

Krystyna Boroń-Krupińska, Lesław Kulmatycki

Faculty of Physical Education, Department of Humanities and Health Promotion, Health Promotion and Relaxation Techniques Unit, University of Physical Education in Wrocław
Wydział Wychowania Fizycznego, Katedra Nauk Humanistycznych i Promocji Zdrowia, Zakład Promocji Zdrowia i Technik Relaksacji, Akademia Wychowania Fizycznego we Wrocławiu

Prospect of relaxation technique as a complementary chronic pain treatment. A systematic review in 2007-2012

Możliwości zastosowania relaksacji, w uzupełniającym leczeniu bólu przewlekłego. Przegląd badań w latach 2007-2012

Summary

Common phenomenon of chronic pain is accompanied and determined by the physiological, psychological and social disturbances, decreasing the quality of life. That is the reason to lead multidimensional chronic pain treatment. Not only conventional methods are applied, also alternative, including relaxation. The aim of this study was to evaluate the effectiveness of relaxation techniques in non-cancer, chronic pain intensity reduction. This study includes a review of 16 articles published in Medline data base in past 5 years (2007-2012), considering the impact of relaxation techniques on chronic pain level in adults. Results indicate different attitudes, concerning alternative methods in chronic pain treatment. It is necessary to lead further, more precise researches to set its efficacy.

Key words: non-cancer, chronic pain management, relaxation technique

Streszczenie

Mechanizmy towarzyszące powszechnemu zjawisku bólu przewlekłego i determinujące obniżenie jakości życia to zaburzenia fizjologiczne, psychologiczne i społeczne, dlatego największą skutecznością charakteryzuje się interdyscyplinarne podejście do opisywanego zjawiska. Oprócz konwencjonalnych metod leczenia coraz powszechniej stosowane jako uzupełniające są metody alternatywne, do których zaliczamy m.in. relaksację. Celem pracy była ocena skuteczności relaksacji w obniżaniu natężenia bólu przewlekłego, nienowotworowego, na podstawie dostępnego piśmiennictwa naukowego w bazie danych Medline. Dokonano przeglądu 16 prac, dotyczących zastosowania technik relaksacji w łagodzeniu przewlekłego bólu nienowotworowego u osób dorosłych, opublikowanych w ostatnich 5 latach (2007-2012). Źródłem materiałów była baza Medline i wyszukiwarka Pubmed. Przegląd prac wskazuje na istnienie zróżnicowanych postaw wobec zastosowania alternatywnych metod w procesie leczenia bólu i wymagany jest przeprowadzenie bardziej precyzyjnych badań, celem oceny ich skuteczności.

Słowa kluczowe: ból przewlekły nienowotworowy, techniki relaksacji

Introduction

Pain is the most common symptom associated with certain diseases. According to the definition of the International Society for the Study of Pain (IASP), “pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described as a failure/damage” (Diener, Maier 2003) Emphasis was placed on what the patient feels, sees and describes, without prejudging the mechanism that causes the pain or the duration thereof. In other words, it can be assumed that pain is what the patient calls pain. The pain that lasts a long time, more than three months, despite the healing of the tissues or is associated with a long-term disease process is called chronic pain. In contrast to acute pain it loses its warning function, and thus it becomes incomprehensible and the disease itself, affecting all the aspects of human life.

Similar mechanisms occur in all patients suffering from chronic pain, which lead to the quality of life reduction: physiological, psychological and social disorders. They depend on the duration and intensity of pain rather than its cause.

The priority in the treatment of chronic pain is primarily a maximum reduction of pain and minimal side effects and minimal invasiveness. Therefore, the most effective therapy is characterized by the interdisciplinary combination of pharmacological and non-pharmacological treatments.

Among non-pharmacological, complementary methods, special attention should be paid to different relaxation techniques, increasingly used as a supplement to psychotherapy and physiotherapy.

Relaxation comprises all the methods which aim at obtaining the state of physical and mental slowdown, so called “state of relaxation”. Relaxation training and exercises develop habits of entering into a state of mental and physical relief, reducing physical and mental tension, or generating the process of demobilization, i.e. reduction in the body’s response to fight or escape. One of the most well-known definition of relaxation therapy was introduced by Herbert Benson in his research on a meditating group (Benson et al. 1974). Regardless of the term used the state of relaxation is opposite to stress and tension associated with the phenomenon of chronic pain.

