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Effects of functional treatment of V metatarsal bone fracture in athletes – an evaluation of cases

Bartłomiej Kacprzak[1], Klaudia Krzymińska[2], Natalia Siuba[1], Adrian Miler[4], Magdalena Hagner-Derengowska[4], Ewa Kitschke[3], Walery Zukow[4]

[1]Ortomedsport, Łódź, Polska.hipokrates@op.pl

[2]Klinika Rehabilitacji, Szpital Uniwersyteckinr 1 w Bydgoszczy, Polska.

[3]Uniwersytet Mikołaja Kopernika w Toruniu, CM UMK Bydgoszcz Katedra Rehabilitacji, Polska.
Adrian Miler

[4]10 Wojskowy Szpital Kliniczny z Poliklinika w Bydgoszczy, Klinika Ortopedii i Chirurgii Narządu Ruchu, Bydgoszcz, Polska

[5]Uniwersytet Mikołaja Kopernika w Toruniu, Katedra Kultury Fizycznej, Polska

Abstract

This study presents the rehabilitation process for the management of six cases of fractures of the fifth metatarsal bone in players of various sports playing at high levels of competition in Poland. The course of treatment was based on an intensive rehabilitation protocol with the need for orthopaedic shoe inserts, with full weight bearing on the limb and under close supervision of a physiotherapist. The effectiveness of rehabilitation was assessed by physical examination, X-ray examination and the numerical pain rating scale - NRS.

This study focuses on the rehabilitation process for managing fractures of the fifth metatarsal bone in high-level athletes in Poland. The treatment involved an intensive rehabilitation protocol with orthopaedic shoe inserts, full weight bearing, and physiotherapist supervision. The effectiveness of rehabilitation was evaluated through physical exams, X-rays, and the numerical pain rating scale.

Introduction

Fractures of the fifth metatarsal bone are common in athletes aged 10-29, especially in football, basketball, and dance. Complications include delayed bone fusion and repeat fractures, emphasizing the importance of quick return to fitness. The involvement of physiotherapists and patient positivity is crucial. The debate among clinicians stems from classification variations and interpretations of 'Jones fractures'.

Diagnostic and Classification Methods

The Lawrence and Bottle classification distinguishes three types of metatarsal fractures: avulsion, Jones, and fatigue fractures. The study presents six cases of conservative treatment for these fractures, showing positive outcomes in returning athletes to competition.

Rehabilitation Procedure

Patients underwent functional treatment with orthopaedic insoles, immediate weight-bearing, and various therapies like Orthokine®, Exogen, hyperbaric chamber sessions, ESWT, and EPTA. Post-workout treatments included Game Ready®, flossing, manual therapy, dry needling, and lymphatic drainage. Patients also engaged in self-managed rehabilitation exercises. Treatment Results

Radiographic examinations showed progressive healing in all cases, with reduced pain and no edema after two weeks. Patients returned to sports within three weeks, with no complaints after 13 months. The study highlights the success of functional treatment in achieving full recovery without complications.

Conclusion

The study challenges the need for surgical intervention and immobilization in treating fifth metatarsal fractures. Functional treatment led to excellent outcomes and quick return to sports. Literature review supports early mobilization and functional therapy for optimal results. Further research is needed to establish a standard treatment protocol based on evidence-based medicine.

Keywords: treatment, V metatarsal bone fracture, athletes, evaluation of cases studium.

