

A Review Article:

The Effect of Manual Therapy and Reflexology in Knee Osteoarthritis

RANIA A. NASSAR, M.Sc.*; NORAN A. ELBEHARY, Ph.D.**; MARIAM O. GRACE, Ph.D.** and
MOLHAM M. MOHAMED, M.D.***

The Departments of Basic Science,** and Orthopedic Surgery***, Al Ryada University for Science and Technology*,
Faculty of Physical Therapy, Cairo University**, Faculty of Medicine, Cairo University****

Abstract

Background: Knee osteoarthritis called degenerative joint disease, usually results from progressive deterioration of the log of articular cartilage. The elderly are most likely to experience it. The goal of knee OA treatment is to reduce pain while enhancing function and overall well-being. Foot reflexology improving physical complains of knee osteoarthritis. Manual therapy with movement achieve immediate pain relief.

Aim of Study: Is to review the effect of Reflexology and manual therapy for patients with Osteoarthritis knees.

Conclusion: Despite the recognized benefits of foot reflexology massage and manual therapy to patients of knee osteoarthritis on function ability, ROM and pain. There is still insufficient evidence the effect of adding Reflexology to manual therapy that will much better than received reflexology only or that received manual therapy only.

Key Words: Knee osteoarthritis - Reflexology- Manual therapy
– Knee pain - Functional ability.

Introduction

USUALLY a progressive condition, osteoarthritis may eventually lead to disability. Knee osteoarthritis can be divided into two types, primary and secondary. Primary osteoarthritis is articular degeneration without any discernible underlying cause. Either aberrant articular cartilage, as in rheumatoid arthritis, or an aberrant concentration of force across the joint, as in post-traumatic reasons, can result in secondary osteoarthritis. Individual dif-

ferences may exist in the severity of the clinical symptoms. But over time, they usually worsen, occur more frequently, and become more incapacitating. Each person progresses at a different rate as well. Knee stiffness and swelling, discomfort after extended sitting or rest, pain that becomes worse with time, and knee pain that starts slowly and gets worse with exercise are common clinical symptoms. Conservative measures are the first line of treatment for osteoarthritis in the knee, and when they are unsuccessful, surgical options are considered. There are presently no proven disease-modifying drugs for the treatment of osteoarthritis in the knee, however drugs can help delay the progression of RA and other inflammatory disorders. Treatment by reflexology and manual therapy in knee osteoarthritis improve pain, function ability of knee and increase flexion, extension range of motion.

Reflexology mechanism of action:

The health of connected body parts can be affected by applying pressure to specific places on the hands and feet. Every pressure point on the hands and feet serves as a sensor and is connected to a specific bodily region [1]. Enhances blood flow to the joints or organs that are being treated. Reflexology stimulation strengthens the neurological link to the corresponding body parts, according to the nerve impulse idea. According to the lactic acid theory, lactic acid builds up as crystals on the soles of the feet, reducing regular flow and encouraging free circulation [2].

Effect of reflexology massage on pain:

Foot reflexology eases tension and stress related to bodily ailments and provides a calming and

Correspondence to: Dr. Rania A. Nassar, The Department of Basic Science, Al Ryada University for Science and Technology

soothing impact. Consequently, this impacts the immune system, hormone balance, and autonomic physiological responses. That help to reduce pain and fatigue [3].

Some studies have shown the effectiveness of Reflexology intervention began to reduce average discomfort and weariness. Compared to aromatherapy massage, the reflexology intervention by Metin et al., began to reduce mean pain and exhaustion scores earlier (week 1 vs. week 2 for pain, week 1 vs. week 4 for fatigue) ($p < 0.05$)* [4].

Özbaş et al., for the trial, 40 patients were randomly allocated to one of two groups (20 in the control group and 20 in the intervention group). Foot reflexology was introduced to the intervention group. The intervention group's postoperative Visual Analogue Scale ratings dropped more quickly than those of the control group ($F = 80.417$; $p < .001$; $n_2 = 0.685$). Over time, the intervention group's Western Ontario and McMaster Universities Osteoarthritis Index scores fell, whereas the control group's increased ($p < 0.05$). The Tampa Scale for Kinesiophobia scores gradually increased in the control group, but decreased in the intervention group ($F = 84.860$; $p < .001$; $n_2 = 0.696$). In the intervention group, fewer analgesics were utilised ($p < .05$). An efficient and secure way to treat pain and kinesiophobia following total knee replacement is through the use of foot reflexology [5].

Samuel & Ebenezer demonstrated for the first time in a controlled study that reflexology produces antinociceptive effects [6].

