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Glide Into Relief: The Role Of Mulligan Mobilization In Managing Knee Osteoarthritis

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Abstract: Knee osteoarthritis (knee osteoarthritis (KOA)) is among the most prevalent degenerative joint diseases, leading to pain, stiffness, and decreased functional capacity. Among various physiotherapeutic interventions, Mulligan's Mobilization with Movement (MWM) has attracted increasing attention for its active, without pain approach. This narrative review summarizes the evidence supporting MWM in knee osteoarthritis (KOA) rehabilitation, highlighting its effects on pain, function, proprioception, and balance. Recent studies indicate MWM can serve as an effective tool in conservative knee osteoarthritis (KOA) management when used alone or with complementary therapies. Keywords: Knee osteoarthritis, Mulligan mobilization, MWM, pain, function, proprioception, manual therapy

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INTRODUCTION

Knee osteoarthritis (knee osteoarthritis (KOA) is a progressive, degenerative joint disorder characterized by cartilage degeneration, osteophyte formation, and reduced joint space, commonly affecting individuals over the age of 45.[1] Symptoms include pain, stiffness, joint instability, and functional limitations that impair activities of daily living. Conservative management including exercise and manual therapy plays a key role, particularly in early to moderate stages of knee osteoarthritis (KOA).[2]

Mulligan's Mobilization with Movement (MWM) offers a promising manual therapy technique. It involves applying a sustained without pain glide to the joint while the patient performs a specific movement, aiming to restore joint kinematics and relieve discomfort. Unlike traditional passive mobilizations, MWM is active and immediate in its effects, making it an attractive option in clinical practice.[3]

BENEFITS OF MULLIGAN MOBILIZATION IN KNEE OA ARE,

1. PAIN AND FUNCTIONAL IMPROVEMENTS

Reducing pain is often the primary goal in knee osteoarthritis (KOA) rehabilitation. In a randomized clinical trial, Nigam et al. assessed the long-term effects of MWM combined with standard physiotherapy. The MWM group showed markedly better reductions in pain scores, improved function on the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and superior performance in timed up-and-go and stair climb tests compared to the control group receiving routine physiotherapy alone.[4]

These improvements were maintained at three- and six-month follow-ups, indicating the durability of MWM's benefits. Additionally, a meta-analysis by Chen et al. concluded that joint mobilization techniques, including MWM, significantly improved pain and disability in knee osteoarthritis (KOA) patients, though range of motion gains were not consistently superior to controls.[5]

2. PROPRIOCEPTION AND BALANCE ENHANCEMENT

Proprioceptive deficits are common in knee osteoarthritis (KOA) and contribute to impaired postural control and increased fall risk. Mulligan mobilization has shown promise in addressing these neuromuscular impairments. In a randomized clinical trial by Mostamand et al., knee osteoarthritis (KOA) patients receiving MWM demonstrated significant gains in both static and dynamic balance following 10 treatment sessions. [6,7]

A similar study by Heggannavar and Gupta combined MWM alongside proprioceptive exercises and found improvements in joint position sense and functional capacity. These findings support the idea that MWM facilitates sensorimotor feedback and enhances neuromuscular control, which is crucial for stability and safe mobility.[8]

3. BIOMECHANICS AND FUNCTIONAL CAPACITY

The biomechanical foundation of MWM lies in correcting positional faults and restoring joint arthrokinematics. Nazir et al. compared the effects of MWM, trunk stabilization exercises (TSE), and isometric strengthening over six weeks. While all interventions demonstrated progress, the MWM group reported significant reductions in pain and gains in walking distance and stair-climbing ability. However, TSE produced slightly greater improvements in submaximal exercise capacity.[9]

These findings highlight the multifactorial nature of knee osteoarthritis (KOA) and indicate that combining interventions may yield optimal outcomes. MWM appears particularly effective for improving joint mechanics and alleviating mechanical dysfunctions that underlie pain.[9]

4. Synergy with Other Therapies

MWM's therapeutic effects may be enhanced when combined with other modalities. Milton et al. compared outcomes of patients receiving MWM plus conventional therapy with those receiving conventional therapy alone. The MWM group showed significantly better outcomes in pain pressure threshold and WOMAC scores.[10]

Another study by Palanivel et al. explored the combined use of MWM and whole-body vibration (WBV) therapy. Results showed superior improvements in pain and disability when both treatments were used together, indicating a potential synergistic effect.[11]

These findings advocate for a multimodal approach in knee osteoarthritis (KOA) rehabilitation, where MWM serves as a core manual therapy, complemented by strength training, balance work, or physical agents like WBV.

