

## EFFECTIVENESS OF PSYCHOLOGICAL TRAINING WITH GRADUAL MUSCLE RELAXATION TECHNIQUE ON FATIGUE IN MULTIPLE SCLEROSIS PATIENTS

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### ABSTRACT

**Introduction:** Fatigue is one of the most important symptoms of multiple sclerosis where in majority of patients that often suffer from it are young individuals in active life stage. This study was carried out with an aim to assess the effectiveness of psychological Training with gradual muscle relaxation technique on fatigue in multiple sclerosis patients.

**Material and methods:** In this triple blind placebo-controlled clinical trial study, 60 multiple sclerosis patients that were Multiple Sclerosis Association Members of Yazd Province via an easy sampling method and considering the input and output criteria entered the study. The samples were randomly divided into two groups of test (30 persons) and control (30 persons) respectively, and test group received 12 sessions of psychological education with gradual muscle relaxation technique, two sessions a week, whereas for control group nil intervention were adopted. The information was collected using a demographic questionnaire and the Fatigue Severity Scale (FSS). prior to intervention, immediately and three months after an intervention. For analysis of information the statistical tests; Pearson correlation, Repeated measures and t-student was used.

**Results:** Considering that the patients were randomly divided into two groups of test and control, prior to education did not exhibit a statistical difference in the demographic characteristics, disease duration, body mass index, fatigue scale of patients. ( $P > 0.05$ ). The fatigue scale in the test and control groups prior to the intervention were  $41.9 \pm 6.666$  and  $42.833 \pm 8.363$ , respectively, immediately after the intervention were  $41 \pm 6.103$  and  $33.9 \pm 7.073$ , respectively, and three months after an intervention were  $41.1 \pm 6.567$  and  $35.567 \pm 7.61$ , respectively and this difference from statistical viewpoint was significant ( $P < 0.001$ ). Likewise, the Repeated measures statistical test showed a significant reduction in the Fatigue Severity Scale in the education group in triple measurements ( $P < 0.00001$ ).

**Conclusion:** The psychological Training with gradual muscle relaxation technique in the multiple sclerosis patients can lead to reduction of fatigue scale. Therefore, this method can be safely suggested as an effective and affordable in terms of cost and time for multiple sclerosis patients.

**Keywords:** psychological Training, Gradual muscle relaxation, Fatigue, Multiple sclerosis.

Received January 30, 2016; Accepted June 02, 2016

### Introduction

Multiple Sclerosis (MS) is a chronic disease that occurs due to demyelination of the central nervous system. This disease is an autoimmune disorder<sup>(1)</sup> The prevalence of this disease in the countries of Southwest Asia is approximately 51.52 in 100,000 persons<sup>(2)</sup>.

The Director of Iran Neurology Specialists Association reported that Iran is accounted among the countries that have a high prevalence of this disease and its range is 5.3 to 74.28 in every 100,000 people wherein the danger of infection is 1.8 to 3.6 times higher in women<sup>(3)</sup>. MS with high prevalence generally occurs at 20 to 40 years of age, this is in the state whereby the symptoms of this disease could outbreak during childhood and midlife<sup>(4)</sup>.

Recently, the cognitive epidemic study reported the prevalence of severe stress, severe anxiety and severe depression as 46.4%, 19.2% and 29.2% respectively in these patients<sup>(5)</sup>.

The results of some of the studies state that stress, anxiety and depression symptoms in the multiple sclerosis patients have a close association with disease relapse and life quality reduction<sup>(6-8)</sup>. In an assessment, Schreurs et al. reported that the physical fatigue has a correlation with the physical inability and mental fatigue with depression in these patients, in a manner that the physical fatigue is a predictor of physical inability in the next one year<sup>(9)</sup>. Over 90% of multiple sclerosis patients experience fatigue and 50 - 60% of them, introduce this issue as a bad sign that intensely affects activities, daily functions and life quality of them<sup>(10)</sup>.

