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Original Research Article

Integrating Mind-Body Techniques in Physiotherapy Rehabilitation: A Review of Literature

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Abstract

Aim- This study aimed to examine the usefulness of various mind-body interventions in physiotherapy rehabilitation. ***Methods***- Through a comprehensive review of the literature on topics such as yoga, mind-body exercise, Tai Chi, pain neuroscience education, and mindfulness-based stress reduction, the researchers identified the potential benefits and drawbacks of incorporating these interventions into clinical practice. ***Result***- These results indicate that combining mind-body therapies with physiotherapy rehabilitation may lead to positive outcomes for patients in terms of their recovery and overall well-being. ***Conclusion***- The integration of mind-body techniques in physiotherapy rehabilitation holds significant promise for improving recovery and fostering general psychological well-being in individuals with musculoskeletal, neurological, and other conditions.

Keywords: Physiotherapy, Rehabilitation, Mind-body techniques, Mindfulness, Yoga, psychologically informed physical therapy, Mind fullness based stress reduction.

INTRODUCTION

Traditionally, physiotherapy has aimed to restore physical function and mobility in individuals diagnosed with a diverse range of musculoskeletal and neurological disorders [1]. Throughout its history, interventions have typically involved correcting physical impairments using exercises, manual therapy, and implementing various therapeutic approaches [2]. However, recent research has uncovered a close relationship and interdependence between mind and body, leading to the development of a new rehabilitation paradigm [3]. This paradigm incorporates mind-body techniques as part of physiotherapy rehabilitation, providing a comprehensive perspective that considers the interdependence of physical, psychological, and emotional health [4]. This perspective posits that mental and emotional well-being can directly affect patients' physical health and recovery outcomes [5]. As a result, incorporation of these interventions has become increasingly prevalent in contemporary physiotherapy [6]. The primary aim of this review was to assess the efficacy of incorporating diverse mind-body techniques, including yoga, Tai Chi, mind-body exercises, pain neuroscience education, PIPT, and mindfulness-based stress reduction, into physiotherapy rehabilitation. Rather than concentrating solely on the beneficial aspects of each intervention, this review offers a more in-depth perspective that acknowledges instances in which these interventions may not exhibit substantial positive outcomes[6]. The foremost objective of integrating mind-body techniques in healthcare is to address not only the physical manifestations of an injury or illness but also the psychological and emotional aspects that frequently accompany painful treatments [6]. Patients with chronic pain often experience comorbidities including stress, anxiety, and depression, which can impede their ability to undergo rehabilitation and achieve complete recovery [7]. Physiotherapists can enhance the quality of care provided by employing interventional techniques to address psychosocial factors. Furthermore, incorporating mind-body techniques is consistent with the biopsychosocial model of healthcare, which acknowledges the interrelationships between biological, psychological, and social factors in health and disease.

Physiotherapists can enhance the efficacy of their treatment and address the diverse requirements of their patients by developing more comprehensive rehabilitation plans [8]. The increasing body of evidence supporting the usefulness of mind-body interventions in a range of healthcare sectors, such as physiotherapy, motivated this literature review to offer a well-supported examination of this subject [9]. The primary aim of this review was to expand the existing body of evidence by integrating recent studies on the integration of mind-body techniques in physiotherapy rehabilitation. Furthermore, the synthesis presented pinpoint areas that warrant further investigation and advocate for an evidence-based approach in future interventions. This study offers valuable insights into the effectiveness of therapeutic methods such as yoga, mindfulness, psychologically informed physical therapy (PIPT), mindfulness-based stress reduction, and cognitive behavioural therapy when combined with physiotherapy rehabilitation.

METHODOLOGY

An extensive search was undertaken for relevant articles on the application of mind-body techniques in physiotherapy rehabilitation, utilizing electronic databases, such as PubMed, Scopus, and Web of Science. Articles published between 2017 and 2023 were also reviewed. Studies that incorporated interventions such as yoga, mind-body exercises, pain neuroscience education, mindfulness-based stress reduction, psychologically informed physical therapy, and cognitive-behavioural therapy were analyzed. Eighteen articles were evaluated for their quality and relevance to the subject matter.

