

## DIFFERENCES IN THE LEVEL OF ANXIETY IN PATIENTS AFTER PHYSICAL THERAPY FOR MUSCULOSKELETAL DISEASES IN RELATION TO GENDER, AGE AND DURATION OF TREATMENT

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### Abstract

*The main goal of the research was to determine the differences in the level of anxiety of patients after physical therapy for diseases of the musculoskeletal system in relation to gender, age and duration of treatment. The research was conducted on a sample of 30 patients, who were stratified according to gender, age and duration of physical treatment for specific research purposes. The Test Anxiety Inventory (TAI) was used to assess anxiety. Descriptive statistics (i.e. frequencies, percentages, arithmetic means and standard deviations) were applied. One-factor analysis of variance revealed differences in gender, age and duration of treatment, as well as the level of anxiety in patients after physical therapy. Percentage differences in the level of anxiety of patients after physical therapy in the level of anxiety, gender, age and duration of treatment were determined by  $\chi^2$  tests. Based on the obtained results, it can be concluded that based on the obtained results, it can be concluded that in this sample of patients, the level of anxiety does not differ in relation to gender, age and duration of physical treatment.*

**Key words:** Physical treatment; anxiety; TAI

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### Introduction

Anxiety and fear seem like very similar reactions at first, but they are different. Fear is an emotional reaction to a specific, recognizable and immediate threat, i.e. danger (e.g. from injury). This reaction can protect the individual from that danger with a defensive reaction (offensive or defensive behavior). In people with diseases of the musculoskeletal system, the present pain can cause fear of movement, physical activity and work, and consequently avoidance of movements that can increase the feeling of pain or cause new traumatization. However, this avoidance of movement, forced and unnatural body position and passivation contribute to the worsening of pain and delay recovery, and can also contribute to the emergence of phobias, i.e. intense, irrational fear that is not necessarily preceded by a traumatic event. Fear of movement in people with musculoskeletal disorders can also contribute to anxiety.

Anxiety, unlike fear, is an affective state focused on the future, where the source of endangering the organism is not clearly defined. Although the components of anxiety are similar to those of fear, they are less intense. Furthermore, while fear motivates a person to quickly engage in defensive or offensive behaviors and reactions, anxiety is associated with preventive behaviors, including avoidance. In any case, anxiety and fear of activity and its avoidance have an adverse effect on the course and outcome of diseases of the musculoskeletal system and should therefore be detected and removed with an appropriate psychological approach, cognitive-behavioral treatment, with the introduction of gradual and measured physical activity and physical therapy, which will contribute to a better therapeutic effect and patient recovery. The terms fear and anxiety are often used together in situations where pain is present. Separating these two terms is theoretically correct, but it is difficult to do in the clinical context and practice, especially in chronic pain, when pain is an activator and stimulator for both of these psychological states and is constantly present (Leeuw et al. 2007).

Anxiety and catastrophizing of existing pain in people with diseases of the musculoskeletal system are also often present and negatively affect the course and outcome of treatment.

Pain, which can be accompanied by anxiety, represents a negative conviction and belief that the current pain will lead to long-term or even permanent negative consequences. It has a multidimensional

construction and includes negative thoughts, a feeling of helplessness and the presence of pessimism, and as such contributes to the maintenance of pain, i.e. the appearance of its chronicity (Sullivan et al., 2001). Very often, pain and kinesiophobia (fear of movement) are present together and interconnected (Picavet et al., 2002). Tangestani et al. showed in their research that there is a close relationship between anxiety and catastrophizing pain in diseases of the musculoskeletal system and that this should be taken into account, and that removing or reducing anxiety and catastrophizing will have a wider positive effect on the treatment of diseases of the musculoskeletal system (Tangestani et al., 2012).

In some people, as a type of anxious and catastrophic understanding and attitude in relation to diseases of the musculoskeletal system, there may be fear of movement and their avoidance due to the belief that movement can worsen the condition, i.e. lead to increased pain or new injuries. Because of this, these people are prone to the appearance of passivation, but also depression, that is, the appearance of an anxious-depressive state. To detect the presence of these disorders, there are different approaches and assessments using appropriate questionnaires, among which are psychometric assessments using the Tampa Kinesiophobia Scale, then a questionnaire to assess the presence of fear-avoidance-negative beliefs (fear-avoidance- beliefs-questionnaire - FABQ.), as well as the catastrophic pain scale and others. The aforementioned questionnaires can be used to assess the prognosis and effectiveness of the applied therapeutic procedures and as indicators of the existence of a tendency to chronicity of lumbar syndrome, and they can also be guidelines for the application of additional psychological-cognitive and behavioral therapeutic procedures. (George et al., 2010; Rainville et al., 2011; Poiraudau et al., 2000).

