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# Physiotherapy Management of Grade I Ankle Sprain: A Case Report

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## Abstract

**Introduction:** Ankle sprains are among the most common musculoskeletal injuries in athletes, particularly in sports requiring rapid directional changes. The anterior talofibular ligament (ATFL) is the most frequently affected structure. Effective physiotherapy management is crucial to restore function and prevent recurrence, particularly among recreational athletes who may lack access to structured rehabilitation.

**Methods:** This case report presents a 21-year-old male recreational football player diagnosed with a grade I ATFL sprain. The physiotherapy program aimed to reduce pain and swelling while restoring ankle strength and function. The intervention consisted of three sessions over one week, including rest, compression, elevation, therapeutic exercise, and proprioceptive training. Pain was measured using the Visual Analog Scale (VAS), swelling with circumferential measurement, and muscle strength through Manual Muscle Testing (MMT).

**Results:** After three physiotherapy sessions, the patient demonstrated substantial improvement. The VAS score decreased from 6 to 2, indicating pain reduction. Ankle circumference decreased by 1.5 cm, reflecting reduced swelling. MMT results improved from grade 4– to grade 5, signifying restoration of muscle strength and functional mobility.

**Discussion:** A brief, targeted physiotherapy program effectively managed a mild ankle sprain in a recreational football player. Early rehabilitation focusing on inflammation control, muscle activation, and proprioceptive training was critical to facilitating safe return to activity and reducing the risk of chronic instability.

**Conclusion:** Structured physiotherapy delivered promptly can accelerate recovery and improve outcomes in grade I ankle sprains among recreational athletes.

## Keywords

ankle sprain, anterior talofibular ligament, physiotherapy, football, rehabilitation, case report

## Introduction

Football is widely recognized as the most popular sport across the globe, engaging individuals of various ages, genders, and cultural backgrounds. Its universal appeal lies not only in its entertainment value but also in the physical, psychological, and social benefits it offers. However, the sport's high physical intensity, rapid directional changes, jumping, and frequent player-to-player contact render participants vulnerable to a wide range of musculoskeletal injuries, particularly in the lower extremities.[1] Among these, ankle injuries are particularly prevalent due to the biomechanical demands placed on the joint during play.[2]

Football requires sustained high-intensity effort over two 45-minute halves, combining elements of endurance, agility, and explosive movement. This places considerable strain on the musculoskeletal system, elevating the risk of both acute and overuse injuries.[2] In professional football, ankle trauma is among the most frequently reported injuries. It is estimated that ankle injuries account for approximately 10–18% of all injuries experienced by professional football players and are associated with a notably high recurrence rate.[3,4] Most ankle sprains in football involve the lateral ligament complex, particularly the anterior talofibular ligament (ATFL), due to inversion stress during dynamic movements.[5]

The typical clinical presentation of an ankle sprain includes localized pain, swelling, bruising, and joint instability.[5] Such symptoms can result in significant functional limitations, including altered gait patterns, reduced proprioception, and diminished muscle strength.[5] These factors increase the likelihood of reinjury and can contribute to long-term complications such as chronic ankle instability (CAI).[6] Therefore, early and effective intervention is crucial for optimal recovery and injury prevention.

Physiotherapy is a cornerstone in the conservative management of lateral ankle sprains. Evidence supports its role in achieving both short- and long-term rehabilitation goals. In the acute phase, physiotherapeutic interventions focus on reducing pain and inflammation, restoring range of motion, and initiating weight-bearing as tolerated. In the subacute and recovery phases, treatment strategies expand to include neuromuscular training, strengthening of the peroneal muscles, proprioceptive exercises, and sport-specific functional rehabilitation aimed at minimizing the risk of reinjury and preventing the development of CAI.[7]

Given these considerations, this case report aims to describe the clinical application of sports physiotherapy in managing a Grade 1 lateral ankle sprain involving the ATFL in a recreational football player. Special emphasis is placed on interventions targeting pain reduction, enhancement of muscle strength, and restoration of functional capacity.

