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Ankle Sprains: Clinical Practice and Guideline-Based Treatment Strategies

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Abstract

Ankle sprains, particularly lateral sprains involving the anterior talofibular ligament (ATFL), represent up to 85% of ankle injuries and are common in both athletic and general populations. Despite their prevalence, misdiagnosis and inadequate treatment can lead to chronic ankle instability and post-traumatic osteoarthritis. This narrative review synthesizes current clinical guidelines and evidence-based practices for diagnosis and treatment. Clinical assessment, supported by the Ottawa Ankle Rules, ultrasound, and MRI, enables accurate injury

classification. Conservative treatment is preferred for Grade I and II injuries, with early mobilization and functional support—especially within the POLICE protocol—demonstrating superior outcomes. Exercise therapy effectively reduces recurrence, while surgical intervention is reserved for Grade III injuries or chronic instability in high-demand patients. Timely and structured rehabilitation remains key to restoring ankle function.

Keywords: Lateral ankle sprain; ATFL injury; Conservative treatment; Clinical guidelines; Ankle rehabilitation

Introduction

Ankle sprains are among the most common musculoskeletal injuries in both athletes and the general population (1). They are characterized by the stretching, partial rupture, or complete tear of one or more ligaments within the ankle joint, typically resulting from an involuntary twisting motion that exceeds the joint's normal anatomical range of movement (2).

Lateral ankle sprains (LAS) are the most frequently encountered subtype, as they constitute approximately 85% of all ankle sprains. These injuries are predominantly associated with athletic activities. Among the lateral ligamentous structures of the ankle, the anterior talofibular ligament (ATFL) is the most vulnerable and consequently the most commonly affected during such trauma (3). Other ligaments that comprise the lateral ankle complex include the calcaneofibular ligament (CFL) and the posterior talofibular ligament (PTFL).

The severity of ankle sprains is commonly classified into three grades. Grade I refers to ligamentous stretching without tearing. Grade II involves a partial rupture of one or more ligaments. Grade III is characterized by a complete rupture of all components of the lateral ligament complex and represents the most severe form of injury.

Despite their high incidence, ankle sprains are frequently underdiagnosed. Failure to appropriately manage these injuries can lead to persistent functional impairments, chronic ankle instability (CAI), and an elevated risk of developing post-traumatic osteoarthritis (4).

Aim of the work

This narrative review aims to synthesize current clinical guidelines and scientific evidence concerning the diagnosis and treatment of ankle sprains, with emphasis on the effectiveness of both conservative and surgical approaches, as well as rehabilitation strategies aimed at reducing recurrence and restoring function.

Literature review results

1.Clinical Evaluation of Ankle Sprains

1.1 Mechanism of Injury and Risk Factors

A thorough clinical evaluation of ankle sprains requires a detailed understanding of the injury mechanism, patient history, and associated risk factors to accurately identify the structures involved and guide appropriate management. Determining the mechanism of the injury is recommended, as it provides information about damaged anatomical structures, which can help prioritize the damaged tissue in examination. For instance, when a patient describes a mechanism involving sudden, rapid inversion combined with internal rotation of the foot and ankle complex - regardless of any sagittal plane angular displacement - clinicians should strongly consider the possibility of lateral ankle ligament injury (5). In more severe cases, the medial ankle structures may also be involved (6). When the foot's eversion and abduction pair with the leg's internal rotation, clinicians may suspect a medial ankle sprain involving the deltoid ligament (7). If the patient reports a mechanism of injury involving excessive dorsiflexion combined with eversion of the talus within the ankle mortise and external rotation of the foot, syndesmotic ligament injury should be considered. However, these clinical features are not entirely specific and must be interpreted with caution (5).

