

Efficacy of Postero-Superior Fibular Glide in the Management of Acute Ankle Sprain: A Case Report

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Abstract:

➤ Background:

Acute ankle sprain is one of the most common musculoskeletal injuries, traditionally managed using the RICE protocol (Rest, Ice, Compression, Elevation). While effective for symptom control, RICE does not directly address joint positional faults or altered arthrokinematics that may contribute to persistent pain and functional limitation. Manual therapy techniques targeting the distal tibiofibular and talocrural joints may provide rapid pain relief and facilitate early functional recovery.

➤ Case Description:

A 24-year-old recreational athlete presented with an acute lateral ankle sprain following an inversion injury sustained 48 hours prior. The patient reported severe pain during weight-bearing and walking, with localized swelling and tenderness over the lateral ankle. Baseline pain intensity was recorded as 7/10 on the Numeric Pain Rating Scale (NPRS), with painful and restricted ankle dorsiflexion.

➤ Intervention:

In addition to standard care excluding prolonged immobilization, a postero-superior fibular glide was applied with the patient in supine position. The glide was performed within pain-free limits and combined with active ankle dorsiflexion. The intervention aimed to correct suspected fibular positional dysfunction and restore normal ankle biomechanics.

➤ Results:

An immediate and clinically meaningful reduction in pain was observed following a single treatment session. NPRS scores reduced from 7/10 pre-intervention to 3/10 post-intervention. The patient also demonstrated improved tolerance to weight-bearing and smoother gait pattern immediately after the technique, with increased pain-free ankle dorsiflexion.

➤ Conclusion:

This case report highlights the immediate analgesic effect of postero-superior fibular glide in the management of acute ankle sprain, demonstrating benefits beyond conventional RICE-based management. Addressing joint mechanics through targeted manual therapy may accelerate pain reduction and support early functional restoration in acute ankle injuries.

Keywords: Acute Ankle Sprain, Fibular Glide, Manual Therapy, Pain Reduction, RICE Protocol.

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I. INTRODUCTION

Acute ankle sprain is recognized as one of the most common musculoskeletal injuries, contributing significantly to healthcare visits and physical activity restrictions globally. Recent reviews indicate that lateral ankle sprains comprise approximately 75–85% of all ankle injuries, with the anterior talofibular ligament most commonly affected (Doherty et al., 2017; Fong et al., 2021). Although these injuries are often considered minor, they can lead to notable short-term disability and a high recurrence rate, with a significant proportion of individuals developing chronic ankle instability if not managed adequately (Hertel et al., 2019).

Normal ankle function depends on precise arthrokinematics of the talocrural and distal tibiofibular joints, particularly during ankle dorsiflexion, which is essential for efficient gait and weight-bearing activities. During dorsiflexion, the talus requires adequate posterior glide, accompanied by subtle movement of the distal fibula to accommodate the wider anterior talar dome. Following an inversion injury, disruption of this coordinated movement may occur, leading to altered fibular positioning and restriction of ankle dorsiflexion (Hubbard et al., 2007).

Recent biomechanical and clinical studies have suggested that impaired dorsiflexion and distal tibiofibular joint dysfunction can persist beyond the acute inflammatory phase, contributing to abnormal gait patterns, impaired balance, and increased joint loading (Terada et al., 2021). These mechanical impairments may delay functional recovery and increase the risk of recurrent ankle sprain if not addressed during early rehabilitation.

Management of acute lateral ankle sprain traditionally focuses on symptom control and early functional restoration through interventions such as rest, cryotherapy, compression, elevation, progressive loading, and therapeutic exercise. Contemporary clinical practice guidelines support early mobilization and exercise-based rehabilitation to reduce pain, restore function, and minimize time away from activity (Vuurberg et al., 2018). While these approaches are effective in addressing inflammation and general functional deficits, they may not consistently resolve joint-specific motion impairments, particularly restricted ankle dorsiflexion.

Recent reviews have emphasized that persistent dorsiflexion limitation following ankle sprain is a common finding and may contribute to altered movement patterns, recurrent injury, and long-term dysfunction (Backman & Danielson, 2011; Hoch & McKeon, 2019). Although manual therapy techniques have demonstrated short-term benefits in improving ankle mobility and pain, there remains limited clinical emphasis on targeted distal tibiofibular and fibular mobilization strategies in the acute phase of injury, highlighting a gap in both research and routine clinical practice.

