

**THE IMPORTANCE OF MOTIVATIONAL QUESTIONNAIRE
IN PHYSIOTHERAPY PRACTICE AND BEHAVIOR CHANGES IN MENTAL WORKERS
HAVING NON-SPECIFIC LOW BACK PAIN DURING AN OUTPATIENT PHYSIOTHERAPY**
**VÝZNAM MOTIVAČNÉHO DOTAZNÍKA
VO FYZIOTERAPEUTICKEJ PRAXI A ZMENY SPRÁVANIA U PRACOVNÍKOV
S MENTÁLNOU ZÁŤAŽOU S NEŠPECIFICKOU BOLEŠŤOU KRÍŽOV
POČAS AMBULANTNEJ FYZIOTERAPIE**

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ABSTRACT

Introduction: Chronic low back pain is a serious and common public health problem. Physiotherapy helps reduce pain and restore motor function in mentally burdened workers with chronic low back pain, however, those who prefer this therapy are often in the minority.

Objective: To help workers with a mental burden with chronic low back pain overcome ambivalence and find out their own motivation for changing health behavior during outpatient therapeutic exercises.

Material and methods: The questionnaire is aimed at determining the motivation of workers with mental burden with chronic low back pain in the outpatient stage to physiotherapeutic treatment. The questionnaire was completed by 85 people (50 women and 35 men), whose average age was 38.36 ± 5.67 (25 – 55) years. The self-construction questionnaire was divided into 4 blocks, which consisted of questions about external (social, material) and internal (personal, physiological) motives.

Results: It was revealed that the most effective motive for patients (35.2 %) to visit a physiotherapy centre is the recommendation of a doctor and physiotherapist. It turned out that the interest of patients in visiting the rehabilitation center is 8.52 ± 1.40 points and the interest in individual exercises with a therapist or even independently (without visiting the center) was 7.42 ± 2.36 points. The optimal motivation for patients to exercise is a visit to the rehabilitation center 5 times a week for 1 hour. The main expectation of patients from visiting the rehabilitation center was the elimination/reduction of pain (18.8 %).
Conclusion: Patient adherence to treatment is influenced by personal and social factors, as well as the relationship with the physiotherapist, which can be useful for the practice and development of theoretically reliable interventions aimed at increasing adherence to outpatient physiotherapy by mentally burdened workers with chronic low back pain.

Key words: Chronic non-specific low back pain. Motivation questionnaire. Behavior change. Recovery in the outpatient setting.

ABSTRAKT

Úvod: Chronická bolesť krížov je závažným a bežným problémom verejného zdravia. Fyzioterapia pomáha znižovať bolesť

a obnoviť motorické funkcie u pracovníkov s mentálnou záťažou s chronickou bolesťou krížov, avšak tí, ktorí uprednostňujú túto terapiu, sú často v menšine.

Cieľ: Pomôcť pracovníkom s mentálnou záťažou s chronickou bolesťou krížov prekonať ambivalenciu a zistiť vlastnú motiváciu pre zmenu zdravotného správania počas ambulantných terapeutických cvičení.

Materiál a metódy: Dotazník je zameraný na zistenie motivácie pracovníkov s mentálnou záťažou s chronickou bolesťou krížov v ambulantnom štádiu k fyzioterapeutickej liečbe. Dotazník vyplnilo 85 ľudí (50 žien a 35 mužov), ktorých priemerný vek bol $38,36 \pm 5,67$ (25 – 55) rokov. Samokonštrukčný dotazník bol rozdelený do 4 blokov, ktoré pozostávali z otázok o vonkajších (sociálnych, materiálnych) a vnútorných (osobných, fyziologických) motívoch.

Výsledky: Zistilo sa, že najúčinnjším motívom pre pacientov (35,2 %) k návšteve fyzioterapeutického centra je odporúčanie lekára a fyzioterapeuta. Ukázalo sa, že záujem pacientov navštíviť rehabilitačné centrum je $8,52 \pm 1,40$ bodov a záujem o individuálne cvičenia s terapeutom alebo aj samostatne (bez návštevy centra) bol $7,42 \pm 2,36$ bodu. Optimálnou motiváciou pacientov k cvičeniu je návšteva rehabilitačného centra 5-krát týždenne s dĺžkou 1 hodiny. Hlavným očakávaním pacientov od návštevy rehabilitačného centra bolo odstránenie/zníženie bolesti (18,8 %).