As part of initial assessment of a suspected ankle sprain, it is essential to inquire about the patient's history of previous ankle injuries or sprains (7). A previous history of ankle sprain is a significant risk factor for future sprains, with affected individuals demonstrating a higher likelihood of recurrence compared to those with no prior injury history. (8) Additionally, a prior ankle sprain may lead to impairment in both passive and active range of motion, which could influence clinical assessments of the ankle. This information is particularly important when determining if the currently affected ankle has any limitation in range of motion in comparison to the contralateral ankle (9). In addition to injury history, clinicians should evaluate other potential risk factors such as the specific sport or activity

during which the injury occurred, and the use of external supports, including bracing, taping, or footwear (6)

1.2 Initial Physical Examination

Physicians, when it comes to the clinical assessment of an injured joint, should look for any abnormalities or asymmetries in the limb that may suggest dislocations or fractures. Evaluating foot and lower limb alignment in a standing position may assist the clinician in identifying biomechanical risk factors for ankle injuries (6). Firstly, the clinician should check for palpable tenderness or swelling in the affected limb. Localized tenderness is typically observed over the sinus tarsi region, particularly in the area of the ATFL, and it may also be present beneath the lateral malleolus near the CFL (7). When, during examination, the patient reports a sensation of "known pain," it may be indicative of a ligamentous injury (5). In cases where, due to muscle contractions, restraints are present, discomfort may extend along muscles, such as the fibularis longus and brevis. A comprehensive palpation of the ankle complex is essential to accurately identify areas of tenderness. Noticeable edema may also be evident in these regions or elsewhere along the lateral ankle complex (6). The distribution of swelling can suggest which structures are damaged, especially when observed shortly after injury. However, the extent of edema does not correlate with patient-reported functional limitations. To monitor recovery, assessment of fluid volumetry or ankle circumference, using a figure-of-eight method, may be employed to evaluate progress (10).

1.3 Assessment of Range of Motion

Ankle range of motion (ROM) should be assessed through active, passive, and resisted testing in both the frontal (inversion-eversion) and sagittal (plantarflexion-dorsiflexion) planes. Restricted ROM may be indicative of joint effusion or intra-articular pathology. To evaluate structures under tension passive testing is advocated, whereas active and resisted tests are primarily employed to identify musculotendinous injuries, muscular dysfunction secondary to joint trauma, or a combination of both (7). Assessment of ankle ROM should be performed with the knee positioned in both extension and flexion, as dorsiflexion varies depending on knee position. Typically, dorsiflexion measures around 10 degrees when the knee is extended, and increases to approximately 20 degrees when the knee is flexed. Evaluation of subtalar joint movement should be conducted while the ankle is maintained in a neutral position (6). Bilateral assessment of ankle ROM is recommended to allow for side-to-side comparison, as normative values can vary between individuals. Any pain or discomfort elicited during the assessment should be documented. Furthermore, the patient’s clinical history- particularly any

prior ankle injuries- must be taken into account, as chronic limitations in joint kinematics may lead to asymmetrical ROM (9).

1.4 Ligament-Specific Clinical Tests

Finally, physician should asses ankle ligaments conditions as well as syndesmosis ligament. Clinical tests to determine damage of ATFL are best performed 4-6 days after injury, rather than within 48 hours after injury. The anterior drawer test is considered the most sensitive clinical assessment for detecting a complete tear of the ATFL. Reported sensitivity and specificity values are 0.96 and 0.84, respectively, with a corresponding negative likelihood ratio of 0.04 (11). Other studies validating the anterior drawer test have reported sensitivity ranging from 80% to 95% and specificity between 74% and 84% for detecting ligamentous rupture (6). That suggests that the absence of a "sulcus sign" during the test indicates a low probability of a complete or partial ATFL rupture (5). The presence of palpable pain and hematoma in combination with a positive anterior drawer test improve sensitivity (100%), ensuring accurate identification of true positives. However, specificity remains moderate (77%), indicating a limited ability to confidently rule out false positives (12).

The CFL is the second most frequently injured structure in LAS. Subtalar joint involvement is often observed in conjunction with suspected CFL injury, particularly when the injury mechanism includes excessive rearfoot supination or generalized inversion. The talar tilt test is routinely employed to evaluate subtalar instability; however, its sensitivity and specificity for detecting CFL injury have not been consistently validated in the current literature (6).

