



## THE EFFECT OF AEROBIC EXERCISE ON QUALITY OF LIFE IN MALE PATIENTS WITH SCHIZOPHRENIA

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### ABSTRACT

**Objective:** Having a chronic mental disorders such as schizophrenia prone the patient to stress, dependence, the problems in life skills, employment and social relationships. People with schizophrenia compared to normal individuals are lower quality of life. Nowadays, the exercise is used as a way to prevent disease, improve health and well-being. Unfortunately, in spite of limited studies on the effects of exercise on patients with schizophrenia, sport variables underlying these effects has not been quite clear and evaluated. The aim of the study was to investigate the effect of regular aerobic exercise on quality of life of male patients with chronic schizophrenia hospitalized.

**Methods:** In this randomized controlled trial, 68 patients who met the inclusion criteria were randomly allocated to intervention and control groups. The intervention group received aerobic exercise 24 sessions for 8 weeks total for 11 hours, while the control group was given use of fresh air simultaneously. Schizophrenic quality of life scale (SQLS) was completed before and after intervention in both groups. Quality of life was scored in both groups. The data were analyzed in SPSS13 using t-test, and chi-squared test.

**Results:** There was significant difference in dimensions of Psychosocial, motivation and energy and symptoms and side effects. Also there was significant difference in quality life mean scores before and after the intervention in control and intervention groups among ( $p \leq 0.05$ ). The application of aerobic exercise significantly increases the quality of life level in the participants ( $p < 0.05$ ).

**Conclusions:** Using regular aerobic exercise in patients with schizophrenia could be a strong complementary therapy in improving quality of life.

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### Introduction

Nowadays, mental disorders is as one of the greatest problems of human societies. Among them depression, bipolar disorder, schizophrenia and psychosis and dementia disorders are the growing world's largest global burden of the disorders.(1) Among these disorders, schizophrenia because of its costs and consequences is one of the challenges communities. On the other hand, this disorder is the most severe and most devastating impact on the individual, families and social life.(2) In addition to signs of the disease, pay attention to the quality of life, social rehabilitation and general functioning of people with schizophrenia as variables to show the effectiveness of pharmacological and non-pharmacological interventions have been applied.(3)

According to the World Health Organization, quality of life is people's perception of their position with regard to culture, system of values, goals, expectations, standards and concerns of the individual.(4) People with schizophrenia as a result of factors such as the side effects antipsychotic drugs, poor diet, smoking and poor lifestyle, cognitive problems are inappropriate physical health, low life expectancy and quality of life.(5,6) One of the main treatments in the disease is drug therapy but the use of antipsychotic drugs in patients with schizophrenia causes side effects such as weight gain and intolerance to medication, sleep disorders, weight gain, dry mouth, extrapyramidal side effects, and neuroleptic malignant syndrome.(7) In spite of new antipsychotic drugs, the patients are not appropriate social, family function and quality of life.<sup>8</sup> Male patients with schizophrenia compared to female patients are lower age of onset, more negative symptoms and low social functioning and quality of life.(9) Evidences indicates that a combination of treatments such as psychotherapy, psychopharmacology and psychosocial interventions, family therapy and occupational therapy is the best treatment strategy for the patients.(10) The aim of these strategies is enabling patients to obtain social and job skills and to create an independent life.(11) One of the non-pharmacological strategies is exercise that it is used as a method for prevention of diseases, improve the health and well-being. (12) Unfortunately, despite the limited studies have been done about the positive effects of exercise on patients with schizophrenia but Sport variables that make the positive effects has not been quite clear and evaluated.(13) Nurses play an active role in the prevention of diseases, treatment and rehabilitation of mental patients and they have an important role in encouraging the mentally ill and motivation to do physical activities and exercises, and the role is an important part of nursing care.(14) Having a chronic mental disorders such as schizophrenia prone the patient to stress, dependence, and the problems in life skills, employment and social relationships. On the other hand, encourage the patients to return to society facilities promotion of social functioning and quality of life and reduce the costs of relapse and readmission.(15) The aim of this study was to investigate of regular aerobic exercise on quality of life in male patients with schizophrenia in 2016.

### Materials and methods

The present double-blind Randomized Controlled clinical trial was conducted to determine the effect of regular aerobic exercise on quality of life in male patients with schizophrenia hospitalized in psychiatric wards. Participants included 68 patients selected by convenience sampling method.

The inclusion criteria were: The definitive diagnosis of chronic schizophrenia by psychiatrist; having a physical health to take part in regular aerobic exercise with physician approval; having no ulceration or scarring in the foot; Willingness and ability to participate in the study.

Sampling of the study consists of 68 patients (34 interventions, 34 controls), who had hospitalized upon the schizophrenia diagnoses by psychiatry. The patients (subjects and controls) had similar characteristics in age, gender, disorder symptoms, and accepted to participate in the study. Individuals, which matched all necessary criteria, were divided by means of randomization method into two groups as intervention group and control group.

Before the start of sampling, objectives and benefits of the confidentiality of information and the right to withdraw from the study explained to the patients and informed consent form was signed by them. Data were collected at before and after the intervention. researcher was performed the intervention (aerobic exercise) during 24 sessions in 8 weeks for about 11 hours in an outdoor , while the control group used the fresh air simultaneously. Aerobic exercise program was three times a week for 8 weeks, and each time one session for 5min warm up with different types of running, stretching . Then, running at 65% heart rate reserve for 12 minutes was conducted in the first week that it was raised to 26mins and 80% heart rate reserve in 8th week ( 2mins were added for exercise time every week, and 5% for the exercise severity every two weeks).