Záver: Dodržiavanie liečby pacientmi ovplyvňujú osobné a sociálne faktory, ako aj vzťah k fyzioterapeutovi, čo môže byť užitočné pre prax a rozvoj teoreticky spoľahlivých intervencií zameraných na zvýšenie dodržiavania ambulantnej fyzioterapie pracovníkov s mentálnou záťažou s chronickou bolesťou krížov.

Kľúčové slová: Chronická nešpecifická bolesť krížov. Motivačný dotazník. Zmena správania. Ambulantné zotavenie.

INTRODUCTION

The prevalence of chronic low back pain (CLBP) is increasing worldwide, ranging from 4.2 % to 19.6 % among working-age population (Zheng et al., 2023). CLBP disrupts the quality of life, limits

physical, functional and psychological capabilities of working-age population (Hong et al., 2020; Dereka, 2020; Diez et al., 2022; Alfalogy et al., 2023), which in its turn leads to an increase in morbidity rates, high level of disability, huge costs of treatment and compensation for temporary or permanent performance loss (GBD 2019 Diseases and Injuries Collaborators, 2020; Koerich et al., 2021).

The key factors of CLBP development, in addition to genetic predisposition (Zimney et al., 2023), are a sedentary lifestyle (Baradaran Mahdavi et al., 2021), stress, sleep problems, depression, etc. (Hong et al., 2020; Nieminen et al., 2021; Alfalogy et al., 2023).

One of the main reasons for the sedentary lifestyle of mental workers (MWs), which can lead to CLBP development, is their daily work. According to the research, LBP is a common problem among MWs (Hanna et al., 2019; Hong et al., 2020; Kallings et al., 2021; Basakci Calik et al., 2022; Tesfaye et al., 2023).

The nature of the MWs' activities usually involves working at a computer in static neck postures and repetitive hand/wrist movements, often with uncomfortable back postures and non-observance of office ergonomics (Hong et al., 2020; Hossian et al., 2022), which in its turn increases the likelihood of pain development.

Scientific understanding of CLBP has significantly expanded in the recent decades. This has led to a shift from purely biomedical treatment methods to multimodal approaches that take into account the complex biopsychosocial nature of CLBP (Fedorenko et al., 2019; 2020). Currently, non-pharmacological and non-invasive treatments are widely used in CLBP treatment, including recommendations to stay active, patient education and the use of physical therapy (PT) interventions (Malfliet et al., 2019; Matsudaira et al., 2022).

The use of PT, based on a biopsychosocial approach, allows focusing on individual characteristics of each patient, which includes continuous (non)verbal communication, education during all aspects of treatment, identification of patient goals, empowerment of the patient, and confidence of a therapist, who must have sufficient social and interpersonal skills and demonstrate special knowledge in order to select physiotherapeutic measures according to the patient's needs. In addition, it is necessary to focus on the principles of self-control and feedback from the patient. Considering

the fact that with such an approach MWs should review their daily habits, motivational interviewing (MI) techniques can help the therapist overcome the difficulties that patients face when trying to change their attitude to both lifestyle and treatment (Malfliet et al., 2019; Vitomskyi et al., 2019; Matsudaira et al., 2022).

MI is a person-oriented form of counseling aimed at identifying and strengthening motivation for behavior change (Miller et al., 2009). This method has commonly been used in the treatment of addiction (Schwenker et al., 2023), and has also proven useful for other health concerns such as weight loss (Freshwater et al., 2022), managing chronic illness (Zomahoun et al., 2017), and increasing physical activity (O'Halloran et al., 2014). More recently, MI has been applied to people on sick leave, including those with musculoskeletal disorders (Løchting et al., 2021).