Introduction

Fractures of the metatarsal bones, particularly the fifth metatarsal bone, account for one-third of foot injuries in athletes.[1] This type of injury can occur at any age, but the increased risk occurs between 10-29 years of age.[2] Patients in football, basketball and dancers are most likely to fall into this age group.[3,4,5] The consequences of this fracture can be serious for professional athletes. The most common complications are problems with delayed bone fusion and the risk of a repeat fracture. From the perspective of the doctor and the athlete, the most important goal of treatment is to return to fitness as quickly as possible. The involvement of the physiotherapist in the rehabilitation process and the positive attitude of the patient are crucial parts of this.[6]

The therapeutic management of this injury is a matter of debate and controversy among clinicians. The reasons for this are the multiplicity of classifications, the paucity of literature and the different interpretations of the definition of a 'Jones fracture'.[7,8]

Diagnostic and classification methods

The classification used to define fracture types in this publication was created by Lawrence and Bottle in 1993.[9]

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[1] S.A. Metcalfe, „Non-United Fi6h Metatarsal Metaphyseal Fractures", *The Foot* 11, nr 2 (czerwiec 2001): 99–102, https://doi.org/10.1054/foot.2001.0672.

[2] T.R. Nielsen, B.E. Lindblad, i P. Faun, „Long-Term Results a6er Fracture of the Fi6h Metatarsal", *Foot and Ankle Surgery* 4, nr 4 (styczeń 1998): 227–32, https://doi.org/10.1046/j.1460-9584.1998.00100.x.

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[9] Steven J. Lawrencei Michael J. BoHe, „Jones' Fractures and Related Fractures of the Proximal Fi6h Metatarsal", *Foot & Ankle* 14, nr 6 (lipiec 1993): 358–65, https://doi.org/10.1177/107110079301400610.

Referring to this classification, we can distinguish 3 types of metatarsal bone fractures:

Type I - avulsion fracture, with detachment of a small fragment from the end of the bone facing posteriorly

Type II - Jones fracture, the damage occurs at the border between the epiphysis and the metatarsal bone, typically about 1.5cm from the end of the bone.

Type III - a 'fatigue' fracture of the shaft of the bone. Caused by repeated microtrauma and overload.

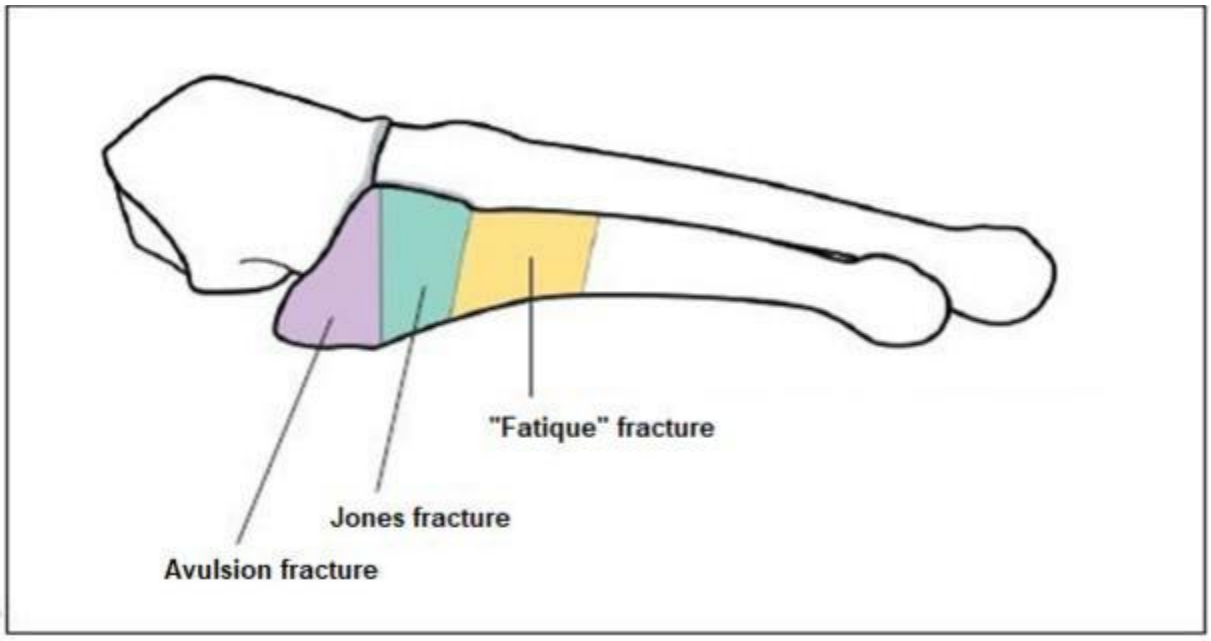

Fig. 1. Schematic representation of the fracture zones of the proximal part of the fifth metatarsal bone Fig. Dave Klemm

