

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eissn 2391-8306 7

© The Authors 2018;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland
Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike.
(<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 28.07.2018. Revised: 28.07.2018. Accepted: 16.08.2018.

Zastosowanie rozluźniania mięśniowo-powięziowego w przewlekłym bólu odcinka lędźwiowo-krzyżowego kręgosłupa - przegląd badań

Effects of Myofascial Release in chronic low back pain - review papers

**Piotr Ożog¹, Dawid Natański¹, Aleksander Goch¹, Magdalena Weber-Rajek¹,
Walery Zukow², Agnieszka Radzimińska¹**

¹Department of Physiotherapy, Collegium Medicum, Nicolaus Copernicus University in Torun, Poland

²Department of Spatial Management and Tourism, Faculty of Earth Sciences, Nicolaus Copernicus University, Toruń, Poland

Streszczenie

Wstęp

Dysfunkcje kręgosłupa lędźwiowo-krzyżowego są jednymi z najczęściej występujących problemów dotyczących układu ruchu wśród współczesnego społeczeństwa na całym świecie, a ich częstość występowania wzrasta wraz z wiekiem. W ostatnich latach, wzrosło zainteresowanie problematyką powięzi, która jeszcze do niedawna była pomijana w etiopatogenezie bólu dolnego odcinka kręgosłupa. Jedną z możliwości terapeutycznych, jakie można zastosować w przypadku chronicznego zespołu bólowego odcinka lędźwiowo-krzyżowego kręgosłupa są techniki rozluźniania mięśniowo-powięziowego (ang. *Myofascial release*, MFR), będące jednymi z najnowszych metod z zakresu medycyny manualnej.

Cel pracy

Celem pracy był przegląd ostatnio opublikowanych badań dotyczących skuteczności technik rozluźniania mięśniowo-powięziowego w leczeniu przewlekłego bólu odcinka lędźwiowo-krzyżowego kręgosłupa.

Material i Metody

W celu odszukania aktualnych badań naukowych (publikacje z ostatnich 5 lat) poświęconych MFR w leczeniu przewlekłego bólu odcinka lędźwiowo-krzyżowego kręgosłupa przeszukano następujące bazy danych: PubMed, PEDro (Physiotherapy Evidence Database), ScienceDirect oraz Academic Search Premier. Zastosowano następujące słowa kluczowe: myofascial release, myofascial release therapy, myofascial pain, chronic low back pain.

Wyniki

Do przeglądu zakwalifikowano 9 badań oceniających wpływ rozluźniania mięśniowo-powięziowego na ból i zakres ruchu, ograniczenia funkcjonalne, pracę mięśni, jak również jakość życia u osób z przewlekłym bólem kręgosłupa lędźwiowo-krzyżowego.

Wnioski

Wyniki tego przeglądu pokazują, że istnieje niewiele badań dotyczących zastosowani MFR w leczeniu dolegliwości bólowych kręgosłupa lędźwiowo – krzyżowego. Na podstawie badań włączonych do tego przeglądu można wyciągnąć wniosek, że MFR może być skuteczną metodą leczenia dolegliwości bólowych kręgosłupa lędźwiowo – krzyżowego, jednakże istnieje potrzeba dalszych badań z dobrze opracowaną procedurą badawczą, która pozwoli na standaryzację tej metody terapeutycznej.

Słowa kluczowe: myofascial release; chronic low back pain

Abstract

Admission

Dysfunctions of the lumbosacral spine are among the most common problems related to the movement of contemporary society throughout the world, and its incidence increases with age. In recent years, increased interest in the issues fascia, which until recently was neglected in the etiology of low back pain. One of the therapeutic options that can be applied in the case of chronic pain syndrome lumbar-sacral spine techniques are easing myofascial (ang. Myofascial release, MFR), which is one of the latest methods in the field of manual medicine.

Objective of the work

The aim of the work was overview AD recently published study on the effectiveness of techniques easing myofascial pain in chronic lumbar-sacral spine.

Material and methods

To find the current investigate research (publications of the last 5 years) dedicated to MFR in the treatment of chronic pain, lumbar-sacral spine searched the following databases: PubMed, PEDro (Physiotherapy Evidence Database), ScienceDirect and Academic Search Premier. The following keywords: myofascial release, myofascial release therapy, myofascial pain, chronic low back pain.

Results

9 qualified to review the studies investigating the effect of loosening myofascial pain and range of motion, functional limitations, muscles, as well as the quality of life in people with chronic pain lumbosacral spine.