MI is aimed at the development of patient's independent motivation by increasing the perception of their own competence, self-control and self-efficacy (Lee et al., 2017). Since this approach can empower patients and thus increase their personal control over the symptoms, the need for ongoing observation and supervision by a physiotherapist may be reduced.

While MI directly shapes patients' attitudes, a motivational questionnaire quantifies criteria of patient characteristics and behaviors that determine the success of motivational interviewing. In other words, it is a systematic tool whose outputs can be quantified and evaluated.

Objective

To help MWs with CLBP overcome ambivalence and find out their own motivations for change health behavior during an outpatient PT.

RESEARCH SAMPLE

Motivation questionnaires aimed to determine motivation for therapy at the outpatient stage (OS) were completed by 85 MWs with CLBP (50 females and 35 males) with average age 38.36 ± 5.67 (25 – 55) years and a history of the disease from five years and more. All patients had higher education.

The research was conducted in accordance with the international principles of the Helsinki Declaration of the World Medical Association (World Medical Association, 2013) regarding ethical norms and rules for conducting medical research with human

participation, and was approved by the University Ethics Committee (No 3/2021). All the participants were familiarized with the measurement procedure and signed the informed consent.

METHODOLOGY

In order to receive a clear idea of the motives for rehabilitation at the OS in MWs with CLBP, a motivational questionnaire consisting of both extrinsic (social, material) and intrinsic (personal, physiological) motives was conducted. The author's questionnaire consisted of 4 blocks and the respondents were supposed to choose the answer, give a positive or negative answer, or rate the answer on a 10-point scale, with 10 points being the maximum value and 1 point – the minimum.

Statistical analysis of the received results was conducted using the program Statistica 12.0 (StatSoft, USA). Mean \pm Standard Deviation ($M \pm SD$) was measured. The significance of the difference was evaluated using the Mann-Whitney U-test. Correlation analysis was performed using Spearman's correlation coefficient. Statistical significance defined at $p < 0.05$.

RESULTS

Block 1 of the questionnaire consisted of the questions "What motivates you to attend a rehabilitation center (RC)?", "What can prevent you from attending classes at a RC", "What do you think depends on you in achieving the desired outcome", "Rate your desire to study at the RC" and "Are you ready to continue rehabilitation after pain syndrome disappears?"

The analysis of the motives for PT in MWs with CLBP revealed a certain sequence presented in Table 1.

Besides, the additional analysis of patients' choice of motives showed that MWs with CLBP chose 1 – 3 motives in average that encourage to receive therapy at the OS.

It was revealed that while choosing the reasons that prevent rehabilitation at the OS, MWs with CLBP almost equally named finances (budget, money, material situation) – 20 %; work, labor activity – 22.4 %; time, employment – 20 %, long distance – 4 %, studies – 2 %, children – 2.4 %, generally bad health – 3.5 %, force majeure and other reasons (laziness, problems, lack of results, family circumstances, weather) – 4.7 %. 21.2% of the patients could not determine the reasons that prevent them from attending classes.

It was revealed that 89.4 % of MWs with CLBP could not be active and sufficiently aware of their recovery in a RC.

According to the results of the questionnaire, the desire of MWs with CLBP to attend a RC comprised 8.52 ± 1.40 points and only 10.6 % patients were ready to take responsibility for themselves and make appropriate efforts on their way to recovery. When answering the question about willingness to continue rehabilitation after the pain syndrome disappears, a fairly high percentage – 63.5 %, of patients were interested in continuing the selected course of PT.

Block 2 of the questionnaire consisted of the questions "Are you a sociable person?", "Do you prefer group classes?", "Are you ready to receive PT on your own based on the recommendations of a physical therapist?", "Are you ready to receive PT only with a physical therapist?" (these questions were assessed according to a 10-point scale) and "Can you receive PT both with a physical therapist and on your own?"