Material and methods

Out of numerous papers on alternative methods of pain relief available in the MEDLINE database, 16 papers published in the last 5 years (2007-2012) were selected for the study. All of them presented and compared the effects of relaxation techniques on pain intensity for chronic non-malignant pain in adults. Multidisciplinary pain management programs with elements of psychological intervention, which includes relaxation became standard procedures (Reese, Mittag 1974).

Results

One of the most common phenomena in the modern world, often resulting from psychosomatic disorders is low back pain. The relationship between meditation and pain intensity was studied by Morone et al. In the group of 30 patients, over 65 years old, suffering from chronic lumbar spine pain, underwent 8-week meditation training, which consisted of 4 sessions per week, each lasting on average of 30 minutes. 48% of respondents reported they had reduced the amount of pain medication (Morone et al. 2008).

Other authors emphasize the effectiveness of relaxation techniques as a component of cognitive-behavioral treatment of chronic back pain (Reese, Mittag 1974; Tan et al. 2009). The test parameters were the intensity experienced in conjunction with stress and emotional response. As a result of the applied multi-faceted treatment, pain intensity was significantly reduced, strategies for coping with it improved, self-confidence and the number of positive beliefs increased while negative attitudes and the level of depression and anxiety decreased.

According to Lillefjel et al., a multidisciplinary rehabilitation program is also indicated for chronic musculoskeletal pain. 143 patients underwent a five-week program involving exercises to strengthen the muscles of the whole body, and relaxation. The intensity of the 100-point pain VAS at baseline had an average of 77.3, and after 5 weeks of training 74.1. These results were verified 52 weeks after the first test, during which the patients continued participation in training, but at a lower frequency-three times a week. The VAS values for intensity of pain remained unchanged and amounted to 74.1. After another 52 weeks, during which the training consisted of an hour a day, once a week, the results showed a further reduction in pain intensity to 66.7 on the VAS scale (Lillefjel et al. 2007).

A common ailment that requires a multi-faceted treatment is the tension headache. According to Rosen, it seems to be very important to understand the pain coping strategies of the patient, because that makes it possible to prepare an appropriate treatment plan and to maximize its effectiveness. In these studies, relaxation training appeared to be effective in reducing the pain and discomfort associated with disturbances (Rosen 2012).

The need for multi-faceted care of chronic pain patient was emphasized by Erlenwein et al. 50% of people suffering from pain, in addition to conventional pharmacological treatment, required such procedures as: psychological and psychiatric care (11.1%), physiotherapy (19.2%) and supporting methods, such a progressive muscle relaxation or TENS (20.2%) (Erlenwein et al. 2012).

Chronic pain is also common in person suffering from rheumatic diseases. Zautra et al compared the effects of cognitive-behavioral therapy with mindfulness meditation. Besides the two experimental groups there was a control group taking part only in the educational program. The authors studied both physical and psychological impacts, as well as biochemical interventions on people with rheumatic disease. Those involved in cognitive-behavioral therapy declared increased self-efficacy in controlling pain and reducing levels of interleukin (substances occurring in inflammatory rheumatic diseases which increases the intensity of pain). In both experimental groups, strategies for coping with pain improved compared with the control group. Among those with chronic depression, practicing meditation, the most significant change was observed in the positive affect, as well as in the reduction in joint tenderness (Zautra et al. 2008).

The need to include an interdisciplinary treatment program in other rheumatic diseases was suggested by Suman et al. A program with such a cognitive-behavioral therapy helped to reduce the intensity of pain, as well as the number of painful areas of the body in patients with fibromyalgia. These effects persisted up to a year after completion of the program (Suman et al. 2009).

The effectiveness of MBSR (Mindfulness Based Stress Reduction) conducted among persons with chronic disease symptoms was confirmed by Rosenzweig et al. The study included people with diverse locations of pain that accompanies osteoarthritis, migraines, back and neck pain, and fibromyalgia. MBSR turned out to be the intervention improving most the quality of life in patients affected by degenerative disease, whereas in patients with headaches the intervention had a lesser impact on beneficial changes in the pain intensity and quality of life; while in patients with fibromyalgia had the smallest impact on psychological stress (Rosenzweig et al. 2010).