Case descriptions

The following publication will present the concept of conservative treatment of 6 patients with a fracture of the fifth metatarsal bone between March 2019 and September 2023. The fractures of the above-mentioned patients were classified into Lawrence & Bottle types I, II and III.

Case 1

Male 19 years old - 1st division footballplayer. He reported to the doctor on 19.08.2019 due to complaints of pain at the base of the metatarsal bones of the left foot. The pain symptoms had persisted for 7 days-since the injury. They were accompanied by pain occurring during walking, swelling, pressure soreness at the level of the fifth metatarsal bone and limping. On the NRS scale, he was defined as 4. An X-ray showed a fracture of the fifth metatarsal bone of the left foot.

Fig. 1. X-ray 1-fracture of the tuberosity of the 5th metatarsal bone 2- effects of conservative treatment after 3 weeks.

Case 2

Female 25 years old - player in the 1st Women's Basketball League. She reported to the doctor 09.03.2019 due to swelling and pain in the right foot after an injury during a game the previous day. The complaints were accompanied by severe pressure soreness on the dorsum of the foot, bruising below the ankles. On the NRS scale, he was defined as 5. Radiograph showed a fracture of the fifth metatarsal bone of the right foot.

Fig. 2. X-ray 1- fracture of the shaft of the 5th metatarsal bone of the right foot with displacement 2- after 2 weeks of conservative treatment

Case 3

Male 22 years old - Ekstraklasa footballplayer. He reported to the doctor on 26.10.2018 due to severe pain in his left foot after an injury during a match on 21.10.2018. The mechanism of the injury was that the foot was stepped on by a football player of the opposing team. On examination, severe pressure soreness at the level of both the dorsum of the foot and the area of the 5th metatarsal bone. NRS scale defined at 4. X-ray showed a Jones type fracture.

Fig. 3 X-ray 1 - Jones type fracture 2 - effects of conservative treatment after 3 weeks.

Case 4

Female 29 years old - player of the highest level of the Polish Football League. She reported to the doctor on 21.09.2023 due to severe pain resulting from an eversion movement during training. She was diagnosed with an avulsion fracture of the fifth metatarsal bone of the right foot and a second-degree triceps ligament injury. On examination, severe soreness and tenderness at the base of the V metatarsal bone. NRS scale defined at 6.

Fig. 4. X-ray 1- fracture of the metatarsal tuberosity of the 5th metatarsal bone, 2- after 2 weeks of conservative treatment, 3- after 5 weeks of conservative treatment

Case 5

Female 25 years old - player of the highest level of the Polish Football League. She reported to the doctor on 17.04.2023 due to complaints of pain in the left metatarsal. She was diagnosed with a fracture in the tuberosity of the fifth metatarsal bone of the left foot. On examination, there was minimal swelling and pain tenderness. On theNRS scale defined at 4.

Fig. 5. X-ray 1 - fracture of the tuberosity of the 5th metatarsal bone 2 - effects of conservative treatment after 4 weeks.

Case 6

Male 36 years old - Muay Thai competitor at amateur level. He reported to the doctor on 18.03.2023 due to complaints of pain and a massive haematoma of the right metatarsal area. A fracture of the right fifth metatarsal bone was diagnosed. On examination, severe soreness. On the NRS scale defined at 3.

Fig. 6. X-ray 1 - fracture of the tuberosity of the 5th metatarsal bone 2 - effects of conservative treatment after 4 weeks.