Table 1 Hierarchy of motives for PT in MWs with CLBP at the OS, n=85

Motives for rehabilitation in patients	Place by importance	No of patients, 85 (%)
Recommendations of a doctor (doctors), a physical therapist	1	30 (35.2)
To avoid painful sensations	2	27 (31.7)
Communication with other patients	3	26 (30.6)
To avoid worsening of health, disability	4	21 (24.7)
To restore physical and mental functions	5	21 (24.7)
Patients' desire to support themselves, their physical condition at this level	6	20 (23.5)
Patients' desire to develop their physical qualities, to achieve a better condition(s)	7	14 (14.1)
To return to former life, work	8	14 (14.1)
Friendly relations with the medical staff	9	6 (7.1)
To avoid disability	10 – 11	5 (5.9)
Requirements of family and friends	10 – 11	5 (5.9)

Table 2 Inclination to various formats of classes in MWs with CLBP at the OS, (n=85, points)

Classes format	Priority	M ± SD
With a physical therapist or independently	1	7.42 ± 2.36
Only with a physical therapist	2	7.38 ± 2.81
Ready to attend PT classes independently	3	7.29 ± 2.51
Group classes	4	6.06 ± 2.69

Table 3 Comparison of the number of attended classes with the desired attendance in MWs with CLBP, (n=85)

Parameter	No of attended classes %	5 times a week	4 times a week	3 times a week	2 times a week	1 time a week	1 time a month
Patients who are ready to attend classes		56.5	12.9	18.8	4.7	5.9	1.2
Actual attendance of the classes		22.4	5.9	36.5	18.8	12.9	3.5

With the help of the questionnaire, which specified several possible forms of interaction with the patients and accompanying them in a RC, a certain sequence of inclination of patients with CLBP to different formats of classes was revealed, which is presented in Table 2.

When studying the relationship between patients' sociability self-assessment and their choice of training formats, we revealed a direct relationship between sociability indicator of MWs with CLBP and their choice of classes both with a physical therapist and independently ($r = 0.48$; $p < 0.05$), group classes ($r = 0.45$; $p < 0.05$), only with a physical therapist ($r = 0.41$; $p < 0.05$), independent classes ($r = 0.34$; $p < 0.05$).

Block 3 of the questionnaire consisted of the questions "Do you have a goal or an image of the desired outcome of rehabilitation? If yes, which one?", "How often are you willing to visit a rehabilitation center?", "How much time do you intend to spend in a RC?", "How do you experience painful feelings? Rate them on a 10-point scale", "What is your pain like at the time you arrive at a RC?", "Are you ready to handle difficulties and pain during classes? Rate your answer on a 10-point scale" and "Are you ready to use a diary of self-observation (self-control)?"

Analyzing the presence of a goal in MWs with CLBP and their idea of the desired outcome, it was revealed that all the respondents had an idea of the therapy goal and only 14.1 % – of the desired outcome.

A comparison of patients' readiness to attend classes and their actual attendance of classes in a RC showed corresponding results presented in Table 3.

The time which patients are willing to spend on classes in a RC was also different. 20 % of the MWs

with CLBP noted that they are ready to attend classes up to 1 hour long, 51.8 % – 1, 6.5 % – from 1 to 1.5, 8.2 % – from 1 to 2, 3.5 % – 2 hours, respectively.

It was revealed that the level of pain experience in MWs with CLBP comprised 6.65 ± 1.65 points. Actual pain index at the time of admission to a RC according to Wong-Baker pain scale was 5.99 ± 1.95 points. 15.3 % of the respondents had no constant pain, 20 % replied that pain interferes with their activities, 42.4 % replied that pain interferes with concentration, and in 22.4 % of replies it interferes with basic needs. There were no patients answering "pain can be ignored" and "necessary bed rest" in the group of respondents.

The analysis of the relationship between self-assessment of pain in MWs with CLBP and the actual pain at the time of admission to a RC according to Wong-Baker pain scale revealed a direct relationship between these indicators ($r = 0.60$; $p < 0.05$).

The indicator of readiness to endure difficulties and pain during PT classes comprised 7.20 ± 1.68 points, and 65.9 % of the respondents noted their readiness to use an observation diary.