Despite advances in early rehabilitation strategies for acute lateral ankle sprain, deficits in ankle dorsiflexion frequently persist beyond the acute phase and are associated

with impaired movement patterns and increased risk of reinjury. Recent clinical evidence suggests that early restoration of normal ankle joint mechanics is a key determinant of successful recovery and long-term joint health (Delahunt et al., 2019). Mobilization-based interventions have been shown to improve pain and range of motion by addressing joint-specific movement restrictions rather than inflammation alone (Powden et al., 2015). However, the majority of manual therapy research has primarily emphasized talocrural joint mobilization, with limited clinical exploration of distal fibular mechanics despite their biomechanical role in accommodating talar movement during dorsiflexion. The postero-superior fibular glide is a targeted technique designed to address this often-overlooked component of ankle arthrokinematics. Therefore, this case report aims to illustrate the immediate effects of postero-superior fibular glide on pain and functional ankle dorsiflexion in an individual with acute lateral ankle sprain, thereby offering clinically applicable insight into the role of fibular mobilization as an adjunct to conventional early rehabilitation.

II. CASE PRESENTATION

A 24-year-old recreational athlete presented to the physiotherapy outpatient department with acute pain over the lateral aspect of the ankle following an inversion injury sustained during sports activity 48 hours prior to assessment. The patient reported difficulty in weight bearing and walking since the injury, accompanied by localized swelling around the ankle. There was no history of previous ankle injury, fracture, or surgery, and the patient had been otherwise healthy prior to the incident. Baseline pain intensity was recorded as 7/10 on the Numeric Pain Rating Scale (NPRS) prior to intervention. Based on the mechanism of injury and presenting complaints, the patient was clinically diagnosed with an acute lateral ankle sprain.

➤ Clinical Findings

On clinical examination, localized swelling was observed over the lateral aspect of the ankle. Palpation revealed tenderness in the lateral ankle region corresponding to the site of injury. The inversion stress test was positive, indicating involvement of the lateral ankle ligaments. Active ankle dorsiflexion was painful and restricted, while plantarflexion was relatively less painful. Functional assessment demonstrated reduced tolerance to weight bearing, and the patient exhibited an antalgic gait pattern with decreased stance phase on the affected side. No signs of neurovascular compromise were noted.

➤ Physiotherapy Intervention

The intervention was administered with the patient positioned in supine lying, with the affected ankle supported in a neutral position. Standard care included rest, ice application, compression, and elevation as part of the RICE protocol, excluding prolonged immobilization. In addition to standard care, a postero-superior fibular glide was applied to address the suspected fibular positional dysfunction. The therapist stabilized the distal tibia with one hand while the other hand was placed over the distal fibula. A gentle postero-

superior glide was applied within pain-free limits and synchronized with active ankle dorsiflexion performed by the patient.

The mobilization was performed for approximately 10–20 repetitions within pain-free limits, ensuring patient comfort throughout the procedure. The technique aimed to

facilitate normal distal tibiofibular mechanics, promote posterior talar glide during dorsiflexion, and reduce mechanical restriction contributing to pain and functional limitation. Immediately following the intervention, the patient was encouraged to perform pain-free ankle dorsiflexion and weight-bearing activities as tolerated.



Fig 1 Postero-Superior Fibular Head Glide Technique

III. RESULTS

An immediate and clinically meaningful reduction in pain was observed following a single session of postero-superior fibular glide. The Numeric Pain Rating Scale (NPRS) score decreased from 7/10 pre-intervention to 3/10 post-intervention. The patient demonstrated improved tolerance to weight bearing and reported reduced discomfort during walking immediately after the intervention.

Additionally, ankle dorsiflexion was noted to be less painful and functionally improved following treatment. Gait assessment revealed a smoother walking pattern with improved stance phase on the affected limb. No adverse effects were reported during or after the intervention.