Rehabilitation procedure

Patients immediately started functional treatment at the Ortho Med Sport clinic after giving informed consent. All patients were instructed to use orthopaedic shoe insoles. Full weight-bearing of the injured limb was started immediately. No bracing of any kind, plaster dressing, walking on crutches or restriction of movement was used. In close cooperation with the physiotherapist, a series of treatments and functional training in the rehabilitation room were started.

Orthokine® therapy was administered to each patient. This involves the application of an autologous serum, derived from the patient's own blood. A blood sample was extracted from each participant, subsequently incubated and fractionated using a specialized apparatus (Orthokine®II or EOT®II). This process yielded a cell-free serum enriched with anti-inflammatory cytokines and growth factors. The serum was administered in a single dose bi-daily to the patient at the site of affliction. Each patient received a minimum of six injections. A comprehensive account of the Orthokine® therapy procedure can be found in relevant scientific literature.[10,11]

Concurrent with the rehabilitation exercises, the following treatments were administered:

- Exogen therapy: Applied 30-60 times at the fracture site, with treatment focused on the sole of the foot.
- Hyperbaric chamber sessions: Conducted daily, with each session lasting 90 minutes. The Oxylife I 1.5 ATA Premium model was used.
- Extracorporeal shockwave therapy (ESWT): Administered every three days, with a total of 5-10 regenerative sessions. This was applied to the fifth metatarsal bone area and the soleus muscle, with 2000 strokes at a frequency of 8-10 Hz. The pressure was adjusted within the range of 2-3.5 bar, incrementally increasing during the treatment to the maximum level tolerated by the patient.
- Percutaneous Electrolysis Therapy (EPTA): Administered every five days, with a total of five sessions. The treatment was applied to four anatomical points of the metatarsal sole region, with a current of 350 uA/cm2 for 20 seconds per point, followed by a 20-second rest period.

Post-workout, the following treatments were administered:

- Game Ready® ankle wrap
- Flossing: Conducted in cycles of three minutes of work followed by three minutes of rest. The rubber band used had a width of 5 cm and a thickness of 1.3 mm, with a maximum stretch of 150% of the original length of 2 meters.

[10] K.G. Auw Yang i in., „Autologous Interleukin-1 Receptor Antagonist Improves Funcaon and Symptoms in Osteoarthrias When Compared to Placebo in a Prospecave Randomized Controlled Trial", *OsteoarthriBs and CarBlage* 16, nr 4 (kwiecień 2008): 498–505, https://doi.org/10.1016/j.joca.2007.07.008.

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- Manual therapy with V-bone bypass: Administered based on the individual needs and fascial disorders of the patient.
- Dry needling: Applied to the anatomical area of the posterior band, Achilles tendon, and metatarsus soleus.
- Lymphatic drainage: Administered after each training session for 20 minutes, with pressures of 100-120mmHG (adjusted based on individual tolerance).

In addition, patients were instructed to perform the following:

- Mini roll with V-bone bypass: Daily for 5 minutes, targeting each muscle part of the lower limb eight times.
- Ice packs/ice bath: Applied to the affected area for 20 minutes daily.
- Stretching: Focused on the muscle groups of the lower limb.
-

Tab. 1. Diagram of the rehabilitation procedurę

Everyday treatments	Every 2-3 days	Every 5 days	Self-managed rehabilitation
Functional training	Extracorporeal shockwave therapy	EPTA	Rolling mini roll
Game Ready	1x Orthokine injection		Stretching
Flossing	Taping		Ice packs/ice bath
Dry needling			
Exogen			
Lymphatic drainage			
Electrostimulation			

Functional training, since the first day after diagnosis, took place in the rehabilitation room at the Orto Med Sport clinic under the close supervision of the physiotherapists.
Patients performed exercises:
- resistance,
- eccentric-concentric,
- proprioceptive - based on ground instability,
- active exercises using own body weight, focusing on increasing muscle strength in extensor muscles and knee flexors.