Block 4 of the questionnaire consisted of the questions "Rate your own knowledge of your disease on a 10-point scale", "Rate your knowledge of exercises leading to improvement of your condition on a 10-point scale", "Please, indicate what you expect from attending a RC?"

According to the analysis of the results, the index of self-assessment of knowledge of their disease and exercises leading to improvement of their condition in MWs with CLBP comprised 7.52 ± 1.62 points and 7.32 ± 1.72 points.

The questionnaire made it possible to determine the following expectations of MWs with CLBP related to attending a RC:

- To remove, reduce pain, painful feelings – 18.8 %;
- To restore health and functions – 12.9 %;
- To recover – 12.9 %;
- To improve well-being, state of health, physical qualities – 10.6 %;
- To get better – 7.1 %;
- To maintain health condition – 5.9 %;
- To avoid disability and deterioration of health, condition – 3.5 %;
- The outcome – 2.4 %;
- To return to work – 1.2 % persons, respectively.

It should be noted that 6 persons named several options of expectations. Besides, 27.1 % of the respondents did not have any expectations of attending a RC.

DISCUSSION

Timely resumption of usual activities is integral to successful functional outcomes in individuals with CLBP. Integrating motivational interviewing with traditional physical therapy has been shown to reduce pain and functional limitations and improve exercise compliance (Prevett, 2017; Jamil et al., 2021).

MI comprises a specific set of strategies and techniques to help motivate ambivalent individuals towards behavior change (Arbuckle et al., 2020). MI presumes personal autonomy, that people will make their own choices, hence the aim of our study was to help MWs with CLBP overcome their ambivalence and find out their own motivation for change.

Based on the obtained data, it can be stated that one third of the patients chose motive "Recommendation of a doctor (a physical therapist)" as an important (primary) one, namely the specialist's ability to interact with patients, manage them in accordance with a jointly defined individual PT program, i.e., extrinsic motivation for outpatient therapy prevailed in MWs with CLBP. On the other hand, the percentage of patients choosing motive "Communication with other patients" indicates that this category of patients finds the need to communicate with patients having the same disease significant, which inspires them to continue PT in the outpatient setting.

It was revealed that only one-fifth of those who took part in the study can freely attend classes in a RC. MWs with CLBP who, when choosing the reasons that prevent them from attending classes in a

RC, stated such things as work, employment, time, financial situation, probably need some correction in interaction with a RC, or a shortened program of PT, remote support, that is, taking into account patient's individual needs and capabilities.

Despite the fact that the desire of MWs with CLBP to attend classes was higher than average, however, respondents' answers to the question "What depends on you in achieving the desired outcome?" indicate their low awareness and responsibility for the effects of outpatient PT, which makes it necessary to include a number of additional aspects in the activities of physical therapists when working with such patients. Namely, it is necessary to emphasize to the patients that PT success depends on their involvement, awareness, initiative, and interest. Classes with such patients must be organized with their maximum conscious engagement in the recovery process.

It was found that the more sociable patients are, the less inclined and ready they are to choose independent classes, that is, it can be claimed that individual psychological features must be taken into account when drawing up an outpatient PT program. Patient's sociability can be decisive in choosing an effective form of exercise.

Motivation for therapy of MWs with CLBP may be influenced by various factors and reasons. Accordingly, setting goals and objectives, attending and accepting a certain number of classes in one's lifestyle, as well as their duration, patients' willingness to overcome pain and difficulties, monitor their condition and its changes with writing in an observation diary will also reflect the motivation for classes in a RC. Besides, specifying the desired outcome will have a positive effect on the activity of patients. It is important to note the high willingness of MWs with CLBP to visit a RC. Undoubtedly, patient's high motivation affects their priorities in life and readiness for life changes in general, and allocation of a significant amount of attention to the process of their recovery in particular.