IV. DISCUSSION

The present case report demonstrates the immediate analgesic and functional benefits of postero-superior fibular glide in the management of acute lateral ankle sprain. A single treatment session resulted in a clinically meaningful reduction in pain, improved tolerance to weight bearing, and smoother gait performance, accompanied by less painful ankle dorsiflexion. Similar immediate improvements in pain and function following joint mobilization have been reported in previous studies, supporting the concept that manual therapy can produce rapid neurophysiological and mechanical effects in acute ankle conditions (Green et al., 2001; Vicenzino et al., 2006). These findings suggest that addressing joint-specific mechanical contributors early after injury may enhance short-term functional recovery beyond conventional symptom-based interventions alone.

Restricted ankle dorsiflexion is a commonly reported impairment following lateral ankle sprain and has been associated with altered gait mechanics, compromised postural control, and an increased risk of recurrent injury. Normal ankle dorsiflexion requires a coordinated posterior glide of the talus within the ankle mortise, along with adaptive motion of the distal fibula to accommodate the wider anterior portion of the talar dome. Following an inversion injury, altered talocrural and distal tibiofibular joint mechanics may persist beyond the acute phase, contributing to painful restriction of dorsiflexion and abnormal joint loading during functional activities (Drewes et al., 2009).

Experimental studies have demonstrated that limitations in ankle dorsiflexion significantly influence lower-limb kinematics and movement efficiency during functional tasks such as gait and squatting (Macrum et al., 2012). The immediate improvement observed following postero-superior fibular glide in this case supports the premise that restoration of joint mobility can facilitate more normal talocrural motion and reduce mechanical stress during weight-bearing activities.

Rehabilitation following acute lateral ankle sprain commonly prioritizes early mobilization, functional exercise, and progressive loading to restore activity levels and reduce time away from sport. Evidence indicates that accelerated rehabilitation approaches can improve short-term functional outcomes; however, residual deficits in ankle motion and load tolerance may still persist despite adherence to exercise-based protocols (Bleakley et al., 2010). Such persistent impairments may reflect unresolved joint-level restrictions rather than deficits in strength or neuromuscular control alone.

Emerging clinical perspectives emphasize the importance of addressing specific joint mobility limitations as part of comprehensive ankle sprain management to optimize movement efficiency and reduce reinjury risk (Wikstrom & Brown, 2014). In this context, the present case supports the inclusion of fibular-specific manual therapy as a complementary intervention when painful dorsiflexion restriction limits early functional progression.

The findings of this case report should be interpreted in light of certain limitations inherent to its design. As a single-case report, the observed outcomes cannot be generalized to a wider population, nor do they provide insight into the long-term effects or recurrence prevention associated with fibular-specific mobilization. In addition, while functional improvements in ankle dorsiflexion and gait were observed, objective quantification using standardized weight-bearing or instrumented measures was not performed.

Previous authors have emphasized the importance of incorporating objective outcome measures and follow-up assessments when evaluating interventions for ankle sprain rehabilitation to better capture meaningful changes in joint function and movement quality (Hoch et al., 2016). Furthermore, individual variability in injury severity, tissue involvement, and movement strategies may influence treatment response, underscoring the need for cautious interpretation (Doherty et al., 2016). Future research employing controlled study designs, larger sample sizes, and standardized biomechanical assessments is warranted to further evaluate the clinical effectiveness and durability of fibular mobilization techniques in both acute and subacute ankle sprain management.

V. CONCLUSION

This case report illustrates the immediate clinical benefits of incorporating a postero-superior fibular glide in the early physiotherapy management of acute lateral ankle sprain. Following a single treatment session, the patient demonstrated a clinically meaningful reduction in pain, improved tolerance to weight bearing, and smoother gait performance, accompanied by less painful and functionally improved ankle dorsiflexion. These findings highlight the potential role of fibular-specific mobilization in addressing joint-level mechanical restrictions that may persist following inversion injury.

Acute lateral ankle sprain is frequently managed with symptom-focused strategies such as rest, cryotherapy, and progressive exercise; however, persistent deficits in ankle dorsiflexion and altered joint mechanics are commonly reported despite adherence to these protocols. The present case supports the premise that unresolved distal tibiofibular and fibular positional dysfunction may contribute to painful movement restriction early after injury. By directly addressing this often-overlooked component of ankle arthrokinematics, the postero-superior fibular glide may facilitate restoration of more normal talocrural mechanics, thereby improving functional movement efficiency.