Under supervision, patients learned to perform correct movement patterns. The exercises were complemented by manual therapy carried out by a physiotherapist. Stretching and rolling, of the muscles and fascia after exercise, was of great importance.

Fig. 8, 10, 11. 1, 2, 3 Functional, rehabilitation training

Treatment results

A subsequent radiographic examination of the fractured bone was conducted between the second and third weeks post initial consultation. In all six instances, the x-ray images revealed progressive osteogenic adhesion and substantial osseous proliferation, leading to the closure of the fracture gap. During the second week follow-up visit post-fracture, patients reported a significant alleviation in pain. This suggests a positive response to the treatment regimen. Patients were walking with full weight bearing on the limb and denied the presence of edema. After three weeks of intensive rehabilitation, patients were able to return to sports and to play matches at the highest level of competition. Approximately 13. months after the injury, none of the patients reported complaints.

Discussion

The foot is a structurally and functionally complex element of the skeletal system. The intricate arrangement of foot bones and their connections are subject to constant stress. Athletes are prone to fractures of the fifth metatarsal bone, as they often perform the same actions during long training periods, leading to muscle fatigue and excessive strain on ligament structures. Contact sports, such as football or basketball, are an additional factor increasing the risk of fifth metatarsal fractures. Such a mechanism occurred in one of the described cases. In the past, this type of injury had a convalescence period ranging from 3 to 5 months - assuming no complications occur.[12]

As shown by the example of treatment according to our scheme, we can significantly shorten the return to play time - even to 3 - 4 weeks. We believe that any kind of use of stabilizers such as a Walker boot, plaster cast, etc. is not necessary. The implementation of full load in all cases was introduced immediately and did not result in any negative effects in the form of delayed union or re-fracture. The use of autologous, multiplied anti-inflammatory protein injections resulted in a rapid analgesic effect, which additionally enabled intensive training shortly after the injury. Despite the occurrence of a fracture with displacement in the second patient and a Jones type fracture in the third patient, we did not consider the possibility of surgical treatment. As it turned out rightly, because the whole treatment scheme resulted in a good clinical and radiological effect, which can be seen in the attached X-ray images.

Despite the large number of such injuries in sports, there is still a lack of a unified procedure for the method of treatment. There are numerous descriptions of used classifications, from which authors determine the treatment scheme - surgical vs conservative.

Most studies suggest treating non-displaced fractures conservatively with limited weight-bearing and stabilization in various forms: short plaster cast, elastic bandaging, or just a rigid boot. In the work of Shahid and co-authors, the use of a short orthosis was compared with a plaster cast below the knee.[12,13,14,15] They concluded that the use of a short orthosis resulted in faster relief of pain and return of full range of motion compared to the plaster cast. No significant statistical difference was observed in the fracture healing time.[15]

Meanwhile, in the work of Gray and co-authors, the use of regular footwear was compared with the application of compressive bandaging. As it turned out, the group using regular footwear had better results in the category of pain complaints, but they leveled out at the 6th and 12th week of use.[14]

The analysis of many authors' publications regarding early patient mobilization shows better results and a faster return to functional efficiency.[16,17]

Early patient mobilization has been a subject of significant interest in the medical field, with numerous studies highlighting its benefits in improving patient outcomes and expediting the return to functional efficiency.[18] While some authors advocate for stabilization methods such as orthoses or plaster casts to facilitate faster mobilization, Zenios and colleagues found that stabilizing dressings may not provide pain relief and could even lead to additional discomfort and complications.[19] Specifically, their study revealed that patients who were only bandaged had similar crutch discontinuation times compared to those with plaster casts, with the latter group experiencing dangerous complications like deep vein thrombosis and reflex sympathetic dystrophy.[19]