Each patient undoubtedly experiences pain in their own ways. In our study, the level of pain experienced by MWs with CLBP was average and above average, and the level of actual pain at the time of admission to a RC according to Wong-Baker pain scale ranged within moderate pain feelings, which was manifested in characteristics that interfere with activities and concentration. Therefore, rehabilitation work with MWs having CLBP should be aimed

primarily at relieving pain and painful experiences and lead to a gradual relief of pain in the process of training (at first until the experience of mild pain, and then possibly until its complete elimination), which, in its turn, will increase motivation for classes in a RC on the basis of achieving the desired health condition, namely the absence of pain. Taking into account the specifics of the disease, a high willingness of MWs with CLBP to tolerate problems was revealed. Despite the fact that 84.7 % of the patients experienced more or less pain, they were ready to work, take necessary actions to correct pain, which indicates the significant role of this motive in the motivation for therapy in the studied patients. Besides, confirmation of sustainable motivation in MWs with CLBP at the OS shows that the majority of the respondents noted their willingness to use an observation diary.

The respondents of our study showed an above-average level of self-assessed knowledge about their disease and exercises that lead to health improvement, which is probably related to a high level of education and ability of MWs to comprehend information.

Expectations and attractiveness are determinants of human motivation (Ankawi et al., 2019), therefore, the obtained knowledge of MWs' expectations of the classes in a RC enabled us to understand patients' actions and behavior, their aspirations and control (self-control) ability based on the existing experience.

Based on the fact that one fourth of the respondents could not decide what they would like to achieve attending PT classes in a RC, physical therapists need to pay attention to the expansion and formation of effective motives and motivation for outpatient PT in patients, particularly MWs with CLBP.

There are a number of theories used to substantiate behavior change interventions, many of which share similar concepts (Kok, 2014).

The process approach to health is one of the models which describes the process of health behavior change (Schwarzer, 2008), and is used to explain the behavior related to exercise and physical activity (Schwarzer et al., 2007). The model has two levels: a continuous level that provides distinction between the motivational phase leading to behavioral intention and the volitional phase leading to actual health behavior.

There are three most influential factors of the motivational phase. The first one is perception of risk, that is, interpretation of a threat to health (for example, feeling of pain); the second one is expectation of the result (for example, expectation of the prescribed exercises); the third one is self-efficacy of completing the task (patients' belief in their ability to successfully consolidate behavior), which is the most influential in this phase. After forming an intention, a person moves to a volitional phase, where maintaining self-efficacy, planning actions and overcoming difficulties are most influential. After the behavior is adopted, the person moves to the action stage, where self-efficacy, external barriers, and facilitators influence the maintenance of the behavior. Maintenance of behavior can be achieved due to stronger motives and planning (Lippke et al., 2005). This theory can provide an appropriate basis for explaining favoring physical activity and contribute to the development of the process of physical therapy intervention and the role of a physical therapist in it (Meade et al., 2019).

Although physical therapists are increasingly developing advanced communication skills to motivate and support behavior change (Prevett, 2017), patients themselves are responsible for adherence to exercise prescriptions. Since self-efficacy, motivation, and intentions were identified as predictors of favoring PT programs (Essery et al., 2017), effective support of patients in the development of these skills, which will lead to independent management of their health condition, is one of the main tasks of a physical therapist.

CONCLUSIONS

Personal and social factors, as well as relationship with a physical therapist, influence patients' favoring therapy, which may be useful for practice and development of theory-based interventions aimed to increase favoring outpatient physical therapy intervention in MWs with CLBP. The use of MI techniques to increase outcome expectancy of patients could further strengthen the impact of PT on rehabilitation outcomes of patients with CLBP.