The effectiveness of complementary methods in chronic, non cancer pain treatment was also evaluated for other illnesses. The study on the effectiveness of self-hypnosis and progressive muscle relaxation in reducing the intensity of pain and limitations caused by pain included patients with MS and suffering from chronic pain (Jensen et al. 2009). The analysis showed that the most effective form of dealing with pain was self-hypnosis. In contrast to this group, the other one taking PMR recorded no significant pain relief. In both groups the respondents expressed a desire to continue to learn methods of pain relief and test their effectiveness.

Progressive muscle relaxation, along with other components of the cognitive-behavioral approach has proven to be highly effective in relieving pain in people infected with HIV and suffering from AIDS (Cucciare et al. 2009). The analysis showed that the greater was the intensity of the pain and distress, the more significant was the reduction of symptoms in patients treated with this method.

Ussher and al. verified immediate effects of the application of the MBSR program which included the body scan in patients with chronic, nonmalignant pain. Every day the subjects performed twice the body scan under different conditions: in the clinic and the home. The comparison was made with a control group who listened to recordings about natural history. Before and after the completion of each trial the prevalence of pain and stress associated with it as well as the ability to perform everyday activities, and the likelihood of the disorder of social relationships caused by pain. The trials in the clinic showed a significant difference between the experimental and control groups in the parameters associated with pain relief, and in the home there were no significant differences between the analyzed factors in both groups (Ussher and al. 2012). The summary of data in Table 1.

Tab.1 Relaxation techniques in chronic pain treatment (a systematic review in 2007-2012)

| | Authors | Title | Source | Characteristic of the group | Factors analyzed | Method | Results |
|---|--|--|--|--|---|---|--|
| 1 | Cucciare MA, Sorrell JT, Trafton JA. | Predicting response to cognitive-behavioral therapy in a sample of HIV-positive patients with chronic pain | J Behav Med. 2009Aug; 32(4):340-8 | HIV patients with chronic pain | Pain intensity, level of anxiety | Progressive muscle relaxation, positive reconceptualization | The higher pain intensity and related anxiety the greater reduction in symptoms as a result of using methods |
| 2 | Erlenwein J, Schlink J, Pfingsten M, Petzke F. | Clinical pain consultation. Profiles of clinical pain consultation and requirements for management of complex pain patients in inpatient care, | Schmerz. 2012 Dec; 26(6):692-8. | Patients with chronic pain | Evaluation of the need for diverse care of patients with pain | Interventions: pharmacological, psychological, psychiatric, physiotherapy and complementary-progressive muscle relaxation, TENS | The most effective was a multi-faceted care, which in addition to conventional methods: pharmacotherapy, physiotherapy included psychological interventions |
| 3 | Green SM, Hadjistavropoulos T, Hadjistavropoulos H, Martin R, Sharpe D. | A controlled investigation of a cognitive behavioural pain management program for older adults | BehavCognPsychother. 2009Mar; 37(2):221-6 | Elderly with chronic pain | Pain intensity, coping strategies, appraisals and | Cognitive-behavioral therapy | Pain intensity decrease, relaxation as an adaptive coping strategies, fewer maladaptive strategies, |
| 4 | Jensen MP, Barber J, Romano JM., Molton IR, Raichle KA, Osborne TL., Engel JM, Stoelb BL., Kraft GH, Patterson DR., A. | Comparison of Self-Hypnosis Versus Progressive Muscle Relaxation in Patients With Multiple Sclerosis and Chronic Pain | Int J ClinExpHypn 2009 April; 57(2): 198-221 | Patients with MS suffering from chronic pain | To evaluate the efficacy and preference by patients | self-hypnosis, progressive muscle relaxation | the most effective form of pain management:s elf-hypnosis ;the PMR use: no significant decrease in pain intensity; both groups of respondents expressed a desire to continue to learn and test methods of pain relief. |