Ankle syndesmosis ligament injuries, with or without associated lateral ligament involvement, have been reported to occur in approximately 20% of acute ankle sprains (13). Accordingly, clinical evaluation of the syndesmotic ligaments is essential. According to findings by Sman et al., localized tenderness upon palpation demonstrates the highest sensitivity (0.92) for detecting syndesmotic injury, whereas the squeeze test exhibits the greatest specificity (0.88). Thus, concurrent positive findings on both tests provide strong clinical evidence of syndesmotic ligament involvement. (14).

2. Imaging and Radiological Assessment of Ankle Sprains

2.1 Ottawa Ankle Rules

The Ottawa Ankle Rules (OARs) are utilized to exclude fractures in the ankle region and reduce unnecessary use of radiological imaging. Ankle X-rays are advised, if the patient

meets any of the following criteria: pain accompanied by tenderness on palpation in the region of the lateral or medial malleolus and posterior to them, incapacity to bear weight for four steps immediately post-injury or during clinical evaluation (15). Use of OAR exhibits high sensitivity in excluding ankle fractures; however, their specificity is lower, and therefore, they should not be used to confirm ankle fractures (16).

2.2 Ultrasonography in Ligament Assessment

Ultrasound is a widely accessible and cost-effective imaging technique for ankle assessment. It allows for both dynamic evaluation of articular surfaces under stress and static assessment of ligamentous integrity and cross-sectional area. Diagnostic ultrasound provides moderate to strong confirmation of lateral ligamentous injury in patients with suspected lateral ankle sprain. (9)(17)(18). A study by Chen et al. reported that ultrasound demonstrates high sensitivity in detecting injuries of the ATFL (98.9%) and CFL (93.8%) and a specificity of 93.8% and 90.9%, respectively (18). In conclusion, ultrasonography, as a cost-effective and real-time imaging technique, demonstrated satisfactory sensitivity and specificity in identifying lateral ligament injuries (17). However, its accuracy is highly dependent on the skill and experience of the physician.

2.3 Magnetic Resonance Imaging

Magnetic resonance imaging (MRI) can effectively visualize injuries to the lateral ankle ligaments, including ligamentous tears, discontinuities, increased signal intensity within the ligament, and irregular or undulating ligamentous structures that retain normal thickness and signal intensity (18). Reported sensitivity for detecting ATFL injuries was 97% with 100% specificity compared to arthroscopy (17). A study by Y.S. Kim et al. reported that MRI demonstrates high positive predictive value and specificity for detecting ATFL injuries; however, negative predictive value and sensitivity were relatively low (19). Similarly, a study by Joshy et al. demonstrated that MRI exhibits high specificity and positive predictive value in detecting tears of the ATFL and CFL, but its sensitivity remains relatively low. Therefore, ruling out ligamentous injuries in symptomatic patients based solely on MRI findings should be approached with caution (20).

3. Management of Acute Ankle Sprains

3.1 Initial Treatment Objectives and Indications

The primary objectives in the management of acute ankle sprains are to alleviate pain, minimize edema and hematoma formation, and restore functional mobility of the ankle joint (21). Both conservative and surgical approaches are employed, depending on the severity of

the injury. Conservative management is typically indicated for Grade I and Grade II sprains, whereas surgical intervention is generally reserved for severe Grade III injuries (2).

3.2 Acute Management Protocols: RICE, PRICE, and POLICE

Common conservative strategies include protocols such as “RICE” (Rest, Ice, Compression, Elevation) ,“PRICE” (Protection, Rest, Ice, Compression, Elevation) and “POLICE” (Protection, Optimal Loading, Ice, Compression, Elevation) (6). A study by Erdurmuş et al. demonstrated that the POLICE protocol was associated with a shorter recovery period and a more effective return to pre-injury function compared to the PRICE approach. Additionally, patients treated with the POLICE method reported fewer chronic problems and a lower incidence of recurrent ankle sprains (21). Although there is limited high-level evidence supporting the efficacy of the RICE protocol, its use is widely accepted in clinical practice and is considered beneficial for short-term symptom relief, particularly in alleviating pain and facilitating early mobilization (6).