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REFERENCES

- ALFALOGY E., MAHFOUZ S., ELMEDANY S. et al. Chronic low back pain: prevalence, impact on quality of life, and predictors of future disability. *Cureus*. 2023; 15 (9): e45760.
- ANKAWI B., KERNS R.D., EDMOND S.N. Enhancing motivation for change in the management of chronic painful conditions: a review of recent literature. *Current pain and headache reports*. 2019; 23 (10): 75.
- ARBUCKLE M.R., FOSTER F.P., TALLEY R.M. et al. Applying motivational interviewing strategies to enhance organizational readiness and facilitate implementation efforts. *Quality management in health care*. 2020; 29 (1): 1-6.
- BARADARAN MAHDAVI S., RIAHI R., VAHDATPOUR B. et al. Association between sedentary behavior and low back pain; A systematic review and meta-analysis. *Health promotion perspectives*. 2021; 11 (4): 393-410.
- BASAKCI CALIK B., YAGCIN., OZTOP M. et al. Effects of risk factors related to computer use on musculoskeletal pain in office workers. *International journal of occupational safety and ergonomics : JOSE*. 2022; 28 (1): 269-274.
- DEREKA T. Dependence of public health on country's economic indicators. *Zdravotnicke Listy*. 2020; 2: 82-90.
- DIEZ G.G., ANITUA E., CASTELLANOS N. et al. The effect of mindfulness on the inflammatory, psychological and biomechanical domains of adult patients with low back pain: A randomized controlled clinical trial. *PloS one*. 2022; 17 (11): e0276734.
- ESSERY R., GERAGHTY A.W.A., KIRBY S. et al. Predictors of adherence to home-based physical therapies: a systematic review. *Disability and rehabilitation*. 2017; 39 (6): 519-534.
- FEDORENKO S.M., VITOMSKYI V.V., LAZARIEVA O.B. et al. The results of the analysis of the criteria of therapeutic alliance of patients orthopedic profile of outpatient physical therapy program. *Health, sport, rehabilitation*. 2019; 5 (3): 15-23.
- FEDORENKO S., VITOMSKYI V., LAZARIEVA O. et al. Influence specificities of the type of attitude towards a disease on physical therapy satisfaction among the orthopedic profile patients and the possibilities of attitude improvement. *Journal of Physical Education and Sport*. 2020; 20 (2), Art 128: 896-904.
- FRESHWATER M., CHRISTENSEN S., OSHMAN L. et al. Behavior, motivational interviewing, eating disorders, and obesity management technologies: an Obesity Medicine Association (OMA) Clinical Practice Statement (CPS) 2022. *Obesity pillars*. 2022; 2: 100014.
- GBD 2019 DISEASES AND INJURIES COLLABORATORS. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet (London, England)*. 2020; 396 (10258): 1204-1222.
- HANNA F., DAAS R.N., EL-SHAREIF T.J. et al. The relationship between sedentary behavior, back pain, and psychosocial correlates among university employees. *Frontiers in public health*. 2019; 7: 80.
- HONG S., SHIN D. Relationship between pain intensity, disability, exercise time and computer usage time and depression in office workers with non-specific chronic low back pain. *Medical hypotheses*. 2020; 137: 109562.
- HOSSIAN M., NABI M.H., HOSSAIN A. et al. Individual and occupational factors associated with low back pain: the first-ever occupational health study among bangladeshi online professionals. *Journal of preventive medicine and public health = Yebang Uihakhoe chi*. 2022; 55 (1): 98-105.
- JAMIL A., JAVED A., IQBAL M.A. Effects of motivational interviewing with conventional physical therapy on rehabilitation of chronic musculoskeletal disorders: A quasi-experimental study. *JPMA. The Journal of the Pakistan Medical Association*. 2021; 71 (4): 1123-1127.
- KALLINGS L.V., BLOM V., EKBLUM B. et al. Workplace sitting is associated with self-reported general health and back/neck pain: a cross-sectional analysis in 44,978 employees. *BMC public health*. 2021; 21 (1): 875.
- KOERICH M.H.A.D.L., MEIRELLES B.H.S., ECHEVARÍA-GUANILO M.E. et al. Disability in people with chronic low back pain treated in primary care. *Fisioterapia em Movimento*. [Internet]. 2021; 34. [2024 Apr 18]. Accessibility: <https://doi.org/10.1590/fm.2021.34121>
- KOK G. A practical guide to effective behavior change: How to apply theory- and evidence-based behavior change methods in an intervention. *The European Health Psychologist*. 2014; 16 (15): 156-170.