Conclusions

The results of this review show that there is little research on the MFR employs treat ailments low back pain lumbar - sacral. Based on the studies included in this review can be concluded that the MFR can be an effective treatment for back pain lumbar - sacral, but there is a need for further research with a well-developed research procedure that will allow the standardization of this therapeutic method.

Key words: myofascial release; chronic low back pain

Admission

Dysfunctions of the lumbosacral spine are among the most common problems related to the movement of contemporary society throughout the world, and its incidence increases with age. Numerous epidemiological data suggest that more than 80% of the population feels or felt in the past will feel at least once in the life of pain and limitation of movement within the lower part of the spine. Particularly problematic are lasting longer than three months or persisting despite the healing of damaged tissue of a chronic ailment (called. Chronic low back pain, CLBP) [1]. In the study "Pain in Europe - A report" - the largest (over 46 thousand. Respondents from 16 countries) a long-term study conducted in 2002-2003 demonstrated.

Many researchers defines chronic pain as a disease in itself, requiring multi-and interdisciplinary therapeutic. Patients suffering from chronic pain of various areas of the body,

including the lumbar-sacral spine observed a significant decrease in the quality of life in physical, psychological and social [2 - 5].

The causes of CLBP are usually multifactorial, which often makes it difficult to correct diagnosis. Most often responsible for his sedentary lifestyle, bad posture habits, lack of regular physical activity, chronic stress, improper performance of activities of daily living, or bad position taken during sleep. Leads to structural changes in the level of the intervertebral disc, muscles and joints, which in turn leads to an overload of the musculoskeletal system and of pain.

In recent years, increased interest in the issues fascia, which until recently was neglected in the etiology of low back pain. World Congress Research fascia (Washington, 2015) have been developed current definition fascia „, describing it as a layer, film, any number of separable section the concentrations of connective tissue contracting under the skin to give the place of the surround, separated muscle and internal organs ". At the same time as the term is defined as the fascial system „, a network that has the ability to transfer forces, where separate elements mutually interact and form complex involved in traversing "[3, 6].

The fascia has a very important function described by including Kuchera & Kuchera as 4P „, ie. *passageway* (ie, acting as roads conductive body), Posture (broadcasting body posture), Packaging (ie acting role, packaging "- building, filling and merge the whole organism and Protection (performing the protective function, primarily through the support and protection of organs internally by destructive influence of external forces). There is also a memory function - a plurality injury or habits in the positioning of the body „, is stored 'in the fascia, which by virtue of the adaptive changes its spatial orientation for optimum performance of the body in the changed environmental conditions, thereby intending to preserving homeostasis [7].

Long-standing limitation of motion occurring in people with risk factors for the development of lower back pain, as well as in those suffering from long time for CLBP gives rise to the so-called. restrictions within the fascial tissue. In recent years, studies have shown a significant deformation [8] and shorten [9] thoraco-lumbar fascia in patients with pain lumbar-sacral spine. Restrictions can cause abnormal tensions which lead to an increase in the excitability of receptors located in the fascia, and bone structures involve in the wrong direction, thus leading to excessive compression in the intervertebral joints. As a result, it can boost the appearance of dysfunction and pain, or the inability to eliminate existing pain [8,9]. Back pain is increasingly treated as a disease is global - the combination of different structures of the complex lumbar – pelvic - hip joint may cause the source of pain is a considerable distance from the locus of pain [10].

One of the therapeutic options that can be applied in the case of chronic pain syndrome lumbar-sacral spine techniques are easing myofascial (ang. Myofascial release, MFR), which is one of the latest methods in the field of manual medicine. Use manual techniques that can be connected

to an active patient motion are designed to enhance flexibility and the slip between the individual layers of soft tissues, in particular the fascia. Consequently, this has led to the offset arrangement of the various elements of the body relative to each other (the influence of the attitude of the body) to improve the range of motion of joints, and reduction of common ailments. Manual work is also to call a number of reflex reactions due to the mechanical stimulation of the receptors located in the fascia. This allows the call to many physiological reactions such as reduction of muscle tone within the structure being developed, improved proprioception (proprioception), reduced the activity of sympathetic part of the autonomic nervous system and improve the blood circulation [11-14].

Objective of the work

The aim of the work was overviewAD recently published study on the effectiveness of techniques easing myofascial pain treatment lumbar-sacral spine.

Material and methods

To find the current investigate research (publications of the last 5 years) dedicated to MFR in the treatment of chronic pain, lumbar-sacral spine searched the following databases: PubMed, PEDro (Physiotherapy Evidence Database), ScienceDirect and Academic Search Premier. The following keywords: myofascial release, myofascial release therapy, myofascial pain, chronic low back pain.