Eghbali et al., Reflexology can be effective in reduce pain from moderate to mild [7].

Effect of reflexology massage on ROM:

Doghabad et al., the results indicated that both therapeutic exercise protocols and reflexology significantly reduce pain intensity and enhance the range of motion in the knee joint of the individuals ($p < 0.05$), with the therapeutic exercise treatment demonstrating superior efficacy compared to reflexology [8].

According to Abdelaziz et al., reflexology sessions were successful in extending knee flexion range of motion [9].

Kiani et al., reflexology movements had positive and significant effects on reducing the severity of pain and increasing joint range of motion in elderly women with knee osteoarthritis ($p \leq 0.05$) [10].

Kazemi et al., demonstrated the effect knee and revealed that reflexology is more successful than

physiotherapy alone at reducing pain, functional impairment, and knee range of motion in a group of 24 elderly adults with osteoarthritis in their knees alone [11].

Effect of reflexology massage on Functional ability:

Yakout et al., made comparison of the control and study groups' means and standard deviations for the WOMAC subscale subdomain before and after each foot reflexology massage session over the course of four weeks. Following each foot reflexology massage session, the study group's patients' mean scores were lower than those of the control group. Additionally, following second, third, and fourth foot reflexology massages, statistically significant differences were seen between the study and control group weeks in pain intensity, stiffness, physical function and total WOMAC subscale were observed, where p -value < 0.00 . Moreover, Following the implementation of the reflexology program, the study group's overall mean disability scores dropped significantly from 31.63 ± 4.12 to 54.53 ± 4.18 , indicating a significant difference between the two groups (p -value < 0.001). Reflexology massage sessions had significantly better therapeutic effects on the study group than the control group in terms of reducing patients' pain levels, enhancing their health, and improving their physical functional abilities [3].

Bakir et al., both immediately following and three months after the intervention's adoption, the overall quality of life score rose ($p < 0.005$). Immediately following program execution, both groups' elderly knowledge of pharmaceutical therapy improved significantly ($p < (8005)$) [12].

Manual therapy:

Interventions for the body's musculoskeletal structures, including the joints, soft tissues, and nerve tissues, are used by manual therapists [13,14] to encourage a number of nonspecific changes in the patient's body, including biomechanical, neurophysiological, psychological, and others, that may lead to a beneficial therapeutic improvement in the patient's functionality [15,16]. Comprises the following methods for treating musculoskeletal pain and disability: Soft tissue mobilisation, joint mobilisation, myofascial release, muscle energy techniques, kneading, and joint manipulation. Pain can be lessened using manual therapy, which enhances a person's mental health. In order to alleviate pain, the pain-gate mechanism is stimulated, muscles are inhibited, nociceptive activity is decreased, intra-articular or periarticular pressure is decreased, and

biomechanical and physical factors aid in tissue modelling and repair [17,18].

Effect of manual therapy on pain:

Reep et al., treatment interventions MWM approaches have shown short-term pain relief and function enhancement in Myofascial Release (Trigger Point Release Therapy).

Myofascial release removes tension and restrictions in the fascia, a connective tissue surrounding and supporting muscles and organs, as well as tight knots in the muscles that are caused by poor posture or injuries. It is a gentle and sustained pressure technique to alleviate pain and improve mobility [19].

When left untreated, these myofascial trigger points can cause pain that radiates (travel) up or down the trigger point. For example, a myofascial trigger point in the shoulder can radiate down the arm and hand, and this sometimes confuses patients as to where the source of the pain is from. patients with clinically diagnosed meniscal pathologies [19].

Pollard et al., Participants with osteoarthritic knee pain reported much less pain following a manual therapy knee regimen, and their self-reported knee function improved right after the two-week treatment period ended [20].

Effect of manual therapy on Functional ability:

Tsokanos et al., patients with knee OA can benefit from MT treatments by experiencing less pain and seeing an increase infunctionality [21].

Van den Dolder, P. A., & Roberts, D. L shown Manual therapy is effective in improving knee flexion and stair climbing in patients with anterior knee pain. There is a trend towards a small improvement in pain [22].

Abbott et al., compared to standard care, manual physiotherapy had advantages that lasted for a full year [23].

Effect of manual therapy on ROM:

Kiran et al., for the study, sixty-two patients were chosen. 5. Before and after two weeks of intervention, all patients were evaluated using the Western Ontario McMaster OA (WOMAC) Index for knee OA, goniometry, visual analogue scale (VAS), and knee range of motion (ROM). The findings were analysed using the paired sample *t*-test. According to this study, MWM was superior to other treatments for knee OA in terms of reducing pain and enhancing range of motion [24].