The importance of early mobilization in various medical contexts has been extensively researched. Studies have shown that early mobilization is crucial in improving functional outcomes and quality of care in critically ill patients, including those in the ICU.[20] Additionally, the safety and efficacy of early mobilization have been well-documented, emphasizing its role in enhancing patient recovery and reducing the incidence of complications.[20] However, the definition of early mobilization can vary across studies, highlighting the need for standardized protocols to ensure consistency in practice and outcomes.[21]

In the context of specific conditions like hip surgery, early mobilization has been associated with better functional outcomes in the Chinese population, underscoring its positive impact on postoperative recovery.[22] Similarly, in patients with acute ischemic stroke, early mobilization has been shown to improve functional ability and overall outcomes, emphasizing the importance of timely intervention in such cases.[23] Moreover, early mobilization programs have been linked to decreased mechanical ventilation duration and ICU length of stay following cardiac surgery, indicating the broad applicability of mobilization protocols across different medical specialties.[24]

Despite the benefits of early mobilization, challenges exist in implementing such programs consistently. Nursing barriers to early mobilization in hospitalized patients have been identified, emphasizing the need for clear guidelines, staff training, and accountability to overcome these obstacles and promote timely mobilization practices.[25] Furthermore, public perceptions of mobility and exercise in hospital settings, particularly in the ICU, may influence patient participation in early mobilization programs, highlighting the importance of patient education and engagement in promoting mobility initiatives.[26]

In the critical care setting, early mobilization has been associated with improved mobility outcomes in both adult and pediatric populations, suggesting its potential to enhance recovery across diverse patient groups.[27] Studies have also explored the hemodynamic impact of early mobilization in critically ill patients receiving vasoactive drugs, indicating the feasibility of incorporating mobilization strategies into complex medical regimens to optimize patient care.[28] Additionally, the benefits of early mobilization inpatients with cancer have been recognized, pointing to the potential of mobility programs to support the recovery and well-being of oncology patients during hospitalization.[29]

While the evidence supporting early mobilization is robust in many clinical scenarios, gaps in knowledge persist, particularly regarding its specific benefits in neurosurgical populations.[30] Further research is needed to elucidate the advantages of early mobilization in patients with traumatic brain injuries and other neurologic conditions to optimize rehabilitation outcomes and enhance patient care.[31] Additionally, exploring the impact of early mobilization on patients with sepsis and evaluating its role in improving functional outcomes in this population can provide valuable insights for refining ICU rehabilitation practices.[32]

Early patient mobilization plays a crucial role in promoting recovery, improving functional outcomes, and reducing complications across various medical specialties. While the benefits of early mobilization are well-established, ongoing research is essential to address knowledge gaps, standardize mobilization protocols, and overcome barriers to implementation, ultimately enhancing the quality of care and patient outcomes in diverse healthcare settings.

The treatment of Jones fractures, a specific type of fifth metatarsal fracture common among athletes, has been a subject of extensive research. Roche and Calder highlighted the importance of understanding the treatment methods for Jones fractures and the subsequent return to sport time after such injuries.[33] Surgical management of Jones fractures has been a focus of many studies, with conducting a systematic review and meta-analysis on the return to play and fracture union after surgical management of Jones fractures in athletes.[34] Their analysis, based on multiple scientific papers, revealed that the average return to sport time after surgical treatment ranged from 4 to 18 weeks, emphasizing the significance of prompt and effective management in athletes.

In the context of Jones fractures, the choice between conservative and surgical treatment plays a crucial role in the healing process and the likelihood of union. identified through their review that in the case of Jones fractures of the fifth metatarsal bone, bone healing and functional outcomes were significantly better after surgical intervention compared to conservative treatment.[35] This finding underscores the importance of considering surgical

options, especially in cases where optimal healing and functional recovery are paramount, such as in athletes aiming for a swift return to sports.