- LEE H., WIGGERS J., KAMPER S.J. et al. Mechanism evaluation of a lifestyle intervention for patients with musculoskeletal pain who are overweight or obese: protocol for a causal mediation analysis. *BMJ open*. 2017; 7 (6): e014652.
- LIPPKE S., ZIEGELMANN J.P., SCHWARZER R. Stage-specific adoption and maintenance of physical activity: testing a three-stage model. *Psychology of Sport and Exercise*. 2005; 6 (5): 585-603.
- LÖCHTING I., HAGEN R., MONSEN C.K. et al. Fidelity of a motivational interviewing intervention for improving return to work for people with musculoskeletal disorders. *International journal of environmental research and public health*. 2021; 18 (19): 10324.
- MALFLIET A., ICKMANS K., HUYSMANS E. et al. Best evidence rehabilitation for chronic pain part 3: Low back pain. *Journal of clinical medicine*. 2019; 8 (7): 1063.
- MATSUDAIRA K., OKA H., YOSHIMOTO T. Changing concepts in approaches to occupational low back pain. *Industrial health*. 2022; 60 (3): 197-200.
- MEADE L.B., BEARNE L. M., GODFREY E. L. "It's important to buy in to the new lifestyle": barriers and facilitators of exercise adherence in a population with persistent musculoskeletal pain. *Disability and Rehabilitation*. 2019; 43: 1-11.
- MILLER W.R., ROLLNICK S. Ten things that motivational interviewing is not. *Behavioural and cognitive psychotherapy*. 2009; 37 (2): 129-140.
- NIEMINEN L.K., PYYSALO L.M., KANKAANPÄÄ M.J. Prognostic factors for pain chronicity in low back pain: a systematic review. *Pain reports*. 2021; 6 (1): e919.
- O'HALLORAN P.D., BLACKSTOCK F., SHIELDS N. et al. Motivational interviewing to increase physical activity in people with chronic health conditions: a systematic review and meta-analysis. *Clinical rehabilitation*. 2014; 28 (12): 1159-1171.
- PREVETT S. Motivational Interviewing: Its role in physiotherapy practice and changing exercise behaviour. *International Journal of Therapy and Rehabilitation*. 2017; 24 (12): 539-541.
- SCHWARZER R. Modeling health behavior change: how to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*. 2008; 57 (1): 1-29.
- SCHWARZER R., SCHUZ B., ZIEGELMANN J.P. et al. Adoption and maintenance of four health behaviors: theory-guided longitudinal studies on dental flossing, seat belt use, dietary behavior, and physical activity. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*. 2007; 33 (2): 156-166.
- SCHWENKER R., DIETRICH C.E., HIRPA S. et al. Motivational interviewing for substance use reduction. *The Cochrane database of systematic reviews*. 2023; 12 (12): CD008063.
- TESFAYE A.H., ABERE G., MEKONNEN T.H. et al. A systematic review and meta-analysis of low back pain and its associated factors among school teachers in Africa. *BMC musculoskeletal disorders*. 2023; 24 (1): 499.
- VITOMSKYI V.V., LAZARIEVA O.B., FEDORENKO S.M. et al. Methods of management and motivation in personnel management of the center of physical therapy and improving the quality of services for patients with orthopedic profile at the outpatient stage. *Health, sport, rehabilitation*. 2019; 5 (2): 17-27.
- WORLD MEDICAL ASSOCIATION. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*. 2013; 310 (20): 2191-2194.
- ZHENG D.K.Y., KAWCHUK G.N., BUSSIÈRES A.E. et al. Trends of low back pain research in older and working-age adults from 1993 to 2023: a bibliometric analysis. *Journal of pain research*. 2023; 16: 3325-3341.
- ZIMNEY K., VAN BOGAERT W., LOUW A. The biology of chronic pain and its implications for pain neuroscience education: state of the art. *Journal of clinical medicine*. 2023; 12 (13): 4199.
- ZOMAHOUN H.T.V., GUÉNETTE L., GRÉGOIRE J.P. et al. Effectiveness of motivational interviewing interventions on medication adherence in adults with chronic diseases: a systematic review and meta-analysis. *International journal of epidemiology*. 2017; 46 (2): 589-602.