Articular mobilizations for knee OA, to do or not to do – Narrative Review

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Abstract

Background: Osteoarthritis (OA) is a common progressive joint disease, involving not only the joint lining but also cartilage, ligaments, and bone. Knee osteoarthritis is a highly prevalent condition with a significant socioeconomic burden to society. It is known to affect sufferers through pain, loss of function and changes in health related quality of life. Management typically involves pharmacologic and/or exercise based therapy approaches to reduce pain. Previous studies have shown multimodal treatment approaches incorporating manual therapy to be efficacious.

Objectives: To appraise the literature by summarizing the findings of current evidence in manual therapy for knee osteoarthritis.

Methodology: Relevant full text articles focusing on joint mobilization of knee osteoarthritis were searched by using Boolean operator “and” using the terms ‘knee’, ‘osteoarthritis’ and ‘manual/ manipulative therapy and knee mobilization’ limited to humans. Databases like PubMed, Cochrane and Google scholar were reviewed for references. Articles included were current clinical practice guidelines, Systematic Reviews, Randomised controlled trials, Case Series and Literature review. In addition, the reviewers manually checked for any articles in peer reviewed journals.

Results: The studies revealed that Manual therapy in osteoarthritis knee have favourable response and can be administered as a sole treatment or as an adjunctive treatment for effective patient care.

Conclusions: The current evidence base is encouraging of the notion that manipulation/manual therapy is effective in treatment of knee osteoarthritis patients.

Key words: Osteoarthritis, knee pain, manual therapy, mobilization, manipulation

Introduction:
Musculoskeletal conditions are the most common cause of chronic disability around the world. The importance of musculoskeletal conditions as a cause of mortality and morbidity has been recognized by the designation of 2000–10 as the Bone and Joint Decade by the United Nations [1], World Health Organization (WHO), and more than 60 countries around the world. WHO (2003,2004)[2,3] has highlighted the burden of musculoskeletal conditions. Estimates of the global burden of these conditions have increased 25% over the past decade (WHO 2000) [4]

Osteoarthritis is increasing among the world’s aging populations and is the sixth leading cause of years lost because of disability globally. It accounts for nearly 3% of the total global years lost to disability, and 10 % of men and 18% of women over the age of 60 have OA.

Osteoarthritis is the most common form of arthritis and one of the leading causes of pain and disability worldwide (NICE, 2008; Reginster, 2002) [5,6]. It is characterised by a progressive loss of articular cartilage, joint space narrowing, sclerosis of subchondral bone and osteophyte formation. Soft tissues such as the capsule can undergo soft tissue contracture and fibrosis [7]. These changes can result in pain, impaired mobility, reduced muscle strength, limitation in activities of daily living [8,9] and reduced quality of life [10] with the knee and hip joints most commonly affected

Restricted joint mobility, especially in terms of knee flexion, appears to be an important determinant of disability in patients with osteoarthritis [8, 11]. Manual therapy is a physical treatment used by physiotherapists, chiropractors, osteopaths and other practitioners to treat musculoskeletal pain and disability, and includes massage therapy, joint mobilisation and manipulation.

Recently published clinical guidelines on the management of OA recommended manual therapy as an adjunctive therapy to exercise for OA. (NICE, 2008 [5]; RACGP, 2009 [12]. A requirement also exists for simple and inexpensive treatment protocols to fill the void between medication, exercise and surgery. Thus, this narrative review gives a comprehensive review on current evidence in joint mobilization in OA knee

Searches and selection: Peer reviewed journal articles that predominantly focussed on joint mobilization in knee OA were included in this review. The articles were identified via a search of PubMed, Cochrane library and Google Scholar. All types of articles, including primary research and review reports were included. Reference lists

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Woo Nam et al 2013
Multimodal approaches utilizing a combination of exercises and individualized manual therapy (received twice weekly for 4 weeks) has resulted in significant improvements in knee pain and function when compared to a placebo therapy of sub-therapeutic ultrasound in both the short term and long term follow up. + +

Deyle GD et al 2000
Another trial compared clinic based treatment incorporating supervised exercise, individualized manual therapy and a home exercise program over a four week period to a home exercise program. The results indicated that in both group’s knee pain decreased and function improved in the short and long term. + +

Tucker M et al 2003
Another randomised controlled trial investigated high velocity thrust techniques (received 8 times over 3 weeks) to the knee compared with NSAIDs. They found no objective or subjective differences between the groups; both were equally effective. Therefore, use of manual therapy should be offered as an alternative to pharmaceutical administrations. + +

Moss P et al 2007
AP mobilization of the tibio femoral (TF) joint resulted in significantly increased pressure pain threshold (lowest stimulus at which mechanical pain was perceived) and reduced timing on the 3 m timed ‘up-and-go’ walk test. + +