3.3 Functional Support and Immobilization

Current high-level evidence supports the use of functional support in combination with exercise therapy as the preferred approach for managing acute LAS. Immobilisation in a lower leg cast for four weeks or longer is associated with less favorable outcomes compared to early functional mobilisation (1). However, short-term immobilisation (≤10 days) with a plaster cast or rigid support may be beneficial in the acute phase by reducing pain and oedema and enhancing early functional recovery, after which functional treatment should be initiated (22).

Functional supports, including ankle braces and taping, enable controlled loading of injured tissues and have shown superior outcomes compared to elastic bandages or compression wraps. Among these, lace-up and semi-rigid braces demonstrate greater efficacy than non-elastic sports tape or kinesiotape, which is generally insufficient for providing mechanical stability in unstable ankles. Functional support should be introduced early and continued for a duration of 4–6 weeks following injury (23).

Taping and bracing, which is external support in an ankle sprain, is the most effective in reducing the chance for reoccurring ankle sprains in athletes when used at least 6 months after the injury combined with physical therapy. They are advised to athletes engaging in challenging scenarios. Effects such as milder acute ankle sprains and lower chances of injuries to happen are noticeable up to a year following an injury (24).

3.4 Pharmacological Pain Management

The use of non-steroidal anti-inflammatory drugs (NSAIDs) is strongly recommended in the immediate period following an acute injury; however, their long-term use is not advised. This form of treatment is effective in reducing ankle pain and swelling (24)(25). Both oral and topical NSAIDs are effective in reducing pain within the first 14 days post-injury without significantly increasing the risk of adverse events when compared with placebo (23). Notably, paracetamol appears to provide comparable efficacy to NSAIDs in terms of pain, edema, and range of motion outcomes, and may serve as a viable alternative, particularly in populations where NSAID-related risks are a concern (26). While opioids demonstrate similar analgesic effects, their use is associated with significantly higher rates of adverse effects, limiting their clinical utility (27). NSAIDs may be considered for short-term symptomatic management of acute LAS to reduce pain and swelling. However, clinicians should weigh the potential benefits against risks, including the possibility of delayed healing, and should match treatment based on individual patient profiles and injury severity (23).

3.5 Exercise Therapy and Rehabilitation

Exercise therapy is a core component in the rehabilitation of patients following acute LAS. High-level evidence supports the early initiation of exercise programs, which primarily include neuromuscular and proprioceptive training. Such interventions significantly reduce the incidence of recurrent ankle and the prevalence of functional ankle instability (28).

Early and structured exercise therapy is also associated with faster recovery, improved ankle function, and better patient-reported outcomes. Supervised physiotherapy appears to offer additional benefits in individuals with more severe injuries, contributing to greater improvements in strength, proprioception, and time to return to work or sport compared to unsupervised or home-based programs (23). However, the evidence regarding the superiority of supervised exercise therapy over non-supervised approaches remains inconsistent (29).

3.6 Surgical Treatment and Indications

Despite favorable clinical outcomes associated with surgical management in cases of chronic instability or acute complete lateral ligament rupture, functional treatment remains the preferred approach, as not all patients require operative intervention. This strategy helps minimize the risk of overtreatment and reduces exposure to potential complications associated with invasive procedures (30). However, treatment decisions should be individualized based on the patient's clinical presentation and functional demands. In professional athletes, surgical

intervention may be considered to expedite recovery and minimize time away from competition (31).

Conclusions

Ankle sprains are highly prevalent injuries that, if not accurately diagnosed and properly managed, can lead to chronic instability and long-term functional limitations. Clinical assessment remains the foundation of diagnosis, supported by tools such as the Ottawa Ankle Rules and imaging techniques like ultrasound and MRI. Conservative treatment - including the POLICE protocol, functional bracing, and structured exercise therapy - should be prioritized in most cases, especially for Grade I and II sprains. Surgical intervention is reserved for severe or recurrent injuries and should be based on individual functional demands. Early, targeted rehabilitation and an evidence-based approach are essential to ensure optimal recovery, reduce recurrence, and restore ankle function effectively.