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| 5 | Karp JF, Shega JW, Morone NE, Weiner DK. | Advances in understanding the mechanisms and management of persistent pain in older adults | Br J Anaesth. 2008 Jul; 101(1):111-20. | Older people with chronic pain, nonmalignant | Evaluation of factors affecting individual application of pain relief methods | Mindfulness meditation | The use of psychological interventions were considered to optimize mental functions of the elderly |
| 6 | Lillefjel M., Krokstad S., Espnes G.A | Prediction of function in daily life following multidisciplinary rehabilitation for individuals with chronic musculoskeletal pain: a prospective study, | BMC Musculoskeletal Disorders, 2007;8:65 | 143 patients with musculoskeletal, chronic pain | impact of an interdisciplinary program on pain intensity | 5-week program of exercises to strengthen the muscles of the body and relaxation | The intensity of the 100-point pain VAS at baseline had an average of 77.3, and after 5 weeks of training 74.1. The re-analysis was performed 52 weeks after the first study, during which patients continued to participate in the training, but less frequently-3 times a week. The intensity of pain VAS remained unchanged and amounted to 74.1. After another 52 weeks (an hour a day, once a week), the results showed a further reduction in pain intensity y for 66.7VAS. |
| 7 | Morone N., Greco C., Weiner D.K. | Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study | Pain, 2008; 134:310-319 | 30 patients over 65 year, suffering from chronic lumbar pain | The impact of meditation on pain intensity | 8-week meditation training: 4 sessions per week, each lasting on average of 30 minutes | 48% of respondents claimed the reduction of the amount of pain medication |
| 8 | Norelli LJ, Harju SK. | Behavioral approaches to pain management in the elderly | Clin Geriatr Med. 2008 May; 24(2):335-44 | Older people affected by chronic pain | Analysis of age, social and cultural conditions in the perception of pain | Behavioral therapy | Authors recognize the multi-faceted, interdisciplinary treatment program, including behavioral approach as effective method in reducing pain intensity |

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| 9 | Ndao-Brumblay SK, Green CR. | Predictors of complementary and alternative medicine use in chronic pain patients, | Pain Med. 2010;Jan; 11(1):16-24. | 5750 patients with chronic pain | Patient preferences and the socio-cultural factors vs. use of relaxation | Acupuncture, relaxation, biofeedback, manual techniques | Most common used methods were: acupuncture (8%), manual techniques (25%), relaxation (13%). Most white women selected relaxation (13%) |
| 10 | Rosen NL | Psychological issues in the evaluation and treatment of tension-type headache. | Curr Pain Headache Rep. 2012Dec;16(6):545-53. doi: 10.1007/s11916-012-0301-z. | Chronic tension headaches | To evaluate the efficacy in the treatment of pain and pain-related disorders | Relaxation training, cognitive behavioral therapy, biofeedback, mindfulness training | Psychological interventions supporting conventional methods of treatment appear to be effective in reducing pain and disability |
| 11 | Rosenzweig S, Greeson JM, Reibel DK, Green JS, Jasser SA, Beasley D. | Mindfulness-based stress reduction for chronic pain conditions: variation in treatment outcomes and role of home meditation practice, | J Psychosom Res. 2010;Jan;68(1):29-36. | 133 patients of integrative medicine center, with pain affected by osteoarthritis, fibromyalgia, migraines | Physical pain, mental symptoms, quality of life | 8-week MBSR program | MBSR has proven to be most effective in improving the quality of life in patients with osteoarthritis |
| 12 | Suman AL, Biagi B, Biasi G, Carli G, Gradi M, Prati E, Bonifazi M. | One-year efficacy of a 3-week intensive multidisciplinary non-pharmacological treatment program for fibromyalgia patients, | ClinExpRheumatol. 2009;Jan-Feb; 27(1):7-14. | 25 women with fibromyalgia | The level of pain intensity. Touch tenderness and soreness, level of depression, biochemical factors | 3-week intensive program, including exercise and cognitive-behavioral therapy | Reduction in pain and depression intensity |
| 13 | Tan EPG., Tan ESL., Beng-Yeong Ng. | Efficacy of Cognitive Behavioral Therapy for Patients with Chronic Pain in Singapore | Ann Acad Med Singapore 2009; 38:952-9 | Chronic low back pain patients | the intensity of pain and the pain-related stress and emotional factors. | Relaxation as part of a cognitive-behavioral therapy | significant reduction in pain intensity, improvement in pain coping strategies, increase in: self-confidence, positive beliefs; decrease in: negative ones and the level of depression and anxiety |

