**Article Full Title**

The Efficacy of Manual Therapy in Patients with Knee Osteoarthritis: A Systematic Review

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**Paper Abstract**

Abstract: Background and objectives: Osteoarthritis (OA) is among the most common degenerative diseases that induce pain, stiffness and reduced functionality. Various physiotherapy techniques and methods have been used for the treatment of OA, including soft tissue techniques, therapeutic exercises, and manual techniques. The primary aim of this systemic review was to evaluate the short- and long-term efficacy of manual therapy (MT) in patients with knee OA in terms of decreasing pain and improving knee range of motion (ROM) and functionality. Materials and Methods: A computerised search on the PubMed, PEDro and CENTRAL databases was performed to identify controlled randomised clinical trials (RCTs) that focused on MT applications in patients with knee OA. The keywords used were ‘knee OA’, ‘knee arthritis’, ‘MT’, ‘mobilisation’, ‘ROM’ and ‘WOMAC’. Results: Six RCTs and randomised crossover studies met the inclusion criteria and were included in the final analysis. The available studies indicated that MT can induce a short-term reduction in pain and an increase in knee ROM and functionality in patients with knee OA. Conclusions: MT techniques can contribute positively to the treatment of patients with knee OA by reducing pain and increasing functionality. Further research is needed to strengthen these findings by comparing the efficacy of MT with those of other therapeutic techniques and methods, both in the short and long terms.

**NIH Risk of Bias Tool**

Quality Assessment of Systematic Reviews and Meta-Analyses

1. **Is the review based on a focused question that is adequately formulated and described?**

Yes

1. **Were eligibility criteria for included and excluded studies predefined and specified?**

Yes

1. **Did the literature search strategy use a comprehensive, systematic approach?**

Yes

1. **Were titles, abstracts, and full-text articles dually and independently reviewed for inclusion and exclusion to minimize bias?**

Yes

1. **Was the quality of each included study rated independently by two or more reviewers using a standard method to appraise its internal validity?**

Yes

1. **Were the included studies listed along with important characteristics and results of each study?**

Yes

1. **Was publication bias assessed?**

Yes

1. **Was heterogeneity assessed? (This question applies only to meta-analyses.)**

Cannot Determine, Not Reported, Not Applicable

**Key Finding #1**

Manual therapy applications combined with therapeutic exercises are associated with reduced pain and increased functionality in the short term.

**Key Finding #2**

The positive effect of manual therapy on pain reduction and ROM/functionality improvements in patients with knee OA can be attributed to neurophysiological adaptations in the peripheral and central nervous systems.

**Key Finding #3**

Although there are positive short term effects of manual therapy, the long term cannot yet be determined.

**Key Finding #4**

**Please provide your summary of the paper**

The results demonstrated that manual therapy has a positive short-term effect on pain and function in patients with knee OA. The study examined roughly 150 studies that implemented manual therapy on patients to assess its effectiveness. In almost all of the studies reviewed, participants were divided into intervention without a control group; although some variations existed among the interventions, the systematic review compared manual therapy technique interventions compared to other interventional methods. Through the systematic review, the results demonstrated that manual therapy has a positive effect on patient pain levels, ROM, and functionality. The reduction in pain and increase in ROM and functionality can be attributed to neurophysiological changes occurring in the nervous system. The peripheral system after manual therapy treatment leads to reduced blood and serum cytokine levels and changes in inflammatory and pain-relief mediators, and the central system responds by altering supraspinal inhibitory pain mechanisms that modulate pain from the higher centers. It is reasonable to assume that manual therapy in patients with knee OA can potentially enhance the mechanical properties of the affected structures of the knee joint through these neurophysiological changes. However, the long term effects of manual therapy for patients with knee OA could not be determined through this systematic review.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

The results of this systematic review positively support the use of manual therapy for achieving short term benefits of pain reduction, increased ROM, and increased function in patients with knee OA. Although the long term benefits cannot be determined, this strategy can be implemented early on in order to hopefully achieve greater participation and self-efficacy from patients. If the patients are able to experience a small amount of positive change early on, they will be more likely to invest in their therapy and overall improvement of function.