Results

9 qualified to review the studies investigating the effect of loosening myofascial pain and range of motion, functional limitations, muscles, as well as the quality of life in people with chronic pain lumbosacral spine.

In a research Arguisuelas et al. [15], the efficacy of the therapy sessions MFR of 4 patients with non-specific CLBP. The control group consisted of patients who used fictitious MFR. In the group shown to decrease the intensity of pain (McGill Pain Questionnaire, MPQ, VAS), improvement of efficiency in the performance of daily activities (pain questionnaire and Roland Morris), and reducing the fear of pain (questionnaire Fear-Avoidance Beliefs, FABQ). No statistically significant differences between the study group and the control group.

In a study conducted by Seong Hun Yu et al. [16] in women between the ages of 65 y.o. of CLBP after application of MFR significant reduction of the intensity of pain (VAS), increasing the range of motion of the spine (Test Schober), and improvement of stability body (test stabilometric platform).

In order to assess if the MFR increases the effectiveness of physiotherapy used Ajimsha et al. [17] conducted a study to assess the efficacy of specific MFR and spine muscle exercise group nurses CLBP. The control group consisted of patients who were treated with the same exercise.

Treatment lasted 8 weeks (24 therapy sessions). The assessment of efficacy was carried out immediately after and after 8 and 12 weeks. The results showed significantly better results in terms of pain reduction (MPQ) and improved functional capacity (Quebec Back Pain Disability Scale) in the group that used the MFR. In the group in which the MFR was used was a reduction of pain by 53.3% (in the group, which used classes - 26.1%) and 30% improvement in functional capacity (in the group, which used classes – 9.8%).

Arun [18] publish the results of studies on the effects on the MFR level of performance limitations due to pain, sleep quality and level of depression in elderly patients with CLBP. By six weeks in a group of 37 men aged from 58 to 65 y.o. MFR of 18 sessions carried out in combination with a 10-min hot compresses the lower part of the spine. Employing techniques focus on many areas of the body, ie. The legs (leg pull) and upper (pull arm) thoracolumbar fascia (cross hand stretch) and the muscles (spine rectifier, quadratus lumborum region Dorsal). Method to objectify the effects of therapy were: Pain Disability Index, Insomnia Severity Index, Beck Depression Scale. It has been shown statistically significant improvement in all the variables examined.

Persons complain on the pain in the lumbosacral section of the spine are usually weakened transverse abdominal muscle, which in addition to muscle multipartite has an important part in stabilizing the trunk.

The study Arun B. et al. [19] 90 people with CLBP (lasting over 12 weeks) were divided into 3 groups, which were used for 6 weeks as follows:

Group A - MFR interchangeably and 5 - minute warm compresses and exercises motor control (isometric contraction of the abdominal muscles in a sitting position and a lying rear, lifting the pelvis in a position lying back - in the support and with both feet and one leg exercises using the Swiss balls);

Group B - only preceded by a warm compress exercise throughout the period of therapy;

Group C - patients performed only warm wraps at home.

Activation of the transversus abdominis muscle was evaluated in the first and last day of therapy using the apparatus biofeedback Stabilizer Pressure acting on the basis of the pressure change in the cuff inflated with air under the influence of exercise activation / in muscle. In each group showed an improvement, but the best results achieved group, wherein an MFR. The authors draw attention to the publication of the limitations of their analysis: a small number of participants, the lack of control over the activities of other subjects outside the conducted therapy, lack of selection for work performed.

The study Yen-Chen Hua et al. [20] transverse abdominal muscle activation was assessed in using ultrasound. We evaluated the thickness of the resting muscle at the time of contraction, the slide connections of the individual layers of fascial, the pattern of movement of the muscle during

operation. The values of most parameters in a preliminary study differed significantly in patients with CLBP, compared to people without the disease. In both groups, MFR was used as a 1-minute Vertical pressure on the so-called. reef side in the area of thoraco lumbar fascia. In both groups had increased difference in transverse abdominal muscle thickness between the phase of the contraction and relaxation and to improve slip between the layers of fascia.