Park, S.J., & Lee, J.H. discovered that kinesio taping and joint mobilisation significantly enhanced knee function, range of motion, and discomfort in patients with osteoarthritis [25].

Conclusion:

This review's findings the therapeutic effects of foot reflexology massage, manual therapy sessions on knee osteoarthritis patients. Improve function, flexion and extension of knee and decrease pain so if adding foot reflexology massage and manual therapy were much better on knee osteoarthritis patients than foot reflexology massage only or manual therapy only.

References

- 1- MARICAN N.D., HALIM M., NOR M. and NASIR M.: Reflexology: A modality in manipulative and body based method. *Indian Journal of Public Health Research and Development*, 10 (5): 515-519, 2019.
- 2- KORAŞ K. and KARABULUT N.: The effect of foot massage on postoperative pain and anxiety levels in laparoscopic cholecystectomy surgery: A randomized controlled experimental study. *Journal of Peri Anesthesia Nursing*, 34 (3): 551-558, 2019.
- 3- YAKOUT R., SEYAM N. and MOHAMED ELDESOKY H.A.: Effect of reflexology foot massage on pain intensity and physical functional abilities among patients with knee osteoarthritis. *Egyptian Journal of Nursing and Health Sciences*, 3 (1): 17-40, 2022.
- 4- METIN Z.G. and OZDEMIR L.: The effects of aromatherapy massage and reflexology on pain and fatigue in patients with rheumatoid arthritis: A randomized controlled trial. *Pain Management Nursing*, 17 (2): 140-149, 2016.
- 5- ÖZBAŞ N., ŞAHAN N. and AYDIN E.: The Effect of Foot Reflexology on Pain and Kinesiophobia in Patients Following Total Knee Arthroplasty: A Double-Blind Randomized Controlled Study. *Orthopaedic Nursing*, 43 (4): 223-233, 2024.
- 6- SAMUEL C.A. and EBENEZER I.S.: Exploratory study on the efficacy of reflexology for pain threshold and tolerance using an ice-pain experiment and sham TENS control. *Complementary Therapies in Clinical Practice*, 19 (2): 57-62, 2013.
- 7- EGHBALI M., SAFARI R., NAZARI F. and ABDOLI S.: The effects of reflexology on chronic low back pain intensity in nurses employed in hospitals affiliated with Isfahan University of Medical Sciences. *Iranian journal of nursing and midwifery research*, 17 (3): 239, 2012.
- 8- DOGHABAD, F.K., KHOSHRAFTAR YAZDI N. and FARZANEH H.: The Effect of a Period of Kinesiotherapy