Authors' Contributions Statement

All authors have read and agreed with the published version of the manuscript.
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References

1. Ruiz-Sánchez FJ, Ruiz-Muñoz M, Martín-Martín J, Coheña-Jimenez M, Perez-Belloso AJ, Pilar Romero-Galisteo R, i in. Management and treatment of ankle sprain according to clinical practice guidelines: A PRISMA systematic review. Medicine (Baltimore). 21 październik 2022;101(42):e31087.

2. Ortega-Avila AB, Cervera-Garvi P, Marchena-Rodriguez A, Chicharro-Luna E, Nester CJ, Starbuck C, i in. Conservative Treatment for Acute Ankle Sprain: A Systematic Review. J Clin Med. 27 wrzesień 2020;9(10):3128.

3. Ferran NA, Maffulli N. Epidemiology of sprains of the lateral ankle ligament complex. Foot Ankle Clin. wrzesień 2006;11(3):659–62.

4. Hiller CE, Nightingale EJ, Raymond J, Kilbreath SL, Burns J, Black DA, i in. Prevalence and impact of chronic musculoskeletal ankle disorders in the community. Arch Phys Med Rehabil. październik 2012;93(10):1801–7.

5. Delahunt E, Bleakley CM, Bossard DS, Caulfield BM, Docherty CL, Doherty C, i in. Clinical assessment of acute lateral ankle sprain injuries (ROAST): 2019 consensus statement

and recommendations of the International Ankle Consortium. Br J Sports Med. październik 2018;52(20):1304–10.

6. Chen ET, Borg-Stein J, McInnis KC. Ankle Sprains: Evaluation, Rehabilitation, and Prevention. Curr Sports Med Rep. czerwiec 2019;18(6):217–23.

7. Kaminski TW, Hertel J, Amendola N, Docherty CL, Dolan MG, Hopkins JT, i in. National Athletic Trainers' Association Position Statement: Conservative Management and Prevention of Ankle Sprains in Athletes. J Athl Train. 2013;48(4):528–45.

8. Kucera KL, Marshall SW, Wolf SH, Padua DA, Cameron KL, Beutler AI. Association of Injury History and Incident Injury in Cadet Basic Military Training. Med Sci Sports Exerc. czerwiec 2016;48(6):1053–61.

9. Gribble PA. Evaluating and Differentiating Ankle Instability. J Athl Train. czerwiec 2019;54(6):617–27.

10. Man IOW, Morrissey MC. Relationship between ankle-foot swelling and self-assessed function after ankle sprain. Med Sci Sports Exerc. marzec 2005;37(3):360–3.

11. van Dijk CN, Lim LS, Bossuyt PM, Marti RK. Physical examination is sufficient for the diagnosis of sprained ankles. J Bone Joint Surg Br. listopad 1996;78(6):958–62.

12. Krips R, de Vries J, van Dijk CN. Ankle Instability. Foot Ankle Clin. 1 czerwiec 2006;11(2):311–29.

13. Roemer FW, Jomaah N, Niu J, Almusa E, Roger B, D'Hooghe P, i in. Ligamentous Injuries and the Risk of Associated Tissue Damage in Acute Ankle Sprains in Athletes: A Cross-sectional MRI Study. Am J Sports Med. lipiec 2014;42(7):1549–57.

14. Sman AD, Hiller CE, Rae K, Linklater J, Black DA, Nicholson LL, i in. Diagnostic accuracy of clinical tests for ankle syndesmosis injury. Br J Sports Med. marzec 2015;49(5):323–9.

15. Stiell IG, Greenberg GH, McKnight RD, Nair RC, McDowell I, Reardon M, i in. Decision rules for the use of radiography in acute ankle injuries. Refinement and prospective validation. JAMA. 3 marzec 1993;269(9):1127–32.

16. Beckenkamp PR, Lin CWC, Macaskill P, Michaleff ZA, Maher CG, Moseley AM. Diagnostic accuracy of the Ottawa Ankle and Midfoot Rules: a systematic review with meta-analysis. Br J Sports Med. 1 marzec 2017;51(6):504–10.

17. Oae K, Takao M, Uchio Y, Ochi M. Evaluation of anterior talofibular ligament injury with stress radiography, ultrasonography and MR imaging. Skeletal Radiol. styczeń 2010;39(1):41–7.