After the intervention, Schizophrenic quality of life scale was completed for samples of both control and test groups. Schizophrenic quality of life scale is a tool for measuring quality of life in people with schizophrenia. The scale comprises 30 items scored from 0 to 4 based on a 5-point scale of "never=0", "rarely=1", "sometimes=2", "often=3" and "always=4", counting for a maximum score of 120 and a minimum of 0, with higher scores suggesting lower levels of quality of life. It divided into 3 categories of psychosocial (15 items), Motivation and energy (7 items) and symptoms and side effects (8 items).(16) This scale has been standardized for use in Iran with the high reliability and validity.(17) Written consents were obtained from eligible participants, who were then randomly divided into an intervention group and a control group. The blocking technique was used to randomize the assignment of participants to groups. With the confidence interval of 95% and test power of 90%, total number of 68 patients (34 for each group) were included in this study. Data were collected using a demographic information form (age, marital status, degree of education, BMI), the schizophrenic quality of life scale (SQLS) to assess quality of life. The data were analyzed in SPSS13 by t-test and chi-squared test.

### Ethical issues

Following ethical approval from Ethics Committee of Tabriz University of Medical Sciences receiving the code IRCT2016020823525N3 from Clinical Trial Registry, this study carried out within in 5016.

### Results:

This study was conducted on participants with schizophrenia (34 participants in the intervention group and 34 in the control group). The average age was  $37.29 \pm 7.68$  years in the intervention and  $38.35 \pm 6.64$  years in the control group. Most participants

were married and had Primary education in both groups. The intervention and control groups did not show significant differences in their demographic features (Table 1). The T test showed that there was no significant difference in quality of life between the control group and the intervention group ( $P \leq 0.37$ ). On the other hand, the result indicated that there was significant difference in terms of motivation dimension of quality life in both the groups after the intervention. Non-significant improvement in mental health domain.

### Discussion

The results of the study showed that there was no significant difference in quality of life between the control group and the intervention group. In line with these results, Brenes et al. showed that aerobic exercise in older adults with minor depression was no significant effect on mental health domain (18) on the other hand, Kalateh-jari et al. demonstrated that aerobic exercise had a positive effect on quality of life patients with schizophrenia (19) Gorczynski et al. showed that aerobic exercise improves physical health in patients with schizophrenia that the results of the study with considering the positive effects of physical health on quality of life was in line with current study (20) Falkai et al. demonstrated that exercise promotes the development of mental health, reduces anxiety, depression and negative mood and improves self-esteem and cognitive function in people with schizophrenia (21) Exercise can possibly enhance mental and physical health, cognitive function and brain with increasing the volume of the hippocampus (22-24)

It is possible that the differences arising from the type and duration of exercises, gender of participants and the nature of the disease, the sample size and the time interval of measuring the variable after the intervention.

Also the study indicated that there was significant difference in terms of motivation dimension of quality life in both the groups after the intervention. This means that regular aerobic exercise can possibly enhance motivation of participants.

Among psychological factors, personal motivation is a fundamental role in attending lifestyle programs and in modifying unhealthy habits. On the other hand, recent researches have changed the view of motivation, from a static trait to a psychological dynamic state that can fluctuate over time in relation to many interpersonal and intrapersonal factors. Motivation is thus considered an interpersonal accessible factor that can be modified during a change process (25)

On the other hand, studies showed that exercise regulates neurotransmitters such as dopamine, serotonin, glutamate, norepinephrine and acetylcholine that are involved in the biological etiology of schizophrenia (26)

One of limitations of the present study was that it was conducted only on male patients and its results are not generalizable to female patients. Future studies can focus on female patients. Also the psychosocial status of patients during questionnaire completion and exercise could be effect on quality of their responsiveness and performance.

### Conclusions

According to the findings of this study, use of aerobic exercise as an easy, inexpensive, and safe method could be a strong complementary therapy in improving quality of life in people with schizophrenia.

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**Table 1:** Demographic characteristics of control and intervention group

Variable		Control group(n=34) Number (percent)	Intervention group(n=34) Number (percent)	Sig
Marital status	Single	21 (61.8)	25(73.5)	P=0.42
	Married	8(23.5)	7(20.6)	
	Divorced	5(14.7)	2(5.9)	
Education level	illiterate	7(20.6)	2(5.9)	P=0.35
	Primary school	10(29.4)	13(38.2)	
	Under diploma	7(20.6)	6(17.6)	
	diploma	10(29.4)	12(35.3)	
	university	0(0)	1(2.9)	
Age(years) Mean± SD	38.35±6.64	37.26 ±7.68	P=0.54	

**Table 2:** Comparing the mean of quality of life in intervention and control groups

Variable		Scores of Per - Post test		MD	(95%CI)	P
		Mean± SD	Mean± SD			
Quality of life	psychosocial	-14.67±4.47	39.50±4.18	-1.61	(-3/93-069)	0.16
	Motivation and energy	-1.47±4.32	11.41±2.81	4.41	(2/52-6.29)	0.00
	symptoms and side effects	-7.55±4.35	16.52±3.61	-0.61	(12.38-(-46.27))	0.54
	Total	-23.70±8.48	67.44±18.13	2.17	(-2.63-1.40)	0.27

MD= The average difference after the intervention than before the intervention

P= 0.05

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