This report is particularly significant as it addresses a population group—recreational football players—that is often underrepresented in the existing sports medicine literature, which typically focuses on elite or professional athletes. Providing structured rehabilitation protocols for this group not only enhances clinical outcomes but also contributes valuable insight into injury management within community-level sports, where access to specialized care may be limited. Furthermore, it underscores the preventive potential of physiotherapy in mitigating the transition from acute ankle sprains to chronic instability and long-term disability.

## Methods

This case report was conducted at X Physiotherapy Clinic, Makassar, during the period of June 13–16, 2025. Data were collected from a single case involving a 14-year-old recreational football player diagnosed with a right anterior talofibular ligament (ATFL) Grade 1 ankle sprain as of June 13, 2025. Informed consent was obtained from the patient's parent or legal guardian, and approval was granted for the publication of this case as a scientific report.

The subject was selected using a purposive sampling approach based on the inclusion criteria of a clinically confirmed Grade 1 ATFL sprain with symptom onset of less than seven days. Data collection involved interviews, clinical examination, and functional assessment using standard physiotherapy tools and validated procedures.

Two types of data were collected: subjective and objective. Subjective data were gathered through structured interviews and administration of the Visual Analogue Scale (VAS) to measure pain intensity. Objective data included inspection and palpation, basic movement function assessments, muscle strength evaluation using Manual Muscle Testing (MMT), joint circumference measurements (circumferentia) to assess swelling, and the anterior drawer test as a special test for ATFL integrity.

All data were collected directly (primary data) through structured interviews, clinical observation, and the use of validated assessment instruments. This approach aligns with the principles of case study methodology and observational clinical research. One of the challenges encountered during data collection was the patient’s high pain level during the initial evaluation, which limited participation in early proprioceptive exercises due to restricted active movement.

Quantitative data, including MMT scores, circumferential measurements, and VAS scores, were analyzed by calculating numerical values to assess the degree of dysfunction and monitor progress throughout rehabilitation. Qualitative data from interviews and clinical observations were analyzed to identify patterns in symptoms and the patient's response to therapy. The evaluation of intervention effectiveness was conducted by comparing pre- and post-treatment outcomes. This integrative approach allowed for comprehensive analysis combining both quantitative and qualitative data in accordance with clinical case study methodology.

The prognosis in this case was considered favorable, as treatment began within the first 72 hours after injury and there was no complete ligament rupture or associated combined injury. The selected interventions focused on reducing pain and swelling, improving muscle strength, and enhancing proprioception to prevent reinjury. Based on the diagnosis of a Grade 1 ATFL sprain and signs of mild instability, the physiotherapy protocol included: (1) Ice compress for 10 minutes and immobilization using hard tape to reduce swelling, (2) Transcutaneous Electrical Nerve Stimulation (TENS) for 15 minutes for pain relief, (3) Strengthening exercises targeting the tibialis anterior, gastrocnemius, and peroneal muscles using resistance bands, with a dosage of 2 sets per session, 8 counts each, and 6 repetitions per set.

## Results

This case report was conducted over the course of three physiotherapy sessions. Interventions were initiated on June 13, 2025—one day post-injury—and adjusted based on the patient's clinical progression and reported symptoms in each session. No adverse effects were observed during the intervention period, such as increased pain, skin irritation from electrotherapy modalities, or other discomforts that could disrupt therapy. The patient demonstrated high compliance with all scheduled therapy sessions and adhered to home exercise instructions provided by the physiotherapist, including independent limb elevation and cold compression. The initial physiotherapy intervention, conducted on the first day post-injury, focused on managing acute symptoms such as pain and swelling. The details of the rehabilitation modalities applied on June 13, 2025, are presented in Table 1.

**Table 1.** Physiotherapy Rehabilitation Program – June 13, 2025

| Problem | Physiotherapy Modality | Dosage |
|---|---|---|
| Swelling | Ice compress | F: 2× per 24 hours<br>I: Patient tolerance<br>T1: Ice compress<br>T2: 10 minutes |
| | Immobilization | F: 1× per 12 hours<br>I: Mild tension<br>T1: Hard tape on right ankle joint<br>T2: 3 minutes |

Note: F: Frequency, I: Intensity, T1: Technique, T2: Time

Subsequent sessions on June 14 and 16, 2025, incorporated progressive therapeutic modalities aimed at reducing pain, enhancing circulation, and restoring muscle strength and function. The specific interventions administered during these sessions are summarized in Table 2.