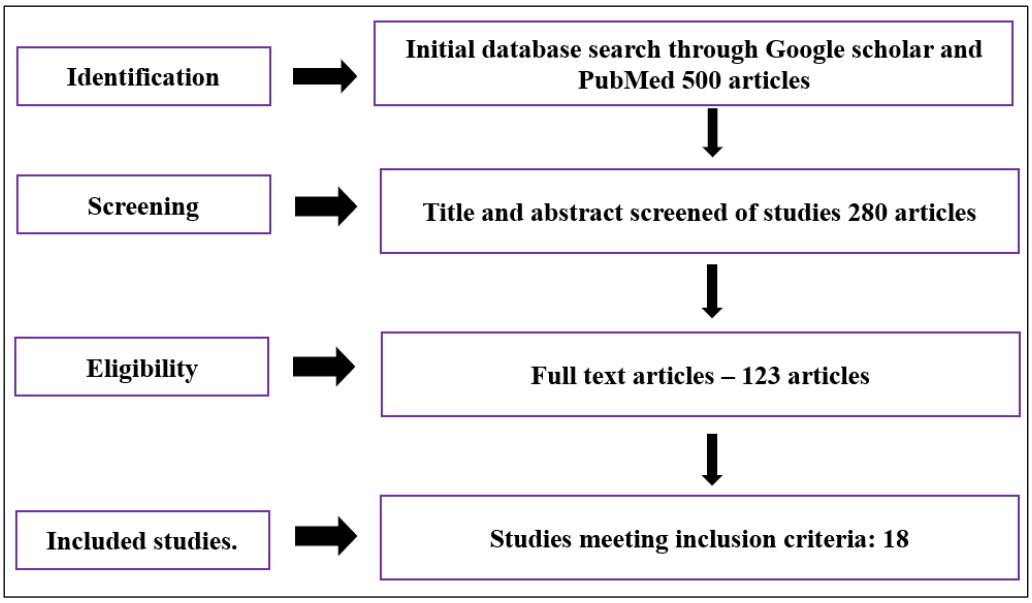

Figure: Flow of Methodology

RESULTS

Sl No	Author	Study Design	No. of patients	Treatment applied	Outcome measures	No. of Sessions	Follow up	Result

5.	4.	3	2.	1.
Wang *et al.*, (2022)	Yue *et al.*, (2023)	Dong Zhu *et al.*, (2020)	CHRISTOPHER T. JOYCE *et al.*, (2022)	J. Y. Kwok *et al.*, (2019)
RCT	RCT	RCT	RCT	RCT
60	100	100	230	Total: 138 - Yoga: 71 - Stretching: 67
The Tai chi group received Tai chi and the Control Group Received Sham Tai Chi Quan Practice with the rest	Tai Chi group and control group	Tailored Mind-Body Exercises (MBE) including elements of qi gong, tai chi, and yoga, with movements in harmony with breathing and acupoint massage.	Physical therapy (PT), yoga, and education	Weekly sessions of yoga or 8 weekly sessions of stretching.
Pressure pain threshold with Hand Held Digital manometer	WOMAC, SF-36	Physical fitness components: aerobic fitness, muscular fitness, flexibility, and body composition; Quality of life for drug addiction measured by the QOL-DA questionnaire.	Changes in back-related pain on the 11-point numerical rating scale and disability on the modified 23-point Roland Morris Disability Questionnaire	Symptom experiences, anxiety and depression, and HRQOL outcomes
40 minutes	Weekly Session for 12 weeks	60 minutes a day, five times a week, for 3 months,	Not mentioned	8 weeks
Post Intervention	Up to 6 weeks after intervention	6 months.	52 weeks	3-month post-intervention
Tai chi group showed substantial improvement after exercise, whereas those in the control group didn’ t improve	Tai chi effectively reduces pain and strengthens Quadriceps in Knee Osteoarthritis patients.	The tailored Mind-Body Exercises (MBE) intervention led to statistically significant improvements in physical fitness parameters and Quality of Life for Drug Addicts (QOL-DA) total score compared to conventional rehabilitation exercises. The MBE group showed better outcomes in terms of physical fitness, weight control, hypertension, aerobic endurance, and overall quality of life.	Improvements in perceived stress-mediated improvements in disability after PT treatment compared to education. No other psychological constructs were significant mediators in the effects of yoga or PT on pain or disability outcomes compared to education.	Yoga significantly improved nonmotor and motor symptom experiences compared to stretching, with changes in anxiety and depression mediating the effects on health-related quality of life.