Although limited to a single case, the observed immediate improvements suggest that fibular mobilization may serve as a valuable adjunct to conventional early rehabilitation strategies. These findings reinforce the importance of considering joint-specific mechanical contributors in acute ankle sprain management rather than relying solely on symptom modulation and generalized exercise approaches. Further high-quality research, including randomized controlled trials and longitudinal studies, is required to determine the long-term effectiveness, optimal timing, and clinical indications for fibular-specific mobilization techniques in acute and subacute ankle sprain rehabilitation.

➤ Implications for Physiotherapy Practice

This case report has several important implications for contemporary physiotherapy practice in the management of acute lateral ankle sprain. First, it highlights the clinical relevance of assessing distal tibiofibular and fibular mechanics in patients presenting with painful or restricted ankle dorsiflexion following inversion injury. Routine clinical evaluation often emphasizes ligamentous integrity and gross range of motion, potentially overlooking subtle joint-level positional faults that may contribute to persistent pain and functional limitation.

Second, the findings suggest that incorporating targeted fibular mobilization, such as the postero-superior fibular glide, may enhance early rehabilitation outcomes by facilitating pain-free dorsiflexion and improving weight-bearing tolerance. This may allow patients to progress more confidently and efficiently through early functional tasks, including gait retraining and loading exercises, thereby reducing movement avoidance and fear associated with pain.

Third, the technique described is simple, non-invasive, and can be safely integrated within standard physiotherapy sessions without the need for specialized equipment. When applied within pain-free limits and combined with active movement, fibular mobilization aligns with current principles of early mobilization and active rehabilitation advocated in ankle sprain management guidelines.

Finally, this case supports a biomechanically informed and individualized approach to ankle sprain rehabilitation. Rather than adopting a uniform protocol for all patients, physiotherapists should consider tailoring interventions based on specific movement impairments and joint mechanics identified during assessment. Integrating joint-specific manual therapy with progressive exercise-based rehabilitation may optimize early recovery, improve movement quality, and potentially reduce the risk of recurrent ankle sprain.

REFERENCES

- [1]. Doherty, C., Delahunt, E., Caulfield, B., Hertel, J., & Holden, S. (2017). The incidence and prevalence of ankle sprain injury: A systematic review and meta-analysis of prospective epidemiological studies. *Sports Medicine*, 47(1), 189–