**Table 2.** Physiotherapy Rehabilitation Program – June 14 and 16, 2025

| No. | Problem | Physiotherapy Modality | Dosage |
|---|---|---|---|
| 1 | Pre-exercise warm-up | Infrared therapy | F: Low temperature<br>I: 30 cm distance<br>T1: Right ankle joint<br>T2: 15 minutes |
| **2** | Pain | TENS | F: 80 Hz<br>I: 30 mA<br>T1: Contra-planar application<br>T2: 10 minutes |
| **3** | Muscle weakness and functional limitation | Exercise therapy | F: 10 repetitions<br>I: 1 set<br>T1: Calf raises<br>T2: 5 minutes<br><br>F: 8 counts × 6 repetitions<br>I: 2 sets<br>T1: Isometric contraction with resistance band<br>T2: 5 minutes |

Note: F: Frequency, I: Intensity, T1: Technique, T2: Time

Following the completion of the three-day intervention, a follow-up assessment was conducted to evaluate the patient's condition. Pain evaluation using the Visual Analogue Scale (VAS) revealed a reduction in pressure-induced pain from 3 to 2, and movement-related pain from 4 to 1. Resting pain remained at 0, indicating no pain at rest from the beginning of treatment.

Muscle strength, assessed via Manual Muscle Testing (MMT), showed improvement to grade 5 for the tibialis anterior, gastrocnemius, and peroneus longus muscles, indicating full functional recovery. Circumferential measurements demonstrated a reduction in swelling, with the difference between the right and left ankles decreasing from 1 cm to 0.6 cm. Clinical outcomes were assessed by comparing pre- and post-intervention values for pain, swelling, and muscle strength. The results of these evaluations, including measurable improvements in all parameters, are presented in Table 3.

**Table 3.** Evaluation of Physiotherapy Program

| No. | Problem | Assessment Tool | Pre-Therapy | Post-Therapy | Remarks |
|---|---|---|---|---|---|
| 1 | Pain | VAS | Resting pain: 0<br>Pressure pain: 3<br>Movement pain: 4 | Resting pain: 0<br>Pressure pain: 2<br>Movement pain: 1 | Pain reduced |
| **2** | Swelling (Edema) | Circumference | Difference: 1 cm | Difference: 0.6 cm | Swelling reduced |
| **3** | Muscle weakness | MMT | Tibialis anterior: 4<br>Gastrocnemius: 4<br>Peroneus longus: 4 | Tibialis anterior: 5<br>Gastrocnemius: 5<br>Peroneus longus: 5 | Muscle strength improved |

The patient was scheduled for a follow-up examination two weeks after the final physiotherapy session to ensure no symptom recurrence and to assess full functional return to sports activity. However, by the end of the final session, the patient reported no additional complaints and was clinically stable.

Overall, the results demonstrate that a structured and individualized physiotherapy program effectively accelerated tissue healing, improved the physiological and biomechanical function of the ankle joint, and significantly supported the restoration of the patient's physical activity.

## Discussion

The patient, referred to as "C", presented to a physiotherapy clinic in Makassar with complaints of pain and swelling in the right ankle. He was a recreational football player who had sustained a Grade 1 right ankle sprain involving the anterior talofibular ligament (ATFL).

