on the positive role of sports and aerobic exercises in general health. The present research too has added information to previous researches whose sample included incarcerated addicts who have a special condition in comparison with normal people. Incarcerated addicts, due to the specific conditions of prison and their addiction, experience critical conditions. Beside specific physiological issues that has occurred to them due to addiction and being imprisoned, they experience severe psychological issues. Therefore, treating physiological and psychological difficulties of these people requires special interventions. In the present research, it is shown that the rather critical psychological condition of incarcerated addicts in the beginning of research was to some extent improved by physical exercise interventions and thus we can consider sport as a medical factor for dealing with psychological issues of addicts.

On the other hand, the results of the research reveal that an eight-week period of aerobic exercise has made no significant changes in the physiological variables such as hepatic enzymes. Considering the obtained results, we may say that the physiological variables that have changed due to addiction require more time and perhaps other medical interventions to be able to achieve relative improvement. Thus, other studies must be carried out to examine the effects of medical interventions along with sports. Moreover, analyzing other psychological variables in addicts is recommended.

REFERENCES