8	7	6
E. Goldstein *et al.*, (2020)	M. A. Galan-Martin *et al.*, (2020)	Umi Budi Rahayu *et al.*, (2020)
RCT	RCT	Randomized controlled trial
Total: 413 - MBSR: 138 - Exercise: 137 - Wait-list control: 138	205	Total: 64 - Control group: 32 - Intervention group: 32
Participants received 8 weeks of training in mindfulness-based stress reduction (MBSR) or 8-8 weeks of training in sustained moderate-intensity exercise. The MBSR program included 2½ hour weekly sessions and regular at-home daily practice for 45 minutes per day. The exercise program consisted of weekly 2½ hour group sessions and daily 45-minute at-home practice of walking or jogging.	Experimental group: Pain neuroscience education Control group: Usual physiotherapy treatment including thermotherapy, analgesic electrotherapy, and exercises.	Neuro restoration protocol for seven days, which was a combination of several established physiotherapy interventions
SF12M (mental health) and PSS10 (perceived stress)	Change in health-related quality of life (HRQL) at different time points	Brain-derived neurotrophic factor serum analysis, Berg Balance Scale, and Barthel Index
Both mindfulness meditation and exercise programs for 2½ hours weekly.	Varied between 10 to 15 hours depending on the group, with the experimental group receiving a total of 28 hours over six weeks and the control group receiving 15 hours	Seven days
Involved weekly self-reports, daily self-assessments, repeated questionnaires at various time points post-intervention, and a final assessment at 8 months post-intervention. The study had a high retention rate of 94%.	6 months	Not Mentioned
Mindfulness-based self-efficacy played a significant role in mediating the effects of both meditation and exercise programs on mental health and stress. The study found that mindfulness and exercise training share similar mechanisms that can improve global mental health, including adaptive responses to stress. The results indicated reasonable predictability for mental health outcomes, with significant indirect effects for the mediating variable MSES-R in mediating mental health and perceived stress outcomes in both the meditation and exercise groups.	The combined treatment of pain neuroscience education (PNE) and group physical exercise was more effective than usual physiotherapy care in improving quality of life, reducing catastrophism, kinesiophobia, central sensitization, disability, pain intensity, and pressure pain thresholds in chronic spinal pain patients in primary care physiotherapy units.	Both groups showed better improvements in all parameters but only balance and functional performance had a statistically significant outcome.

11	10		9
Kristin R. Archer *et al.*, (2017)	K. Arya *et al.*, (2019)		Majid Mozafari Zadeh *et al.*, (2019)
RCT	RCT		RCT
86	Total: 36		Total: 45 Experimental: 23 Control: 22
Psychologically informed physical therapy (PIPT) integrates cognitive-behavioral techniques into conventional physical therapy. Common components include graded activity, goal setting, and cognitive-restructuring	Activity-based mirror therapy (Including movements such as ball-rolling, rocker-board, and pedaling, is performed on the less-affected side in front of a mirror while hiding the affected limb.		Mindfulness training
Effectiveness of pain coping strategies and exercise for improving physical function in patients with knee pain, impact of comparison group on long-term clinical benefits, conflicting findings in patients with neck pain, and effectiveness of PIPT for patients with low back pain.	Brunnstrom recovery stages (BRS), Fugl-Meyer assessment lower extremity (FMA-LE), Rivermead visual gait assessment (RVGA), and 10-metre walk test (10-MWT)		Scores on the mindfulness sport inventory, injury rates, and recovery assessed by a physiotherapist using standardized criteria
Not mentioned	Not mentioned		Not mentioned
3 month follow up	Not mentioned		Not mentioned
PIPT can be effective in improving physical function for patients with knee pain in the short term, with conflicting findings in neck pain but support for its effectiveness in low back pain, especially chronic cases.	The activity-based mirror therapy led to significant and favorable changes in Fugl-Meyer assessment lower extremity (FMA-LE) and Rivermead visual gait assessment (RVGA) compared to the control group. No significant changes were observed in the 10-10-meter test (10-MWT).	The results of the study showed high interest in increasing activity, good to excellent feasibility markers for both programs, improvements in physical and emotional function, and high satisfaction with the programs and skills learned. Additionally, suggestions for modifications were provided based on participant feedback.	Significantly greater mindfulness scores in the intervention group were associated with both reduced injury and improved performance.