Ankle sprains commonly occur as a result of overstretching or hypermobility due to sudden inversion and plantarflexion—frequently during sports or physical activity performed on uneven surfaces when the foot is not properly grounded. This mechanism places the foot in an inverted position, overstretching the lateral ligament complex beyond its normal physiological and functional length, often resulting in microtears or partial tears of the ATFL, the most commonly affected structure.[8]

In this case report, a multimodal intervention was employed, including immobilization with hard taping, ice compress, strengthening exercises, and physical modalities such as transcutaneous electrical nerve stimulation (TENS). TENS is a non-invasive electrical stimulation technique designed to modulate pain by stimulating afferent nerve fibers.[9] This aligns with previous findings that demonstrated significant reductions in resting, pressure, and movement-related pain after three TENS sessions on patients with similar injuries.[3] Additional studies have shown that TENS utilizes low-voltage electrical currents to stimulate subcutaneous nerves, thereby blocking pain signals, releasing endogenous endorphins, and improving blood circulation.[10]

Infrared radiation therapy was also administered as a preliminary exercise modality to enhance local circulation, reduce inflammation and pain, and relieve muscle tension.[11] Infrared rays, which emit electromagnetic radiation with

wavelengths between 4×10 Hz and 7.5×10 Hz, produce heat that promotes tissue extensibility, enhances joint mobility, relieves pain, and accelerates healing of soft tissue lesions.[12]

In the acute phase (days 1–2), the patient demonstrated a progressive reduction in pain and swelling, following the application of the POLICE protocol (Protection, Optimal Loading, Ice, Compression, and Elevation). Clinical studies have reported that the POLICE protocol offers superior outcomes compared to the older PRICE protocol in terms of pain reduction, edema control, and restoration of ankle function.[13] This improvement enabled the patient to transition to the early rehabilitation phase (days 3–5), focusing on muscle re-education and activation, normalization of gait patterns, and recovery of balance and proprioceptive function.[14]

The findings of this case have meaningful clinical implications. The integrated physiotherapy program, combined with patient education and psychological support, appeared to facilitate functional recovery, reduce recurrence risk, and accelerate return to activity.[15] Treatment success was likely supported by early intervention during the acute phase, strong patient adherence, and the synergistic use of both passive and active therapies.

Therefore, an important takeaway from this case is that a comprehensive approach combining physical modalities, therapeutic exercise, and patient education can accelerate healing and help prevent recurrence in cases of acute ligament injury. This supports the use of a multimodal strategy as a recommended clinical protocol for similar conditions.

However, several limitations must be acknowledged. This report represents a single-case design, limiting generalizability. Additionally, no formal range of motion (ROM) assessment was conducted, nor was a functional outcome measure such as the Foot and Ankle Ability Measure (FAAM) used. The duration of follow-up was also relatively short.

Further research using quasi-experimental or randomized controlled trial (RCT) designs is needed to compare the efficacy of individual modalities, involve larger samples, and assess long-term outcomes. Therapists are also encouraged to adopt the POLICE-based rehabilitation protocol while adjusting for patient-specific responses.

## Conclusion

A structured and comprehensive physiotherapy program proved effective in supporting the rehabilitation process of a Grade 1 right ankle ATFL sprain, particularly in the acute to subacute phases. This approach significantly improved bilateral lower limb muscle strength, reduced pain and swelling, and consequently enhanced joint function and stability. These findings highlight the importance of an individualized and continuous therapeutic strategy tailored to the patient's condition, which can accelerate the return to daily and sports activities. Appropriately designed physiotherapy interventions not only facilitate physiological recovery but also contribute to overall improvements in the patient's quality of life.

Physiotherapists and healthcare professionals are advised to implement structured and personalized rehabilitation programs for patients with Grade 1 right ankle ATFL sprains. Initial interventions should focus on pain and swelling reduction during the acute phase, followed by bilateral lower limb strengthening during the early rehabilitation phase to restore normal gait patterns, balance, and proprioception. Regular evaluations should be conducted to adapt the interventions according to the patient’s progress. Furthermore, clinicians should emphasize patient education to prevent recurrent injuries. Nevertheless, as this is a single case report, the findings should be interpreted with caution and cannot be broadly generalized without further experimental research.

## Author Contribution

Putri Maria Angelina Aling contributed to the conception, patient assessment, intervention, and manuscript drafting. Irianto participated in data collection and clinical supervision. Immanuel Maulang provided critical revision of the manuscript and contributed to the interpretation of clinical outcomes. All authors read and approved the final version of the manuscript.