Avrahami et al. [21] conducted a study in the group of athletes (mean age 22 years), which on the basis of the modified test Thomas said hip flexor contractures. Athletes were divided into two groups: Group I (n = 10) - persons with back pain, group II (n = 8), in which there were no signs of pain. In both groups was carried out for 2 weeks. 4 sessions MFR, in order to improve the flexibility of myofascial complex hip flexors. Before starting the treatment and after the measurements: maximum force of the flexors and extensors of the trunk by means of the tension meter (MLP-500-C0, A-Tech Instruments), disorders, functional capacity (Questionnaire pain Roland and Morris), pain intensity (VAS) and the scope of extension of the hip using a modified Thomas test (using a goniometer with a long arm). Measurements of the intensity of pain and muscle strength also performed each time before and after each session MFR. After completing a series of MFR in all subjects achieved a statistically significant improvement in muscle strength and range of motion of the hip joint. Furthermore, in the group with back pain symptoms they reported significant reduction in pain intensity. The authors draw attention, however, to the limitations of their analysis - a small number of participants, the lack of a control group, as well as a potential for an effect of learning, which in the course of repeated measurements of the strength of flexors and extensors of the trunk before and after each session MFR could lead to an increase in strength of these muscles. Measurements of the intensity of pain and muscle strength also performed each time before and after each session MFR. After completing a series of MFR in all subjects achieved a statistically significant improvement in muscle strength and range of motion of the hip joint. Furthermore, in the group with back pain symptoms they reported significant reduction in pain intensity. The authors draw attention, however, to the limitations of their analysis - a small number of participants, the lack of a control group, as well as a potential for an effect of learning, which in the course of repeated measurements of the strength of flexors and extensors of the trunk before and after each session MFR could lead to an increase in strength of these muscles. Measurements of the intensity of pain and muscle strength also performed each time before and after each session MFR. After completing a series of MFR in all subjects achieved a statistically significant improvement in muscle strength and range of motion of the hip joint. Furthermore, in the group with back pain symptoms they reported significant reduction in pain intensity. The authors draw attention, however, to the limitations of their analysis - a small number of participants, the lack of a control group, as well as a potential for an effect of learning, which in the course of repeated measurements

of the strength of flexors and extensors of the trunk before and after each session MFR could lead to an increase in strength of these muscles. After completing a series of MFR in all subjects achieved a statistically significant improvement in muscle strength and range of motion of the hip joint. Furthermore, in the group with back pain symptoms they reported significant reduction in pain intensity. The authors draw attention, however, to the limitations of their analysis - a small number of participants, the lack of a control group, as well as a potential for an effect of learning, which in the course of repeated measurements of the strength of flexors and extensors of the trunk before and after each session MFR could lead to an increase in strength of these muscles. After completing a series of MFR in all subjects achieved a statistically significant improvement in muscle strength and range of motion of the hip joint. Furthermore, in the group with back pain symptoms they reported significant reduction in pain intensity. The authors draw attention, however, to the limitations of their analysis - a small number of participants, the lack of a control group, as well as a potential for an effect of learning, which in the course of repeated measurements of the strength of flexors and extensors of the trunk before and after each session MFR could lead to an increase in strength of these muscles.

Oh, S. et al. [22] conducted a study whose objective was to perform self-loosening effect of myofascial ball with the pain and range of motion in older people (65 y.o.) with CLBP lasting at least 3 months. All study participants were diagnosed with active trigger points around the lower back and pelvis (m. Gluteus medium and larger, m. Iliopsoas and m. Trapezius loin) on at least one side of the body. For 6 weeks the subjects in accordance with the instruction previously conducted independently develop myofascial trigger points in that area. After treatment, a statistically significant change as to reduce the intensity of pain (VAS)

The same team has achieved similar results in the context of re-examination in 2018 [23]. They used the same procedure, but supplemented with a study of functional efficiency. This time, in addition to the assessment of range of motion of lumbar-sacral test carried SLR and ODI Questionnaire (Oswestry Disability Index).

Conclusions

The results of this review show that there is little research on the MFR employs treat ailments low back pain lumbar - sacral.

Based on the studies included in this review can be concluded that the MFR can be an effective treatment for back pain lumbar - sacral, but there is a need for further research with a well-developed research procedure that will allow the standardization of this therapeutic method.