The effectiveness of surgical fixation in Jones fractures has been a subject of interest, with providing insights into the fixation methods for Jones type fifth metatarsal fractures in athletes.[36] Their review highlighted the common occurrence of Jones fractures among athletes and the importance of appropriate fixation techniques to promote successful healing and minimize complications. Surgical interventions, particularly involving screw fixation, have shown promising results in promoting union and reducing the risk of delayed unions or nonunions.[36]

While surgical management has demonstrated favorable outcomes in Jones fractures, the potential complications associated with existing fixation modalities have also been acknowledged. Anastasio and Parekh pointed out the high rates of complications and nonunion associated with current treatment modalities, including screw and plantar plate fixation, emphasizing the need for further advancements in treatment strategies to address these challenges.[37] This highlights the ongoing efforts within the medical community to refine surgical techniques and minimize adverse outcomes in the management of Jones fractures.

In cases where conservative treatment is considered, the limitations and challenges associated with this approach have been noted. Roche and Calder highlighted the lack of detailed therapeutic procedures in conservative treatment methods for Jones fractures, indicating the need for further prospective studies with randomized trials and comprehensive therapeutic schemes to evaluate the effectiveness of conservative treatment compared to surgical intervention 1. This underscores the importance of evidence-based practices and the necessity for well-designed studies to guide treatment decisions and optimize patient outcomes.

The management of Jones fractures, particularly in athletes, involves a careful consideration of treatment options to promote optimal healing, reduce complications, and facilitate a timely return to sports. While surgical interventions, including screw fixation, have shown promising results in promoting fracture union and functional recovery, the choice between conservative and surgical approaches should be tailored to individual patient needs, considering factors such as the extent of the injury, healing potential, and the patient's activity level. Further research, including randomized controlled trials and detailed therapeutic protocols, is essential to enhance our understanding of the most effective treatment strategies for Jones fractures and improve outcomes for patients, especially athletes seeking a swift and successful return to sports.

A functional treatment approach was applied to type I and II fractures of the fifth metatarsal bone according to L&B. This treatment involved managing 39 patients with such fractures, 31% of whom had displacement, through functional treatment without stabilization. Patients were encouraged to bear weight fully as soon as possible, with some returning to sports within 53 days post-injury. The study reported that the functional therapy resulted in excellent clinical outcomes after an average follow-up of22 months, with no significant differences based on the type of fracture.[38] This approach aligns with the findings of,[39] who suggested that athletes with fifth metatarsal fractures may benefit from surgical screw fixation, leading to optimal healing within approximately 7 to 12 weeks after surgery. However, Baumbach et al. demonstrated that functional treatment without stabilization also yielded positive outcomes, emphasizing early return to activities and sports.[38]

Furthermore, Chu et al. 3 highlighted the importance of a conservative approach, including rehabilitative exercises and various therapies, in the nonoperative management of fifth metatarsal fractures. This aligns with the functional treatment approach employed by

Baumbach et al., where patients were not subjected to any form of stabilization but were encouraged to resume activities early, resulting in successful outcomes.[40]

The effectiveness of a functional treatment strategy for type I and II fractures of the fifth metatarsal bone, emphasizing early return to weight-bearing and sports activities without significant differences in outcomes based on the type of fracture. This approach provides valuable insights into the management of such fractures, showcasing that functional treatment can lead to excellent clinical results.

In our work with patients, we allowed patients to fully return to sport and play at the highest level within 3-4 weeks after the injury, despite an incomplete signs of healing in the radiological image.