5. Patient Engagement and Long-Term Benefits

MWM is particularly well-received by patients due to its active nature and instant reduction in discomfort. In Nigam et al.'s study, patients reported greater treatment satisfaction with MWM compared to those who received only conventional care. This likely leads to better adherence and overall outcomes in rehabilitation programs.[12]

Moreover, the maintenance of therapeutic gains over several months highlights MWM's role in long-term symptom control. Its integration into maintenance phases of therapy may help prevent recurrence and support sustained mobility and independence in older adults.

6. Enhanced Muscle Activation and Quadriceps Strength

Mulligan's Mobilization with Movement (MWM) has been shown to facilitate greater muscle activation by reducing joint pain and improving joint alignment. This instant reduction in discomfort reduces AMI, allowing patients to better engage the quadriceps during exercise and functional tasks. As a result, there's a more effective carryover into strengthening protocols—especially when MWM is paired with resistance training or neuromuscular re-education.[13]

In a comparative trial, Nazir et al. found that patients receiving MWM showed improved performance in stair climbing and the 6-minute walk test, suggesting enhanced lower limb strength and endurance. Though the study didn't directly measure quadriceps electromyography (EMG), the functional gains indicate improved muscular output. The authors noted that the without pain movement facilitated by MWM likely contributed to better activation of key stabilizing muscles like the quadriceps and gluteus.[3]

Moreover, by correcting positional faults and restoring normal arthrokinematics, MWM helps reduce mechanical barriers to movement. This optimizes the length-tension relationship of muscles around the knee, improving their force-generating capacity during everyday movements. Thus, MWM not only alleviates symptoms but creates a better neuromuscular environment for strengthening, making it a dual-purpose intervention: therapeutic and preparatory.[14]

7. REDUCTION IN KINESIOPHOBIA

Kinesiophobia where individuals avoid activity due to fear of pain. This avoidance can lead to muscle weakness, joint stiffness, and disease progression. Mulligan's Mobilization with Movement (MWM) effectively addresses this issue by combining passive therapist support with active, pain-free patient movement. This approach not only relieves pain but also helps rebuild confidence in movement, reducing anxiety and fear. As observed by Heggannavar and Gupta, patients engaging in MWM showed greater willingness to exercise, likely due to immediate symptom relief and improved joint trust. By making movement feel safe and manageable, MWM enhances adherence to rehab programs and supports both physical and psychological recovery. [7,15]

CLINICAL IMPLICATIONS

The body of evidence underscores the utility of MWM in both early and chronic stages of knee osteoarthritis (KOA). Its role extends beyond symptom relief—it supports joint function, improves proprioception, and fosters active patient participation. Clinicians are encouraged to incorporate MWM into comprehensive rehabilitation protocols, especially when patients present with mechanical dysfunction, limited mobility, or balance issues.

Given its safety profile, cost-effectiveness, and adaptability, MWM is suitable for outpatient, community-based, and home-based settings. As with all interventions, treatment should be tailored based on individual patient goals, comorbidities, and response to therapy.

CONCLUSION

Mulligan Mobilization with Movement is a clinically effective, evidence-based manual therapy that offers substantial benefits for individuals with knee osteoarthritis. Its unique approach, blending joint mobilization with active movement, not only alleviates pain but also enhances function, balance, and proprioception. Whether used alone or alongside other interventions, MWM represents a essential component in the non-surgical treatment of knee osteoarthritis (KOA). With increasing demand for non-invasive solutions, MWM stands out as a accessible and user-friendly solution in modern physiotherapy.

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