Therefore, this fatigue has a significant effect on the daily life of these patients and obstructs their physical activities and has a role in the accountability and social function causes an intervention especially via impact on the individual's occupation. This situation not only could cause dissatisfaction in the life quality and occupation of patients, but also is an important vector in the disorder in their natural role in the individual and social life. Depression could be a reason or fatigue disability<sup>(11)</sup>.

While, depression and anxiety could increase the fatigue and thus it is required to be diagnosed on time and treated with psychological and drug therapy<sup>(12)</sup>. The behavioral interferences viz. exercise, stress control, patient education, psychotherapy and nervous rehabilitation are in the increasing verge of recognition in the clinical function and research and the highest research-scientific evaluations of these methods are focused on the psychosocial actions viz. life quality, fatigue or depression. In this regard, it could be clearly stated that the psycho-nervous symptoms in multiple sclerosis could be a section of living processes such as inflammation, nervous- adenoidal disorder, and or cerebral damage<sup>(13)</sup>.

The interferences of psychological education signify a paradigm change that is a comprehensive approach and proceeds based on the qualification, stress on health, participation, confront and empowerment<sup>(14)</sup>. Thus, the psychological intervention methods in this regard have a specific role. The aim of the present research was to determine the effectiveness of psychological Training associated with gradual muscle relaxation technique on fatigue in the multiple sclerosis patients.

## Material and methods

In this triple blind placebo-controlled clinical trial study, 60 multiple sclerosis patients that were Multiple Sclerosis Association Members of Yazd Province via an easy sampling method and considering the input and output criteria entered the study. The samples were randomly divided into two groups of test (30 persons) and control (30 persons) respectively, and test group received 12 sessions of psychological Training with gradual muscle relaxation technique, two sessions a week, whereas for control group nil intervention were adopted no mental training, no muscle relaxation, no other things?. The information was collected using a demographic questionnaire (PThe questionnaires were filled before intervention, immediately after intervention) and the Fatigue Severity Scale (FSS). Prior intervention, immediately. The questionnaires were filled before intervention, immediately after intervention.

For analysis of information SPSS version 14 soft ware were used. chi-squar, t, Repeated Measure Pearson correlation coefficient and one sample Kolmogorov Simirnov was used in all tests following a significant level of  $p < 0.05$ .

## Results

In this research, 60 individuals in two groups; test (30 persons) and control (30 persons) had participated. The test and control groups were constituted of 80% (24 persons) women, 76.7% (23 persons) women, 23.3% (7 persons) singles, 26.7% (8 persons) singles, 60% (18 persons) housewives, 50% (15 persons) housewives, 60% (18 persons) had high school qualifications, 40% (12 persons) had university qualifications, 53.3% (16 persons) had high school qualifications and 46.7% (14 persons) had university qualifications. In the test group 20% (6 persons) had good economical status, 66.7% (20 persons) had medium economical status, 13.3% (4 persons) had weak economical status and in the control group, 13.3% (4 persons) had good economical status, 73.3% (22 persons) had medium economical status and 13.3% (4 persons) had weak economical status and from the viewpoint of multiple sclerosis disease history in the family in the test group 13.3% (1 person) and in the control group 3.3% (1 person) had the family history and in the research case units the age average and standard deviation was  $32.2 \pm 6.443$  in the manner that in the

test group was  $32.6 \pm 6.355$  and in the control group was  $31.8 \pm 6.687$ . From the viewpoint of age suffering from the disease in the test group was  $27.567 \pm 7.286$  and in the control group was  $26.1 \pm 6.177$  and the disease duration in the test group was  $6.233 \pm 4.79$  and in the control group was  $5.767 \pm 4.329$  and mass body index in the test group was  $23.599 \pm 3.685$  and in the control group was  $24.272 \pm 4.561$ .