Based on all the above, the aim of this research is to determine the differences in the level of anxiety (assessed by the TAI inventory) in patients after physical therapy for diseases of the musculoskeletal system in relation to gender, age and duration of treatment.

## Methods

### *Sample of respondents*

The research was conducted on a sample of 30 patients, who were stratified according to gender, age and duration of physical treatment for specific research purposes. The criteria for not being included in the study were the presence of comorbidities: diabetes, cerebrovascular insulators, bronchial asthma, urticaria, alcoholism and pregnancy.

### *Sample variable*

Data were collected based on anamnesis, physical examination, available medical documentation and a specific inventory for the assessment of anxiety (Test Anxiety Inventory - TAI).

TAI - Test Anxiety Inventory - asks patients to indicate how often they felt specific symptoms of anxiety after completing physical therapy. The answer to each question is presented in the form of a four-point Likert scale: "Never", "Sometimes", "Often", "Always". The answer to each question is evaluated on a scale from 1 (never) to 4 (always). The minimum score of the questionnaire is 20, and the maximum score is 80. The TAI questionnaire includes two subscales: "Concern" and "Emotionality". Each subscale consists of 8 questions. The questions from the "Concern" subscale refer to the cognitive aspects of anxiety, that is, the experience of anxiety when thinking about the outcome of physical therapy. The questions from the "Emotionality" subscale refer to autonomic symptoms (such as tachycardia, muscle tension, panic) that appeared after the physical examination as a somatic response to anxiety.

### *Statistical analysis*

Descriptive statistics (ie, frequencies, percentages, arithmetic means, and standard deviations) were applied to all variables. The normal distribution of numerical variables was assessed by the Kolmogorov-Smirnov test. One-factor analysis of variance revealed differences in gender, age and duration of treatment, as well as the level of anxiety in patients after physical therapy. Percentage differences in the level of anxiety of patients after physical therapy in the level of anxiety, gender, age and duration of treatment were determined by  $\chi^2$  tests.

Data analysis was done using IBM SPSS version 26.0 software.

## Results

From the review of table 1, which shows the results of the one-factor analysis of variance, it is evident that there are no statistically significant differences in the level of anxiety in patients after physical therapy for diseases of the musculoskeletal system, in terms of gender, age and duration of treatment.

Table 1. Differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to age, gender and duration of treatment

	Mean	SD	F	sig	n
<b>Gender</b>					
Male	42,13	7,33	0,84	0,367	0,03
Female	39,00	11,52			
<b>Age</b>					
13-18 years	43,20	7,97	0,44	0,650	0,03
19-24 years	39,30	10,81			
>25 years	39,20	10,30			
<b>Treatment duration</b>					
10 days	41,94	10,71	0,62	0,548	0,04
15 days	40,44	9,93			
20 days	36,40	3,85			

In order to obtain additional information about the level of anxiety,  $\chi^2$  square tests were also observed in patients after physical therapy for musculoskeletal diseases in relation to gender, age and duration of treatment. Data processing was carried out using contingency tables based on the values of the  $\chi^2$  square test and the contingency coefficients, as well as testing their differences. Contingency tables constructed by crossing, on the one hand, groups of respondents according to anxiety level (in columns - vertical), numerically by frequency (f) and percentage (%), and on the other hand by classifying respondents according to gender, age and duration of physical treatment (in rows - horizontal), also by frequency (f) and percentage (%).

From the review of table 2, it can be seen that 37.5% of the male respondents have optimal anxiety, 62.5% of the female respondents have optimal anxiety. 64.3% of male respondents are anxious and 35.7% of female respondents are anxious. From the values of the  $\chi^2$  ( $\chi^2 = 2.14$ ,  $p = .136$ ) test, it can be seen that there are no statistically significant differences between male and female patients in the level of anxiety.

Table 2. Percentage differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to gender

Gender	Male		Female	
Optimal anxiety	6	37,5%	10	62,5%
Anxious	9	64,3%	5	35,7%
Total	15	50,0%	15	50,0%
$\chi^2 = 2,14$	df=1		sig=136	

Table 3. Percentage differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to age

Gender	13-18 years		19-24 years		>25 years	
Optimal anxiety	5	31,30%	4	25,00%	7	43,80%
Anxious	5	35,70%	6	42,90%	3	21,40%
Total	10	33,30%	10	33,30%	10	33,30%
$\chi^2 = 1,88$	df=2		sig= ,392			

Table 3. and the review of the  $\chi^2$  test ( $\chi^2 = 2.04$ ,  $p = .392$ ), indicate that there are no statistically significant differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to age. The percentage values show that 31.30% of respondents aged 13-18 years have optimal anxiety, 25.00% of respondents aged 19-12 years have optimal anxiety and 43.80% of respondents aged >25 years have optimal anxiety. 35.70% of respondents aged 13-18 have anxiety, 42.90% of respondents aged 19-12 have anxiety and 21.40% have optimal anxiety.