14	13	12
M. Monticone *et al.,* (2017)	Catherine Mak *et al.,* (2017)	Ritsaart F Westenberg *et al.,* (2018)
RCT	RCT	RCT
Total: 170	Total: 20 - MiYoga group: 10 - Control group: 10	The participant count is: Total: 125 - Intervention group: 63 - Control group: 62
Multimodal exercises, cognitive-behavioral therapy sessions led by a psychologist, task-oriented exercises, general physiotherapy, ergonomic advice, group-based programs once a week for ten weeks, compliance monitoring, mild analgesics, and non-steroidal anti-inflammatory drugs.	MiYoga program elements of yoga, mindfulness, and motor learning	60-second personalized mindfulness-based video exercise
Disability Index, Tampa Scale for Kinesiophobia, Pain Catastrophizing Scale, pain numerical rating scale, Short-Form Health Survey	Test of Everyday Attention for Children (TEA-Ch) and Movement Assessment Battery for Children (MABC-2)	The main primaries measured in the study were pain intensity, state anxiety, anxiety symptoms, depression, and anger.
60 minutes per session, once a week	45 minutes	60 seconds
refers to the assessment point 12 months after the end of the intervention, where the effects of the multidisciplinary rehabilitation program on disability, pain, and quality of life were still present.	consisted of assessments conducted at 1 1-weeks-intervention and atm1-months-intervention.	Not mentioned
The multidisciplinary rehabilitation program was superior to general physiotherapy in improving disability, pain, and quality of life in subjects with chronic neck pain. The between-group difference in disability was clinically meaningful at the 12-month follow-up, and the multidisciplinary group reported higher treatment satisfaction.	The MiYoga program was feasible and acceptable to children with CP, resulting in improvements in attention and motor function without any adverse events.	The study found that the 60-second personalized mindfulness-based video exercise was associated with improvements in pain intensity, state anxiety, anxiety symptoms, depression, and anger compared to an attention placebo control. However, the observed differences in pain intensity were below the minimal clinically important difference for chronic pain patients. The mindfulness-based video exercise was feasible and acceptable to patients.

17	16	15
N. Javdaneh *et al.*, (2020)	Shahabeddin Bagheri *et al.*, (2021)	Anna M. Polaski *et al.*, (2021)
RCT	RCT	RCT
72	30	Sample size of 38 adults divided into the MedExT group (n=18) and the audiobook control group (n=20) conducted over 4 weeks at the Duquesne University Exercise Physiology Laboratory.
Scapular stabilization exercise alone and combined with Cognitive Functional Therapy (CFT).	Exercise program for 18 weeks for one group and an 8-week mindfulness intervention in addition to the exercise program for another group	Intervention comprising of mindfulness meditation followed by aerobic walking exercise;
The outcome measures are the Neck Pain and Disability Scale (NPAD), Neck Disability Index (NDI), and scapular kinematics.	The outcome measures included usual pain, pain during stepping, pain during running, knee function, fear of movement, pain catastrophizing, and coping strategies.	Outcome measures: disability, pain, mindfulness, anxiety, and daily pain perception measurements.
The treatment duration was at least six weeks	The treatment duration was 18 weeks in total, with a mindfulness program lasting for 8 weeks.	The intervention lasted for 4 weeks, with participants in the MedExT group performing the intervention 5 days per week
Follow-up assessment at six weeks.	assessments conducted at baseline, week 9, week 18, and 2 months after the end of the intervention for follow-up.	Not mentioned
The multimodal rehabilitation program including scapular stabilization exercise plus cognitive functional therapy was superior to stabilization exercises alone in reducing disability and improving scapular kinematics in patients with chronic neck pain.	The mindfulness exercise group showed lower pain during running, pain during stepping, better knee function, higher perceived treatment effects, lower pain catastrophizing, and more favorable coping strategies compared to the exercise-only group.	The MedExT intervention showed larger improvements in disability, increased mindfulness within the group, and significant improvements in low back pain intensity and unpleasantness compared to the control group.

18	T. Haugmark *et al.*, (2020)	RCT	70	Multicomponent rehabilitation program comprising a mindfulness-based and acceptance-based group program followed by physical activity counseling.	The primary outcome in this study was the Patient's Global Impression of Change (PGIC), with secondary outcomes including self-reported pain, fatigue, sleep quality, psychological distress, physical activity, health-related quality of life, and workability.	The treatment session includes a 10-session mindfulness-based and acceptance-based group followed by 12 weeks of physical activity counseling Control group patients did not receive any organized intervention other than diagnostic clarification and a patient education session but were free to attend any treatment and activity on their own.	12 month	The multicomponent rehabilitation program programs are more effective than treatment as usual, with only 13% in the intervention group and 8% in the control group reporting clinically relevant improvement in PGIC. There were significant between-group differences in the patient' s tendency to be mindful and perceived benefits of exercise in favor of the intervention group.