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| 14 | Turk DC, Swanson KS, Tunks ER. | Psychological approaches in the treatment of chronic pain patients--when pills, scalpels, and needles are not enough. | Can J Psychiatry. 2008 Apr; 53(4):213-23 | Chronic pain patients | Evaluation of the effectiveness of the methods used individually and complex-collective analysis | Relaxation, meditation, visualization, hypnosis, biofeedback | Studies have shown that the most effective is the use of cognitive-behavioral methods, which integrate most of these methods |
| 15 | Ussher M, Spatz A, Copland C, Nicolaou A, Cargill A, Amini-Tabrizi N, McCracken LM. | Immediate effects of a brief mindfulness-based body scan on patients with chronic pain. | J Behav Med. 2012 | Chronic, noncancer pain patients | Analyzed the prevalence of pain and pain-related stress, the ability to take everyday activities, the probability of disorders in social relations caused by pain, comparative study - trials in the clinic and the home | The body scans part of the MBSR program- psychophysical stress reduction; the control group listened to the recordings on natural history. | In the clinic the study showed a significant difference between the two groups - in the parameters reducing pain; in the home there were no significant differences between them. |
| 16 | Zautra AJ, Davis MC, Reich JW, Nicassario P, Tennen H, Finan P, Kratz A, Parrish B, Irwin MR., | Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression | J Consult Clin Psychol. 2008 Jun; 76(3):408-21 | Rheumatic, chronic pain patients | Comparison of different interventions; the impact they have on the psychological and bio-chemical state of patients with rheumatic disease | Cognitive-behavioral therapy, mindfulness meditation, education in the control group | In the group of cognitive-behavioral therapy the sense of self-efficacy for pain control raised and the level of interleukin decreased; In both groups (the cognitive-behavioral approach and meditation) - pain coping strategies improved compared to the control group. In the group with chronic depression, practicing meditation, the most significant change was positive affect, and reduction of joints tenderness |

Discussion and conclusions

Treatment of chronic pain patients, for whom the duration of the phenomenon becomes incomprehensible and disease in itself is a challenge for modern medicine. The interdisciplinary approach to treatment requires supplementing the conventional methods, such as pharmacotherapy, with complementary ones. Out of numerous alternative methods therapists most commonly use: relaxation and biofeedback (13%) and the method of handling (manual therapy, osteopathy) (24%) (Ndao-Brumblay, Green 2010; Green et al. 2009). The authors also point out to the factors determining the use of methods of supporting treatment, e.g. racial, cultural, and gender. For example, African-Americans are less likely to use relaxation and biofeedback than Caucasian people, and gender diversity indicates that women are more likely than men to select relaxation.

Age is an important factor in determining the perception of pain. Chronic pain poses many difficulties in treatment, due to significant psychological components, increasing the dimension of the problem. A particularly important aspect is the pain relief in the elderly, as they may suffer from cognitive impairment. Thus the selection of appropriate methods that can reduce the intensity of pain becomes increasingly important (Karp et al. 2008). Age and related disorders (cognitive impairment-dementia), cultural and social factors are determinants of pain perception, and thus the effectiveness of different therapies. The complexity of the phenomenon of chronic pain and the importance of the inclusion of behavioral methods in its mitigation are presented in the analysis of Norelli and Harju (Norelli, Harju 2008).

Turk et al. suggest a need to implement a psychological approach, which includes elements of cognitive-behavioral perspectives of patients and such techniques. These authors point out to the difference between the outlook of patients-their attitudes, expectations, beliefs, which according to them are more important than the techniques that tend to strengthen their sense of control and efficiency, thus minimizing the passivity and dependence. At the same time they emphasize the importance of interdisciplinary pain management programs that include components of mental, physical and social factors (Turk et al. 2008).

The review of the available literature shows some positive effect of relaxation on the level of chronic pain and the need to implement alternative therapies to the standard treatment. The discrepancies in the assessment of the effectiveness of relaxation methods to reduce the pain intensity may indicate a non-uniform methodology of the tests, which should contain strict criteria for selecting groups of subjects, use of research tools and specific systematic of research. In order to create a certain pattern of the interdisciplinary chronic pain treatment process, it is necessary to conduct further, more specific studies, including a greater number of criteria.

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