From the review of table 3., it can be seen that 43.80% of the subjects whose physical treatment lasted up to 10 days have optimal anxiety, 31.30% of the subjects whose physical treatment lasted up to 15 days have optimal anxiety and 25.00% of the respondents whose physical treatment lasted up to 20 days have optimal anxiety. 64.30% of the respondents whose physical treatment lasted up to 10 days have anxiety, 28.60% of the respondents whose physical treatment lasted up to 15 days have anxiety and 7.10% of the respondents whose physical treatment lasted up to 20 days have anxiety. From the values of the  $\chi^2$  ( $\chi^2 = 2.04$ ,  $p = .361$ ) test, it can be seen that there are no statistically significant differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to the duration of treatment.

Table 3. Percentage differences in the level of anxiety in patients after physical therapy of musculoskeletal disease in relation to the duration of the treatment

Gender	10 days		15 days		20 days	
Optimal anxiety	7	43,80%	5	31,30%	4	25,00%
Anxious	9	64,30%	4	28,60%	1	7,10%
Total	16	53,30%	9	30,00%	5	16,70%
$\chi^2 = 2,04$	df=2				sig= ,361	

## Discussion

This study aimed to investigate differences in the level of anxiety in patients after physical therapy for musculoskeletal disease in relation to gender, age and duration of treatment. Based on the obtained results, it can be concluded that in this sample of patients, the level of anxiety does not differ in relation to gender, age and duration of physical treatment.

From the percentage values, it can be seen that after the physical treatment, 53.3% of the patients had optimal anxiety, 46.7% showed anxiety, while none of the patients showed high anxiety.

Research conducted by Williamson et al. showed that patients who underwent microdiscectomy for lumbar syndrome were extremely anxious before surgery and in the first 6 weeks after it, and were also afraid of physical movements. In the conclusion, it is stated as a recommendation that it is necessary to apply appropriate therapeutic measures in order to eliminate these phenomena and thereby achieve a better postoperative recovery (Williamson et al., 2008).

Corresponding prospective studies show that the presence of fear and avoidance of movement due to a possible cause of pain and a new injury are predictors that indicate the possibility that, due to patient passivation, therapeutic success will be less and they will turn into a chronic disease. (Fritz and George, 2002; Fritz, George and Delitto, 2002; Swinkels-Meewisse, 2006; Thibodeau et al., 2013).

Cai et al. recommend that in people with lumbar syndrome, to detect the presence of fear of movement and physical activity, as a simple and reliable method in everyday practice, the appropriate questionnaire (FABQ-PA) should be used. The results obtained from this questionnaire can be used to direct and supplement therapy and achieve better results (Cai et al., 2007).

Similar views and recommendations are held by Rainville et al., who also point out that the use of this questionnaire in people with lumbar syndrome enables a better therapeutic effect, because by recognizing the present fear of movement and physical activity and eliminating it with appropriate procedures, more active involvement of the patient in therapy (Rainville et al., 2011).

In order to achieve better therapeutic success and functionality, in people with an operative theme of musculoskeletal disease, Archer. et al. recommend immediately after the operation, to notice and remove the fear of movement and to avoid it in time, in order to prevent the occurrence of passivation. These authors therefore recommend the implementation of postoperative screening and, if necessary, the inclusion of appropriate cognitive-behavioral techniques in rehabilitation procedures (Archer et al., 2011).

Passive attitudes and negative beliefs and beliefs about the outcome of treatment, i.e. the presence of pessimism, are significantly associated with a worse therapeutic outcome, i.e. the degree of healing. Namely, the patient's beliefs and expectations regarding his own recovery, i.e. the degree of optimism and pessimism, had a significant impact on the intensity of pain and general functionality during the examined period. Practically at all times of testing, the lowest degree of disability among our subjects was experienced by those who were optimistically oriented and who expected that the therapy would be successful and that they would fully recover. On the other hand, patients who had pessimistic and passive attitudes, i.e. those who expected only a small, half-hearted or no improvement in their health and functional status, had a higher degree of pain and disability.

## Conclusion

On the basis of the obtained results, it can be summarized that on the basis of the obtained results, it can be concluded that in this sample of patients, the level of anxiety does not differ in relation to gender, age and duration of physical treatment.

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