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# Effectiveness of Progressive Muscle Relaxation(Pmr) In Alleviating Psychophysical Disorders-A Systematic Review(1982-2012)

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**ABSTRACT**

*Contemporary medicine requires holistic approach to the patient. The more and more attention is paid to involve patients in the process of alleviating symptoms, including psychological aspects of the disease. Conventional methods are supplemented with additional activities as becoming popular relaxation, both physical and mental, which may be identified with progressive muscle relaxation according to Jacobson. The objective of this paper is to evaluate the effectiveness of progressive muscle relaxation as a supplementary method in alleviating psychophysical disorders. This paper covers 16 source materials on the application of this method in various fields of medicine.*

*PMR is one of the alternative and holistic methods, supporting the mitigation of various psychophysical disorders. It is used both in the field of cardiology, neurology, oncology and respiratory diseases, psychiatry and pain management. The most of cited studies under PMR proved to be an effective method, complementary in a holistic approach to the patient.*

**KEYWORDS : progressive muscle relaxation, relaxation according to Jacobson, psycho-physical discomfort, psychosomatic ailments.**

## INTRODUCTION

### Material and methods.

This is a review paper which synthesizes the research papers describing different areas in which progressive muscle relaxation has been used. To select useful source materials the database, Pubmed, was used.

This method which is becoming very popular is relaxation, both physical and mental. The author of the method was Edmund Jacobson (1888-1983), an American physician, a pioneer of biofeedback, who conducted research on the chemical and electrical nerve conduction in the muscles, and showed the relationship between longitudinal muscle tension, and emotional and mental disorders. It was proven that physical relaxation largely affects mental relaxation. The essence of the method is alternating controlled tension and relaxation of different muscle groups. As a result of its regular use, a new habit, i.e. the ability to relax automatically muscles, is acquired(Payne et al., 2005).

This method is intended to strengthen the capacity of the mind to influence the functioning of the body. Each disease is an extremely stressful phenomenon, therefore all methods reducing discomfort are gaining in popularity.

### Results.

Among different areas of medicine, cardiac diseases are those which are believed to have an important psychological factor. Even the term psycho-cardiology is being used (Sobczak et al., 2011). Due to this phenomenon it is possible to supplement the treatment with psychological activities which have an obvious impact on physical functioning of patients.

Cottier, Shapiro and Julius (1984) suggest introducing progressive muscle relaxation in the treatment of young people with moderate hypertension who declare a high level of anxiety. In their research, under the influence of the applied relaxation the heart rate and blood pressure decreased, whereas in the control group, not involved in muscle relaxation training, the same analyzed factors increased. However, these results were not statistically significant.

Ability to cope and relieve the discomfort associated with respiratory diseases was verified by Freedberg et al. (1987). They found that progressive muscle relaxation according to Jacobson was an intervention that was increasing the patient's sense of control over the intensity of the symptoms associated with asthma. These results suggest that the use and effectiveness of that kind of relaxation is a way of coping with fear in the case of patients with its high and moderate intensity.

Another common respiratory disease characterized by a high level of anxiety and symptoms of shortness of breath, limiting comfortable functioning is COPD - chronic obstructive pulmonary disease (Renfroe,1988). Studies conducted on a group of patients with COPD who underwent a four-week program to learn and practice PRM showed that this method was effective in relieving anxiety, shortness of breath, reducing heart rate after each session, and only the breathing rate per minute remained lower at the end of the study.

The occurrence of various disorders are also associated with mental and physical diseases affecting the motor system, e.g. rheumatic diseases.

Scandinavian researchers present an example of patients suffering from rheumatic arthritis who underwent a 10-week training of progressive muscle relaxation (Lundgren, Stenström, 1999). The study examined the scale of the quality of life dependent on health, the state of muscle function, feelings of pain and physical activity during disease. As a result of participation in the program, patients declared greater self-efficacy and more frequent activity.

Their range of movement improved as well as the muscle function of upper limbs six months after the training program. One year after the training program there was no change. The authors suggest that the 10-week program provides short-term effects in individuals taking part in it.

A comparative study of dynamic exercise with progressive muscle relaxation in a group of people with rheumatic inflammatory disease was conducted by Sternstrom, Arge and Sundbom (1996). Quality of life, the sensitivity of the joints and physical abilities were evaluated. The group applying dynamic exercise increased their intensity of activity during the walk test, and the PRM training group received higher scores in the test of the quality of life conditioned by the state of health. In addition, using relaxation improved muscle function of the lower limbs and muscle strength of the upper limbs. The results show

the effectiveness in improving the perceived quality of life, functioning of the lower limbs, and in reducing the sensitivity of the joints.

Neurology is another area in which the effectiveness of progressive muscle relaxation has been studied, and where actually it is applied.

One of the studies was carried out in patients with Parkinson's disease. It has been found that behavioral therapy which may include progressive muscle relaxation led to improvement in the efficiency and reduction in the postural muscles gait in patients with moderate disease (Muller et al.,1997).

Equally positive effects of training were reported in people with MS (multiple sclerosis). Training was used to assess changes in strategies for coping with stress. Respondents declared lower levels of depression and anxiety, and often used the strategies focused on solving the problem (Foley et al., 1987).

Another field, where relaxation techniques are becoming popular is psychiatry.

Milrod et al. (2007) compared the effectiveness of psychodynamic psychotherapy and progressive muscle relaxation in a group of patients with panic attacks participating in a 12-week program. The results demonstrated the prominent role of psychotherapy in reducing the incidence of symptoms.