Returning to high-level sports following an injury is a complex decision that involves balancing the desire to resume activities with the risk of re-injury. While it maybe tempting to allow patients to return to sports early, caution is warranted. Wright et al. highlighted the risk of re-fracture when patients return to high-level activities before full healing. They observed cases where re-fractures occurred shortly after resuming sports, despite radiological healing being complete. However, in a follow-up study, nore-fractures or complications were reported in six cases where patients returned to sports early.[41]

Rehabilitation programs play a crucial role in optimizing the return to sports after injuries like ACL reconstruction. emphasized the importance of addressing athletes' psychological responses and resolving knee impairments to enhance the likelihood of returning to pre-injury sport levels.[42] Additionally, identifying factors associated with a successful return to pre-injury sport levels can aid in tailoring rehabilitation programs effectively.[43]

In the context of specific injuries, such as forearm fractures in children, early return to sports is common, with most patients resuming activities within four weeks.[44] However, in cases like sacral stress fractures, conservative treatments involving rest from sporting activities and physical therapy are essential for recovery.

The decision to allow patients to return to high-level sports early, before complete radiological healing, should be approached cautiously due to the risk of re-fracture. Tailored rehabilitation programs addressing psychological and physical aspects can enhance the chances of a successful return to pre-injury sport levels.

After reviewing the available literature, it is evident that there is a debate regarding the optimal treatment approach for fractures of the fifth metatarsal in very active, competitive athletes. While some sources advocate for surgical intervention, particularly in cases of displaced spiral oblique fractures to achieve a faster return to play,[45] others support nonoperative management coupled with functional treatment for excellent outcomes without the risks associated with surgery.[46]

The study by Kingery[46] highlights that nonoperative treatment can lead to a 100% return to sport at the highest level of competition without the complications linked to surgery. On the contrary, Mosquea[45] suggests that surgical management of displaced spiral oblique fractures results in a faster return to sport, indicating a potential benefit of surgery in certain cases.

Moreover, the research by Jungmann & Schaeffeler[47] emphasizes that athletes with fifth metatarsal fractures may achieve better return-to-play outcomes with surgical screw fixation, with a high return-to-play rate expected within approximately 7 to 12 weeks post-surgery. This contrasts with the findings of,[48] who report excellent functional outcomes with nonoperative treatment for distal diaphyseal fractures of the fifth metatarsal.

The decision between surgical and nonoperative management of fractures of the fifth metatarsal in very active, competitive athletes should be individualized based on factors such

as the type of fracture, athlete's level of activity, and desired time to return to play. Both approaches have their merits, and the choice should be made after careful consideration of the specific circumstances of each case.

We also do not find support for the claim of the necessity to delay full limb loading, rehabilitation training in favor of using an orthosis, a stabilizing boot, or a plaster cast. Their use can also be associated with the risk of complications, which do not occur in the case of using our treatment scheme.

Further implementation of this scheme is necessary, with a longer follow-up period and randomization is necessary to develop a gold standard of EBM-based procedure.

Conclusions

1. Fractures of the metatarsal bones, especially the fifth metatarsal bone, are common in athletes, particularly those in football, basketball, and dance. The treatment of these fractures is crucial for athletes to return to fitness quickly. The classification of these fractures includes avulsion fractures, Jones fractures, and fatigue fractures. A study presented cases of conservative treatment for patients with fifth metatarsal bone fractures, showing positive outcomes in returning to sports within weeks.

2. The therapeutic management of metatarsal bone fractures is debated among clinicians due to various classifications and interpretations of Jones fractures. The study utilized the Lawrence and Bottle classification to categorize fractures. The treatment involved immediate weight-bearing, functional training, and Orthokine® therapy. Rehabilitation procedures included Exogen therapy, hyperbaric chamber sessions, shockwave therapy, and electrolysis therapy. Post-workout treatments included Game Ready® ankle wrap, flossing, manual therapy, dry needling, and lymphatic drainage.

3. Patients underwent functional training, including resistance and proprioceptive exercises, under physiotherapist supervision. The treatment resulted in progressive bone healing, pain alleviation, and the ability to return to sports within weeks. The study emphasized the importance of early mobilization and functional treatment for faster recovery. The results showed successful outcomes without the need for surgical intervention or prolonged immobilization. Further research is needed to establish a standard treatment protocol based on evidence-based medicine.

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