Pollard. H et al 2008
A short-term manual therapy knee protocol significantly reduced pain suffered by participants with osteoarthritic knee pain and resulted in improvements in self-reported knee function immediately after the end of the 2 week treatment period. + +

Mutlu EK et al 2014
Manual therapy is highly effective and useful treatments for knee osteoarthritis. It is a common observation that exercise therapy can be combined effectively with manual therapy. In knee OA (exterior or interior), mobilization of the tibia –femoral joint, patella, and manual traction can be taken into consideration. + ? +

Chan-Woo Nam et al 2013
Treatment of degenerative osteoarthritis patients using the MWM technique is effective for reducing pain and improving physical functions. + +

Maher S et al 2010
The results of this case series lend support for the use of manual TF joint traction as a means of stretching shortened articular and periarticular tissues without increasing reported levels of pain either during or at the end of treatment. This is the first study documenting the temporal aspects of treatment effectiveness in motion restoration. ? ?

Fish et al 2008
The authors showed favourable responses in both treatment groups, with no statistically significant difference between the results of them. According to the results presented by Fish et al, it seems that the mobilisation of the knee joint is better than placebo for treating knee OA. + +

Takasaki H et al 2013
MWM was associated with immediate pain relief and improved knee function, suggesting its potential as a component of early management of knee OA. + +

+; evidence of benefit
−; no evidence of benefit
?; inconclusive evidence or no available data

Discussion and Conclusion:
The small number of included studies indicates the limited research to date. All studies were heterogeneous regarding the types of manual therapy and comparison interventions used. Findings suggest that manual therapy may have a beneficial short-term effect in reducing pain and improving physical function for patients with knee OA compared with no intervention. A recent systematic review and meta-analysis revealed that the findings in the present meta-analytical review support the use of manual therapy versus a number of different comparators for improvement in self-reported knee function. Lesser support is present for pain reduction, and no endorsement of functional performance can be made at this time [23]. Although, a systematic review revealed that there is less convincing evidence from three studies included in this review on manual therapy on OA knee with a high risk of bias that manual therapy has favourable outcome. The knee OA studies had variable results: one study showed no group differences for pain and function; one showed larger effects for the manual therapy group for both pain and function and the third favoured manual therapy for function but no group differences for pain [24].

In view of clinical practice guidelines/Literature: A systematic review of recommendations and guidelines for the management of osteoarthritis highlighted that Exercise in combination of Manual therapy is effective in treatment of OA knees [25]. Also, the literature review suggests that manual therapy of the knee and full kinetic chain (SI or foot) can be combined with multimodal/exercise therapy [26].

Effect on Knee cartilage:
An interesting study of Du N et al highlighted manipulation is effective in treatment of knee osteoarthritis by decreasing the maximum defect diameter and increasing the volume of knee cartilage [27].

Role of Multimodal treatments:
Patients with knee osteoarthritis may improve their pain, stiffness and physical function with sustained physical exercise, manual therapy or both, according to new research findings. This study showed that benefits imparted by a comprehensive program of exercise therapy or manual therapy, provided by Physical Therapists; remain significant to at least two years follow-up [28]. Jansen et al [29] recommended exercise therapy plus manual mobilisation showed a moderate effect size on pain compared to the small effect sizes for strength training or exercise therapy alone. To achieve better pain relief in patients with knee osteoarthritis physiotherapists or manual therapists might consider adding manual mobilisation to optimise supervised active exercise programs, Jansen 2011, Meta-analysis Knee OA; 12 studies, Meta-regression suggests manual therapy and exercise (ES=0.69) may have a larger effect in relieving pain than strengthening (ES=0.38) or exercise alone (ES=0.34) in the short-term; however, confidence intervals were wide and overlapped.
Rheumatology (2012) recommends Manual therapy in combination with exercise supervised by physiotherapist [30]. A regimen consisted of manual therapy together with resistive exercises appears to be more effective at improving muscle strength, proprioception and functional performance than resistive exercise alone [31]. Thus, we conclude that manual therapy can be effective in the management of patients with OA knee. The extent, to which these treatments are effective in managing symptoms and slowing disease progression, remains to be proven. A limitation of the current review may be that only few databases were searched. Other databases could have been searched in order to broaden the review and not to overlook other guidelines and/or references for manual therapy in the treatment of knee osteoarthritis. Lapeen et al’s conclusion is quite appropriate for this review as a whole. The current evidence base is encouraging of the notion that manipulation/manual therapy is helpful in osteoarthritis patients. It is also encouraging to see new and more sophisticated studies being planned in the protocols cited above. Hopefully, this will lead to greater acceptance and utilization of this form of therapy in osteoarthritis patients.

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