The statistical data analysis in the case of the demographic information and related to the disease with the Chi square statistical (please mention it in previous section) test in the qualitative variables and statistical test t-student in the quantitative variables showed that in the two groups of test and control prior to intervention had nil kind of significant difference ( $P > 0.05$ ). Using the statistical test t-student prior to intervention between the two groups of test and control a significant statistical difference was not observed in the average of fatigue scale ( $P = 0.364$ ), but immediately after an intervention and three months after an intervention this difference was significant between the two groups ( $P = 0.002$ ,  $P < 0.00001$ ) and fatigue scale in the test group had a higher reduction in relation to the control group. The statistical test Repeated measures showed that a significant difference existed between the fatigue scale average in three different periods in the test group ( $P < 0.00001$ ). But in the control group it was not significant (Table 1).

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Group/ Assessment period	Intervention Mean $\pm$ SD	Control Mean $\pm$ SD	Test result t-student
Prior to intervention	42.833 $\pm$ 8.362	41.9 $\pm$ 6.666	P=0.634
Immediately after an intervention	33.9 $\pm$ 7.073	41 $\pm$ 6.103	P<0.00001
Three months after an intervention	35.566 $\pm$ 7.609	41.1 $\pm$ 5.567	P=0.002
Test result Repeated measures	P<0.00001	P=0.071	-----

**Table I:** Comparison of fatigue scale average in both test and control groups in three different periods.

## Discussion and conclusion

In the present research, the statistical comparisons showed that both groups; test and control from the partial viewpoint of important and effec-

tive variables prior to educations accomplishment did not have a significant difference and were similar, this signifies the validity of randomized method of assessed individuals in both groups and was included in the present study results. Moreover, the results of this study showed that the psychological education with gradual muscle relaxation technique led to a reduction of the fatigue scale rate in the test group in relation to the control group wherein this result could signify the effect of psychological education with gradual muscle relaxation technique on the reduction of the fatigue scale. A study was carried out via Ghaffari and associates to investigate the effect of calming technique on the inability symptoms of multiple sclerosis patients, they as well reported that progressive muscle calming technique in these patients led to fatigue reduction<sup>(15)</sup>.

The results of this study are in concurrence with the results of the present study. Even the results of a study carried out by Mills and associates investigating the Tai Chi technique on inability symptoms of multiple sclerosis patients showed that the Tai Chi technique led to calming, solace feeling and reduced fatigue in these patients<sup>(16)</sup>. The repeated measure statistical test in our study demonstrated that the fatigue scale between test and control groups in triple measurement during three months had a significant difference wherein this meaningful difference itself was an indicator of the effect of psychological education with the gradual muscle relaxation technique to reduce fatigue scale of test group patients in the different periods after an intervention. For me it is still not clear if the patients becomes more able to manage fatigue or they took benefits form the intervention. It is crucial for me to understand how this FSS scale work, which are the score determinants!

Likewise, in the study of Oken et al., it was reported that therapeutic methods such as yoga led to a significant difference in the average of fatigue scale between the test and control groups in triple measurements and reduced the fatigue scale in test group in comparison to control group<sup>(17)</sup>. Moreover, in a research by Pilutti et al. in 2013, it was reported that the behavioral intervention had a positive effect on the severe fatigue ( $P = 0.001$ )<sup>(18)</sup>.

In general, reduction of fatigue scale in test group, suffering from multiple sclerosis can be expressed in a manner that during educational sessions the patients obtained a higher awareness in relation to their opinions and feelings and helped

patients to develop more positive beliefs in themselves and have a fundamental outlook in their opinions and feelings and find their strong points and have a logical, real-view reasoning of the occurrences and have a positive attention towards life and family and find solace with gradual muscle relaxation techniques and this in turn caused reduction of fatigue scale. Considering the above matters, besides easy and good execution abilities of psychological education associated with gradual muscle relaxation technique, it can be suggested as a therapeutic method in multiple sclerosis patients, which could reduce the fatigue scale which ultimately could have positive results on life quality of these patients.

In general the discussion is overpromising, so be less promising and highlight much more some study limitation, in your view!

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*Reading your article psychological education in my personal view does not translate properly what do you wanna mean. Maybe it wil souds better Mental Training ? or something already adopted and reported in medline! Please consider to change in all manuscript this crucial term*

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