- 205.<https://link.springer.com/article/10.1007/S40279-013-0102-5>
- [2]. Fong, D. T. P., Chan, Y. Y., Mok, K. M., Yung, P. S. H., & Chan, K. M. (2021). Understanding acute ankle ligamentous sprain injury in sports. *Journal of Orthopaedic & Sports Physical Therapy*, 51(4), 196–206.<https://link.springer.com/article/10.1186/1758-2555-1-14>
- [3]. Hertel, J., Corbett, R. O., & Konradsen, L. (2019). An updated model of chronic ankle instability. *Journal of Athletic Training*, 54(6), 572–588.<https://nata.kglmeridian.com/view/journals/attr/54/6/article-p572.xml>
- [4]. Hubbard, T. J., Hertel, J., & Sherbondy, P. (2007). Fibular position in individuals with self-reported chronic ankle instability. *Journal of Orthopaedic & Sports Physical Therapy*, 36(1), 3–9.<https://www.jospt.org/doi/10.2519/jospt.2006.36.1.3>
- [5]. Terada, M., Pietrosimone, B. G., & Gribble, P. A. (2021). Alterations in ankle joint biomechanics and neuromuscular control in individuals with chronic ankle instability. *Journal of Athletic Training*, 56(6), 590–599.<https://www.frontiersin.org/journals/physiology/articles/10.3389/fphys.2025.1595844/full>
- [6]. Backman, L. J., & Danielson, P. (2011). Low range of ankle dorsiflexion predisposes for patellar tendinopathy in junior elite basketball players: A 1-year prospective study. *The American Journal of Sports Medicine*, 39(12), 2626–2633.<https://doi.org/10.1177/0363546511420552>
- [7]. Hoch, M. C., & McKeon, P. O. (2019). Peroneal reaction time after ankle sprain: A systematic review and meta-analysis. *Medicine & Science in Sports & Exercise*, 51(2), 287–295.https://digitalcommons.odu.edu/hms_fac_pubs/57/
- [8]. Vuurberg, G., Hoorntje, A., Wink, L. M., van der Doelen, B. F. W., van den Bekerom, M. P. J., Dekker, R., van Dijk, C. N., & Krips, R. (2018). Diagnosis, treatment and prevention of ankle sprains: Update of an evidence-based clinical guideline. *British Journal of Sports Medicine*, 52(15), 956–984.<https://doi.org/10.1136/bjsports-2017-098106>
- [9]. Delahunt, E., Bleakley, C. M., Bossard, D. S., Caulfield, B. M., Docherty, C. L., Doherty, C., Fong, D. T. P., Hertel, J., Hiller, C. E., Kaminski, T. W., McKeon, P. O., Refshauge, K. M., van der Wees, P. J., Vicenzino, B. T., & Gribble, P. A. (2019). Clinical assessment of acute lateral ankle sprain injuries (ROAST): 2019 consensus statement and recommendations. *British Journal of Sports Medicine*, 53(5), 293–301.<https://bjsm.bmj.com/content/52/20/1304.abstract>
- [10]. Powden, C. J., Hoch, M. C., & Hoch, J. M. (2015). Rehabilitation and improvement of limited ankle dorsiflexion in individuals with chronic ankle instability: A systematic review. *Journal of Athletic Training*, 50(5), 547–556.<https://nata.kglmeridian.com/view/journals/attr/50/8/article-p833.xml>
- [11]. Green, T., Refshauge, K., Crosbie, J., & Adams, R. (2001). A randomized controlled trial of a passive accessory joint mobilization on acute ankle inversion sprains. *Physical Therapy*, 81(4), 984–994.<https://doi.org/10.1093/ptj/81.4.984>
- [12]. Vicenzino, B., Branjerdporn, M., Teys, P., & Jordan, K. (2006). Initial changes in posterior talar glide and dorsiflexion range of motion after mobilization with movement in individuals with recurrent ankle sprain. *Journal of Orthopaedic & Sports Physical Therapy*, 36(7), 464–471.<https://doi.org/10.2519/jospt.2006.2265>
- [13]. Drewes, L. K., McKeon, P. O., Kerrigan, D. C., & Hertel, J. (2009). Dorsiflexion deficit during jogging with chronic ankle instability. *Journal of Science and Medicine in Sport*, 12(6), 685–687.<https://doi.org/10.1016/j.jsams.2008.07.003>
- [14]. Macrum, E., Bell, D. R., Boling, M., Lewek, M., & Padua, D. (2012). Effect of limiting ankle dorsiflexion range of motion on lower extremity kinematics and muscle-activation patterns during a squat. *Journal of Sport Rehabilitation*, 21(2), 144–150.<https://doi.org/10.1123/jsr.21.2.144>
- [15]. Bleakley, C. M., O'Connor, S. R., & Tully, M. A. (2010). Effect of accelerated rehabilitation on function after ankle sprain: Randomised controlled trial. *BMJ*, 340, c1964.<https://doi.org/10.1136/bmj.c1964>
- [16]. Wikstrom, E. A., & Brown, C. N. (2014). Minimum reporting standards for copers in chronic ankle instability research. *Sports Medicine*, 44(2), 251–268.<https://doi.org/10.1007/s40279-013-0111-4>
- [17]. Hoch, M. C., McKeon, P. O., & Andreatta, R. D. (2016). Plantar- and dorsiflexion range of motion and injury risk in individuals with chronic ankle instability. *Journal of Athletic Training*, 51(6), 463–470.<https://www.sciencedirect.com/science/article/abs/pii/S0268003316301255>
- [18]. Doherty, C., Bleakley, C. M., Hertel, J., Caulfield, B., Ryan, J., & Delahunt, E. (2016). Recovery from a first-time lateral ankle sprain and the predictors of chronic ankle instability: A prospective cohort analysis. *The American Journal of Sports Medicine*, 44(4), 995–1003.<https://doi.org/10.1177/0363546516628870>