References

1. Dobrogowski J., Zajączkowska R., Dutka J. i wsp. Patofizjologia i klasyfikacja bólu. *Polski Przegląd Neurologiczny* 2011; 7 (1): 20-30.
2. Fricker J. Pain in Europe report. Research project by NFO Worldgroup. Mundipharma International Limited, Cambridge, UK, 2003.
3. Domżał T.M. Ból przewlekły — problemy kliniczne i terapeutyczne. *Polski Przegląd Neurologiczny* 2008; 4 (1): 1-8.
4. Dow L. 747 Pain study tracking ongoing responses for a year (PainStory). *European Journal of Pain* 2009; 13 (1):215.
5. Aslan Telci E., Yagci N., Can T. i wsp. The impact of chronic low back pain on physical performance, fear avoidance beliefs, and depressive symptoms: A comparative study on Turkish elderly population. *Pakistan Journal of Medical Sciences*; 29(2): 560–564.
6. Stecco C., Schleip R. A fascia and the fascial system, *Journal of Bodywork and Movement Therapies* 2015; 20,1: 139–140.
7. Kuchera W.A., Kuchera M.L. 1994. *Osteopathic Principles in Practice*. Greyden Press LLC.
8. Langevin H.M., Fox J.R., Koptiuch C. i wsp. Reduced thoracolumbar fascia shear strain in human chronic low back pain. *BMC Musculoskelet Disord* 2011; 12:203.
9. Ranger T.A., Teichtahl A.J., Cicuttini F.M. i wsp. Shorter Lumbar Paraspinal Fascia Is Associated With High Intensity Low Back Pain and Disability. *Spine*, 2016, 41(8): 489-493.
10. Stecco C., Ann Day J. The Fascial Manipulation Technique and Its Biomechanical Model: A Guide to the Human Fascial System, *Int J Ther Massage Bodywork*. 2010; 3(1): 38-40.
11. Tozzi, P., Bongiorno D, Vitturini C. Fascial release effects on patients with non-specific cervical or lumbar pain *Journal of Bodywork & Movement Therapies* 2011; 15(4):405-16.
12. Jaap van der Wal. The Architecture of the Connective Tissue in the Musculoskeletal System – An Often Overlooked Functional Parameter as to Proprioception in the Locomotor Apparatus, *International Journal of Therapeutic Massage & Bodywork: Research, Education, & Practice* 2009; 2(4): 9-23.
13. Schleip R., Kurkowski M. Mechanoreceptory tkanki łącznej. Furtka do zmiany napięcia mięśni szkieletowych, *Praktyczna Fizjoterapia i Rehabilitacja* 2016; 10:18-24.
14. Shah Y., Arkesteijn M., Thomas D. i wsp. The acute effects of integrated myofascial techniques on lumbar paraspinal blood flow compared with kinesio-taping: A pilot study. *Journal of Bodywork and Movement Therapies* 2017;21(2):459-467.
15. Arguisuelas M.D., Lisón J.F., Sánchez-Zuriaga D. i wsp. Effects of Myofascial Release in Non-specific Chronic Low Back Pain: A Randomized Clinical Trial. *Spine* 2017; 42(9):627-634.

16. Seong Hun Yu, , Yong Hyeon Sim, Myung Hoon Kim i wsp. The effect of abdominal drawing-in exercise and myofascial release on pain, flexibility, and balance of elderly females. *Journal of Physical Therapy Science* 2016, 28, 2812-2815.
17. Ajimsha M.S., Daniel B., Chithra S. Effectiveness of Myofascial release in the management of chronic low back pain in nursing professionals, *Journal of Bodywork and Movement Therapies* 2014; 8, 2: 273–281.
18. B. Arun, Effects of myofascial release therapy on pain related disability, quality of sleep and depression in older adults with chronic low back pain, *Int J Physiother Res* 2014;2(1):318-23.
19. Arun B. Effect of Myofascial Release Therapy with Motor Control Exercises on Pain, Disability and Transversus Abdominis Muscle Activation in Chronic Low Back Pain. *A Journal of Health Professions* 2013; 3, 3: 28-32.
20. Yen-Hua Chen, Huei-Ming Chai, Yio-Wha Shau i wsp. Increased sliding of transverse abdominis during contraction after myofascial release in patients with chronic low back pain, *Manual Therapy* 2016; 23:69-75.
21. Avrahami D., Potvin J.R, The clinical and biomechanical effects of fascial- muscular lengthening therapy on tight hip flexor patients with and without low back pain. *The Journal of the Canadian Chiropractic Association* 2014; 58(4), 444-455.
22. Oh S., Kim M., Lee M. i wsp. Self-Management of Myofascial Trigger Point Release by using an In atable Ball among Elderly Patients with Chronic Low Back Pain: A Case Series. *Annals of Yoga and Physical Therapy* 2016; 1(2):1013.
23. Oh S., Kim M., Lee M. i wsp. Effect of myofascial trigger point therapy with an inflatable ball in elderlies with chronic non-specific low back pain, *J Back Musculoskelet Rehabil.* 2018; 6, 31(1):119-126.

Corresponding Author:

Piotr Ożóg

Collegium Medicum Bydgoszcz

Katedra Fizjoterapii

ul. Techników 3

85-801 Bydgoszcz

tel.: 52 585-34-64

e-mail: katfizjoter@cm.umk.pl