- and Reflexology on Pain Intensity and Range of Motion in Elderly Women With Knee Osteoarthritis, *جوساوس ورزشی*, 2020,6.
- 9- ABDELAZIA K.S., BOLTA A.M., EBRAHIM H.H. and GAB A.A.: Effect of Reflexology on Knee Osteoarthritis Patients: A Randomized Clinical Trial. *World Journal of Sport Sciences*, 14 (1): 21-27, 2019.
 - 10- KIANI DOOGHABADI F., KHOSHRAFTAR YAZDI N. and FARZANEH H.: The effect of a period of kinesiotherapy and reflexology on pain intensity and range of motion in elderly women with knee osteoarthritis. *Journal of Sport Biomechanics*, 6 (2): 98-109., 2020.
 - 11- KAZEMI A.R., GHASEMI B. and MORADI M.R.: Comparison of two methods of physiotherapy-reflexology of foot and physiotherapy on symptoms of senile patients with knee osteoarthritis. *Journal of Isfahan Medical School*, 33 (350): 1517-1529, 2015 .
 - 12- BAKIR E., BAGLAMA S. and GURSOY S.: The Effects of Reflexology on Pain and Deprivation in Patients with Rheumatoid Arthritis: A Randomized Controlled Trial. *Complementary Therapies in Clinical Practice*, 31: 315-319, 2018.
 - 13- BIALOSKY J.E., BISHOP M.D., PRICE D.D., ROBINSON M.E. and GEORGE S.Z.: The mechanisms of manual therapy in the treatment of musculoskeletal pain: A comprehensive model. *Man. Ther.*, 14: 531–538, 2009.
 - 14- COOKSON J.C.: Orthopedic Manual Therapy—An Overview: Part II: The Spine. *Phys. Ther.*, 59: 259–267, 1979.
 - 15- COOK C.: *Orthopedic Manual Therapy: An Evidence-Based Approach*; Pearson Education: Upper Saddle River, NJ, USA, 2012.
 - 16- BISHOP M.D., TORRES-CUECO R., GAY C.W., LLUCH-GIRBÉS E., BENECIUK J.M. and BIALOSKY J.E.: What effect can manual therapy have on a patient's pain experience? *Pain Manag.*, 5: 455–464, 2015.
 - 17- SCHULZE N.B., DE MELO SALEMI M., DE ALEN-CAR G.G., MOREIRA M.C. and DE SIQUEIRA G.R.: Efficacy of manual therapy on pain, impact of disease, and quality of life in the treatment of fibromyalgia: A systematic review. *Pain Physician*, 23 (5): 461, 2020.
 - 18- MAJ GUY R. MAJKOWSKI P.T., DSC, OCS, FAAOMPT, NORMAN W. GILLIII PT, DSC, CERT MPT, OCS, FAAOMPT: *Physical Therapy Modalities The Sports Medicine Resource Manual*, 2008 Available from: <https://www.sciencedirect.com/topics/nursing-and-health-professions/physiotherapy> (last accessed 21.9.2019).
 - 19- REEP N.C., LEVERETT S.N., HEYWOOD R.M., BAKER R.T., BARNES D.L. and CHEATHAM S.W.: The Efficacy of the Mulligan Concept to Treat Meniscal Pathology: A Systematic Review. *International Journal of Sports Physical Therapy*, 17 (7): 1219, 2022.
 - 20- POLLARD H., WARD G., HOSKINS W. and HARDY K.: The effect of a manual therapy knee protocol on osteoarthritic knee pain: A randomised controlled trial. *The Journal of the Canadian Chiropractic Association*, 52 (4): 229, 2008.
 - 21- TSOKANOS A., LIVIERATOU E., BILLIS E., TSEKOURA M., TATSIS P., TSEPI S. and FOUSEKIS K.: The efficacy of manual therapy in patients with knee osteoarthritis: a systematic review. *Medicina*, 57 (7): 696, 2021.
 - 22- VAN DEN DOLDER P.A. and ROBERTS D.L.: Six sessions of manual therapy increase knee flexion and improve activity in people with anterior knee pain: A randomised controlled trial. *Australian Journal of Physiotherapy*, 52 (4): 261-264, 2006.
 - 23- ABBOTT J.H., ROBERTSON M.C., CHAPPLE C., PINTO D., WRIGHT A.A., DE LA BARRA S.L. and MOA Trial Team: Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee: A randomized controlled trial. 1: Clinical effectiveness. *Osteoarthritis and cartilage*, 21 (4): 525-534, 2013.
 - 24- KIRAN A., IJAZ M., QAMAR M., BASHARAT A., RASUL A. and AHMED W.: Comparison of efficacy of mulligan's mobilization with movement with maitland mobilization along with conventional therapy in the patients with knee osteoarthritis: A randomized clinical trial. *Libyan International Medical University Journal*, 3 (01): 26-30, 2018.
 - 25- PARK S.J. and LEE J.H.: Effect of joint mobilization and kinesio taping on pain, range of motion, and knee function in patients with knee osteoarthritis. *The Journal of Korean Physical Therapy*, 28 (5): 279-285, 2016.

تأثير تدليك القدم الانعكاسى والعلاج اليدوى فى حالات خشونة الركبة: مقال مراجعة

التهاب مفاصل الركبة المعروف باسم مرض المفاصل التنكسية، عادة ما يكون نتيجة البلى والفقد التدريجى للغضروف المفصلى. وهو الأكثر شيوعاً عند كبار السن. تهدف إدارة الزراعة العضوية فى الركبة إلى السيطرة على الألم مع تحسين الوظيفة ونوعية الحياة. تدليك القدمين يحسن الشكاوى الجسدية من التهاب مفاصل الركبة. إن العلاج اليدوى تحقق تخفيفاً فورياً للألم.

الهدف من الدراسة: هو مراجعة تأثير علم المنعكسات والعلاج اليدوى للمرضى الذين يعانون من هشاشة العظام فى الركبتين.

الخلاصة: ان التأثيرات العلاجية إلى تدليك القدم الانعكاسى والعلاج اليدويسكون افضل بكثير من يتلقى العلاج الانعكاسى العصبى فقط أو الذى يتلقى العلاج اليدوى مثل تعبئة موليغان لذلك يفضل إضافة العلاج الانعكاسى إلى العلاج اليدوى على مرضى التهاب مفاصل.