Progressive muscle relaxation is also used in the case of schizophrenia. According to Chu Wen-Chen et al.(2009) the relaxation is a potentially effective method reducing anxiety in people with schizophrenia. Effectiveness depends on the mental state of patients and duration of the intervention.

Another dynamically growing branch of medicine is oncology. Molasiottis et al.( 2003) expressed the desirability of introducing progressive muscle relaxation as a means of alleviating symptoms of chemotherapy in breast cancer patients. Chemotherapy is a treatment that besides therapeutic effects causes many side effects as: nausea, vomiting, mood and anxiety disorders. Progressive relaxation included in the program of the care of women with breast cancer, resulted in a significant shortening of nausea and vomiting episodes, a significant improvement was noted in terms of mood, but did not affect the intensity of anxiety in patients. This analysis shows that the methods of reducing the side effects of cancer treatments, such as aforementioned relaxation can become supplements to the standard therapy in oncology.

One of the disorders that affects cancer patients is insomnia. Methods of alleviating the problem with the help of progressive muscle relaxation were the subject of Cannici, Malcolm and Peek's (1983) analysis. In the group undergoing relaxation training, the sleep latency of 124 minutes was reduced to 29 minutes, while in the control group this reduction was of only 12 minutes. The effects persisted for three months after the intervention. These results encourage the implementation, depending on the patient's individual needs and possibilities, palliative methods in cancer pain therapy.

Undoubtedly, one of the most difficult experiences for patients is pain associated with the disease. The applicability of progressive muscle relaxation and visualization as a means of soothing the intensity of cancer pain was studied by Kwakkeboom et al. (2008). For both types of interventions the levels of pain and the stress related to it diminished, and at the same time the sense of control over symptoms increased. In addition, the subjects who underwent a guided imagery declared a greater imaginative ability, more positive expectations and fewer comorbid symptoms than in the group practicing PMR.

The use of progressive muscle relaxation to relieve the non-cancer pain has

the aim of the study of van Tulder, Koes and Malmivaara (2006). They compared the most common methods used to relieve pain in the lumbar spine. Progressive muscle relaxation proved to be effective, but short-lasting for chronic pain, whereas for the acute pain the most effective methods were pharmacotherapy and physical activity.

A summary of studies conducted among patients with psychophysical disturbances using progressive muscle relaxation in Table 1.

**Table 1. A review of studies conducted among patients with psychophysical disturbances using progressive muscle relaxation.**

| | Field/area | Authors | Characteristic of the group | Factors analyzed | Results |
|---|---|---|---|---|---|
| 1 | Cardiology | 3,4 | Ischaemic disease, hypertension, myocardial infarction, | Heart rate, blood pressure, level of anxiety, HDL, depression, quality of life | reduction in heart rate systolic blood pressure and diastolic blood pressure, lower level of HDL, anxiety and depression decrease, |
| 2 | Pulmonary diseases | 5,6 | Asthma, COPD, | Level of stress, quality of life, sense of control, intensity of anger, breath shortness, heart rate, blood pressure, anxiety level, panic attacks, | Improving respiratory and cardiac parameters, higher sense of control, lower level of anxiety and anger and panic attacks |
| 3 | Rheumatic diseases | 7,8 | Rheumatitis, | Quality of life, pain, state of muscles function, range of movement, sensitivity of joints, coping strategies, sleep disorders, headache, | Improved quality of life and muscle function, lower level of pain, no change in range movement, reduced sensitivity of joints, improved coping strategies, improved sleep and lower intensity of headache |
| 4 | Neurology | 9,10 | Parkinson's disease, MS | Sleep quality, daily activity, level of stress hormones, depression, anxiety, coping strategies, pain intensity , irritability, agitation, | Improved sleep quality and daily activity, decrease of hormones, lower level of depression, anxiety and pain, better coping strategies, agitation decrease, |
| 5 | Psychiatry | 11,12 | panic disorders, schizophrenia | Frequency of attacks, sense of control, anxiety | Decrease of panic attacks, higher degree of control and lower level of anxiety |

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|---|---|---|---|---|---|
| 6 | Oncology | 13,14 | Colorectal cancer, breast cancer | Quality of life, anxiety, nausea, vomiting, insomnia, | Improved quality of life, decrease of nausea and vomiting, no change in anxiety intensity, reduced sleep latency, |
| 7 | Pain | 15,16 | Cancer pain, back pain, | Pain intensity, level of stress, sense of control, range of motion, | Decrease of pain and stress level, increase of sense of control, no significant change in range of motion; short-effect of pain decrease |

**Discussion.**

Modern medicine requires a multidimensional patient care. Medical interventions are not limited to surgical or pharmacological actions, but extended with approaches involving the participation of the patient to relieve pain in the recovery process, including psychological components.

Flaws in the studies are due to the classification of PMR. Some authors claim that this activity is a component of cognitive-behavioral therapy, others treat it as a behavioral approach (Muller et al.,1997).

Another controversial issue is effectiveness. Some papers report high efficacy and long-lasting effects of progressive muscle relaxation. Others have doubts due to insufficient duration of studies (Lundgren , Stenström,1999; Wen-Chu-Chen, 2009; Cannici et al., 1983). It seems obvious that taking advantage of the possibilities and involving patients in the recovery process and psychophysical disorders alleviating therapies are promising perspectives. Therefore the problem requires further study and analysis, which should include more precise classification of measures, selection of the subjects and the length of experiments.

**Conclusions.**

1. PMR appeared to be effective complementary method in alleviating psychophysical disturbances.
2. PMR is most commonly used in cardiology, neurology, oncology and respiratory diseases, psychiatry and pain management

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