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The patient reported a high level of satisfaction with the physiotherapy treatment and acknowledged that the intervention significantly contributed to the acceleration of recovery and restoration of functional abilities in daily activities. Written informed consent was obtained from the patient’s parent or guardian for the use of clinical data and the publication of this case report, with all personal identifiers removed to ensure confidentiality.

## Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

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## Ethics Statement

This case report was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from the patient for participation and for publication of anonymized clinical data. Institutional ethical approval was not required for a single-patient case report, as per the policy of Hasanuddin University.

## References

1. Pranata D, Kumaat NA. Pengaruh olahraga dan model latihan fisik terhadap kebugaran jasmani remaja. J Kesehat Olahraga. 2022;10(2):107–16.
2. Nurwahidah K, Dewangga MW. Tingkat pengetahuan atlet sepak bola wanita tentang penanganan cidera olahraga. J Pengabdian kepada Masyarakat. 2023;4(1):106–13.
3. Afifatuzzahra S, Santoso TB, Muhammad IF. Manajemen fisioterapi terhadap kasus lateral ankle sprain akut pada atlit sepak bola U-20: a case report. J Multidisciplin Res Sci Adv. 2025;3(2):733–9.
4. Haniffah F, Bahtra R, Mukhtarsyaf F, Selviani I. Analisis pengetahuan pemain sepak bola terhadap cedera sprain ankle. J Ilmu Keolahragaan. 2025;3(3):91–7.
5. Azizah AN, Rahmawati NA, Sriyatun L. Penyuluhan penanganan cedera olahraga pada pergelangan kaki (sprain ankle) pada komunitas olahraga sepakbola di MTS Bahrul Maghfiroh Malang. Health Care J Community Service. 2024;2(3):202–9.
6. Hasdianti AU, Rahman F. Program latihan peningkatan kemampuan fungsional pada sprain ankle lateral grade I akut (a case report). J Innovation Res Knowl. 2022;2(7):2829–38.
7. Rizqi AS, Dwi WA, Putra YW, Suwarni S. Pelayanan fisioterapi pada sprain ankle di Desa Jatipuro Kecamatan Trucuk Kabupaten Klaten. J Pengabdian Widya Dharma. 2023;2(1):33–6.
8. D'Hooghe P, Cruz F, Alkhelaifi K. Return to play after a lateral ligament ankle sprain. Curr Rev Musculoskelet Med. 2020;13(3):281–8.
9. Setiyawan A, Rahayu UB. Pengaruh penambahan back school terhadap penurunan nyeri dan peningkatan kemampuan fungsional pada kondisi low back pain myogenik. FISIO MU Physiother Evid. 2021;2(1):30–5.
10. Rosadi R, Aprilia L, Wardojo SSI. Manajemen intervensi fisioterapi guna mengurangi nyeri dan peningkatan lingkup gerak sendi pada kasus knee osteoarthritis: studi kasus. J Fisioter Rehabilitasi. 2022;6(1):60–6.
11. Sartoyo, Pradita A. Efektivitas kombinasi infrared, transcutaneous electrical nerve stimulation dan muscle energy technique terhadap penurunan nyeri osteoarthritis lutut. Kieraha Med J. 2022;4(2):124–9.
12. Tsagkaris C, Papazoglou AS, Eleftheriades A, Tsakopoulos S, Alexiou A, Găman MA, et al. Infrared radiation in the management of musculoskeletal conditions and chronic pain: a systematic review. Eur J Investig Health Psychol Educ. 2022;12(3):334–43.
13. 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. Ulus Travma Acil Cerrahi Derg. 2023;29(8):920–8.
14. Sánchez FJ, Muñoz M, Martín J, Jimenez M, Belloso AJ, Galisteo RP, et al. Management and treatment of ankle sprain according to clinical practice guidelines: a PRISMA systematic review. Medicine (Baltimore). 2022;101(42):1–6.
15. Rizal Y, Samosir NR. Case study: sprain ankle fase akut dengan penerapan manual lymphatic drainage massage dan neuromuscular taping untuk mengurangi nyeri dan oedem. J Ilmiah Fisioterapi. 2024;7(1):23–7.