18. Cheng Y, Cai Y, Wang Y. Value of ultrasonography for detecting chronic injury of the lateral ligaments of the ankle joint compared with ultrasonography findings. Br J Radiol. styczeń 2014;87(1033):20130406.
19. Kim YS, Kim YB, Kim TG, Lee SW, Park SH, Lee HJ, i in. Reliability and Validity of Magnetic Resonance Imaging for the Evaluation of the Anterior Talofibular Ligament in Patients Undergoing Ankle Arthroscopy. Arthrosc J Arthrosc Relat Surg Off Publ Arthrosc Assoc N Am Int Arthrosc Assoc. sierpień 2015;31(8):1540–7.
20. Joshy S, Abdulkadir U, Chaganti S, Sullivan B, Hariharan K. Accuracy of MRI scan in the diagnosis of ligamentous and chondral pathology in the ankle. Foot Ankle Surg Off J Eur Soc Foot Ankle Surg. czerwiec 2010;16(2):78–80.
21. Erdurmuş ÖY, Oğuz AB, Genç S, Koca A, Eneyli MG, Polat O. Comparison of the effects PRICE and POLICE treatment protocols on ankle function in patients with ankle sprain. Turk J Trauma Emerg Surg. 10 sierpień 2023;29(8):920–8.
22. Uslu M, Inanmaz ME, Ozsahin M, Isık C, Arıcan M, Gecer Y. Cohesive taping and short-leg casting in acute low-type ankle sprains in physically active patients. J Am Podiatr Med Assoc. lipiec 2015;105(4):307–12.
23. Vuurberg G, Hoorntje A, Wink LM, van der Doelen BFW, van den Bekerom MP, Dekker R, i in. Diagnosis, treatment and prevention of ankle sprains: update of an evidence-based clinical guideline. Br J Sports Med. sierpień 2018;52(15):956.
24. Doherty C, Bleakley C, Delahunt E, Holden S. Treatment and prevention of acute and recurrent ankle sprain: an overview of systematic reviews with meta-analysis. Br J Sports Med. styczeń 2017;51(2):113–25.
25. van den Bekerom MPJ, Sjer A, Somford MP, Bulstra GH, Struijs PAA, Kerkhoffs GMMJ. Non-steroidal anti-inflammatory drugs (NSAIDs) for treating acute ankle sprains in adults: benefits outweigh adverse events. Knee Surg Sports Traumatol Arthrosc. 1 sierpień 2015;23(8):2390–9.
26. Dalton JD, Schweinle JE. Randomized controlled noninferiority trial to compare extended release acetaminophen and ibuprofen for the treatment of ankle sprains. Ann Emerg Med. listopad 2006;48(5):615–23.
27. Ekman EF, Ruoff G, Kuehl K, Ralph L, Hormbrey P, Fiechtner J, i in. The COX-2 Specific Inhibitor Valdecoxib versus Tramadol in Acute Ankle Sprain: A Multicenter Randomized, Controlled Trial. Am J Sports Med. 1 czerwiec 2006;34(6):945–55.

28. van der Wees PJ, Lenssen AF, Hendriks EJM, Stomp DJ, Dekker J, de Bie RA. Effectiveness of exercise therapy and manual mobilisation in acute ankle sprain and functional instability: A systematic review. Aust J Physiother. 1 styczeń 2006;52(1):27–37.

29. van Rijn RM, van Os AG, Kleinrensink GJ, Bernsen RM, Verhaar JA, Koes BW, i in. Supervised exercises for adults with acute lateral ankle sprain: a randomised controlled trial. Br J Gen Pract J R Coll Gen Pract. październik 2007;57(543):793–800.

30. Struijs PA, Kerkhoffs GM. Ankle sprain. BMJ Clin Evid. 13 maj 2010;2010:1115.

31. Petersen W, Rembitzki IV, Koppenburg AG, Ellermann A, Liebau C, Brüggemann GP, i in. Treatment of acute ankle ligament injuries: a systematic review. Arch Orthop Trauma Surg. sierpień 2013;133(8):1129–41.