DISCUSSION

The results of the analysis demonstrated that the combination of mind-body techniques with physiotherapy rehabilitation may lead to improved patient outcomes and overall well-being. These techniques aim to address not only physical limitations but also the psychological and emotional aspects of rehabilitation. However, to ensure widespread implementation of this approach, several factors must be considered, including patient adherence, practitioner education, and system-level barriers. Therefore, additional research is necessary to investigate the underlying mechanisms of mind-body techniques and determine how to maximize their potential in clinical practice.

CONCLUSION

Ultimately, the integration of mind-body techniques in physiotherapy rehabilitation holds significant promise for improving recovery and fostering general psychological well-being in individuals with musculoskeletal, neurological, and other conditions. Methods such as yoga, mindfulness, pain neuroscience education, psychologically informed physical therapy, mindfulness-based stress reduction, and cognitive-behavioural therapy aim to synchronize the physical and mental aspects of the healing process. Implementing these approaches within a clinical setting empowers physiotherapists to deliver holistic care that addresses all the essential aspects of their patients' well-being.

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Conflict of interest - None

REFERENCES

1. Todhunter-Brown, A., Baer, G., Campbell, P., Choo, P. L., Forster, A., Morris, J., ... & Langhorne, P. (2014). Physical rehabilitation approaches for the recovery of function and mobility following stroke. *Cochrane Database of Systematic Reviews*, (4).
2. Chaikla, R., Sremakaew, M., Kothan, S., Saekho, S., Wantanajittikul, K., & Uthaikhup, S. (2023). Effects of manual therapy combined with therapeutic exercise versus routine physical therapy on brain biomarkers in patients with chronic non-specific neck pain in Thailand: a study protocol for a single-blinded randomised controlled trial. *BMJ open*, *13*(4), e072624.
3. Soulé, I., Littzen-Brown, C., Vermeesch, A. L., & Garrigues, L. (2022). Expanding the Mind–Body–Environment Connection to Enhance the Development of Cultural Humility. *International journal of environmental research and public health*, *19*(20), 13641.
4. Mayden, K. D. (2012). Mind-body therapies: evidence and implications in advanced oncology

practice. *Journal of the advanced practitioner in oncology*, *3*(6), 357.
5. Forslund, L., Arntzen, C., Nikolaisen, M., Gramstad, A., & Eliassen, M. (2023). Physiotherapy as part of collaborative and person-centered rehabilitation services: the social systems constraining an innovative practice. *Physiotherapy Theory and Practice*, 1-16.
6. Hassed, C. (2013). Mind-body therapies: Use in chronic pain management. *Australian family physician*, *42*(3), 112-117.
7. van Dijk, H., Köke, A. J., Elbers, S., Mollema, J., Smeets, R. J., & Wittink, H. (2023). Physiotherapists using the biopsychosocial model for chronic pain: Barriers and facilitators—A scoping review. *International journal of environmental research and public health*, *20*(2), 1634.
8. Monaco, S., Renzi, A., Galluzzi, B., Mariani, R., & Di Trani, M. (2022, October). The Relationship between Physiotherapist and Patient: A Qualitative Study on Physiotherapists' Representations on This Theme. In *Healthcare* (Vol. 10, No. 11, p. 2123). MDPI.
9. Ruiz-Ariza, B., Hita-Contreras, F., Rodriguez-Lopez, C., Rivas-Campo, Y., Aibar-Almazan, A., Carcelén-Fraile, M. D. C., ... & Afanador-Restrepo, D. F. (2023). Effects of mind-body training as a mental health therapy in adults with diabetes mellitus type II: A systematic review. *Journal of Clinical Medicine*, *12*(3), 853.
10. Kwok, J. Y., Kwan, J. C., Auyeung, M., Mok, V. C., Lau, C. K., Choi, K. C., & Chan, H. Y. (2019). Effects of mindfulness yoga vs stretching and resistance training exercises on anxiety and depression for people with Parkinson disease: a randomized clinical trial. *JAMA neurology*, *76*(7), 755-763.
11. Joyce, C. T., Chernofsky, A., Lodi, S., Sherman, K. J., Saper, R. B., & Roseen, E. J. (2022). Do physical therapy and yoga improve pain and disability through psychological mechanisms? A causal mediation analysis of adults with chronic low back pain. *journal of orthopaedic & sports physical therapy*, *52*(7), 470-483.
12. Zhu, D., Jiang, M., Xu, D., & Schöllhorn, W. I. (2020). Long-term effects of mind-body exercises on the physical fitness and quality of life of individuals with substance use disorder—a randomized trial. *Frontiers in psychiatry*, *11*, 528373.
13. Yue, H., Li, Y., Ma, J., Xie, C., Xie, F., Cai, J., ... & Yao, F. (2023). Effect of Tai Chi on knee pain and muscle strength in middle-aged and older adults with knee osteoarthritis: a randomized controlled trial protocol. *BMC Complementary Medicine and Therapies*, *23*(1), 256.
14. Rahayu, U. B., Wibowo, S., Setyopranoto, I., & Hibatullah Romli, M. (2020). Effectiveness of physiotherapy interventions in brain plasticity, balance and functional ability in stroke survivors: A randomized controlled trial. *NeuroRehabilitation*, *47*(4), 463-470.
15. Galan-Martin, M. A., Montero-Cuadrado, F., Lluch-Girbes, E., Coca-López, M. C., Mayo-Iscar, A., & Cuesta-Vargas, A. (2020). Pain neuroscience education and physical therapeutic exercise for patients with chronic spinal pain in Spanish physiotherapy primary care: a pragmatic randomized controlled trial. *Journal of clinical medicine*, *9*(4), 1201.
16. Goldstein, E., Topitzes, J., Brown, R. L., & Barrett, B. (2020). Mediational pathways of meditation and exercise on mental health and perceived stress: A randomized controlled trial. *Journal of health psychology*, *25*(12), 1816-1830.
17. Zadeh, M. M., Ajilchi, B., Salman, Z., & Kisely, S. (2019). Effect of a mindfulness programme training to prevent the sport injury and improve the performance of semi-professional soccer players. *Australasian Psychiatry*, *27*(6), 589-595.
18. Arya, K. N., Pandian, S., & Kumar, V. (2017). Effect of activity-based mirror therapy on lower limb motor-recovery and gait in stroke: A randomised controlled trial. *Neuropsychological rehabilitation*.
19. Archer, K. R., Devin, C. J., Vanston, S. W., Koyama, T., Phillips, S. E., George, S. Z., ... & Wegener, S. T. (2016). Cognitive-behavioral–based physical therapy for patients with chronic pain undergoing lumbar spine surgery: a randomized controlled trial. *The Journal of Pain*, *17*(1), 76-89.
20. Westenberg, R. F., Zale, E. L., Heinhuis, T. J., Özkan, S., Nazzal, A., Lee, S. G., ... & Vranceanu, A. M. (2018). Does a brief mindfulness exercise improve outcomes in upper extremity patients? A randomized controlled trial. *Clinical Orthopaedics and Related Research®*, *476*(4), 790-798.
21. Mak, C., Whittingham, K., Cunnington, R., & Boyd, R. N. (2017). MiYoga: a randomised controlled trial of a mindfulness movement programme based on hatha yoga principles for children with cerebral palsy: a study protocol. *BMJ open*, *7*(7), e015191.
22. Monticone, M., Ambrosini, E., Rocca, B., Cazzaniga, D., Liquori, V., Pedrocchi, A., & Vernon, H. (2017). RETRACTED: Group-based multimodal exercises integrated with cognitive-behavioural therapy improve disability, pain and quality of life of subjects with chronic neck pain: a randomized controlled trial with one-year follow-up. *Clinical rehabilitation*, *31*(6), 742-752.
23. Polaski, A. M., Phelps, A. L., Smith, T. J., Helm, E. R., Morone, N. E., Szucs, K. A., ... & Kolber, B. J. (2021). Integrated meditation and exercise therapy: a randomized controlled pilot of a combined nonpharmacological intervention focused on reducing disability and pain in patients with chronic low back pain. *Pain Medicine*, *22*(2), 444-458.
24. Bagheri, S., Naderi, A., Mirali, S., Calmeiro, L., & Brewer, B. W. (2021). Adding mindfulness practice

to exercise therapy for female recreational runners with patellofemoral pain: a randomized controlled trial. *Journal of athletic training*, *56*(8), 902-911.

25. Javdaneh, N., Letafatkar, A., Shojaedin, S., & Hadadnezhad, M. (2020). Scapular exercise combined with cognitive functional therapy is more effective at reducing chronic neck pain and kinesiophobia than scapular exercise alone: a randomized controlled trial. *Clinical rehabilitation*, *34*(12), 1485-1496.
26. Haugmark, T., Hagen, K. B., Provan, S. A., Smedslund, G., & Zangi, H. A. (2021). Effects of a mindfulness-based and acceptance-based group programme followed by physical activity for patients with fibromyalgia: a randomised controlled trial. *BMJ open*, *11*(6), e046943.