

## **The problem with diagnoses**

### **Introduction**

This study discusses the limits and problems with diagnosis, the tissue that the study was focused on is the ATFL (Anterior Talofibular ligament), ATFL sprains occur when ankle is in inversion, they are the most common sports injury according to Cavazos et al, (2021). For the therapist to diagnose he/she needs to correctly assess the patient using subjective and objective assessing (Netterstrom-Wedin et al, 2022). Inadequate diagnosis can lead the therapist to treat an injury or issue that is not present. If the therapist is experienced, using the many tools available to them such as; ligament stress tests, manual muscle tests, special tests, range of movement test, palpation, gait tests and functional tests can give the therapist a working hypothesis when using all the different tools to their advantage.

Here the advantages and disadvantages of the diagnosis methods, such as; the limits for and against special tests, ligaments stress tests, manual muscle tests, palpation tests, and range of motion tests are focused on throughout the study. It also focused on when it is right or necessary to refer the patient for imaging to further identify and/or confirm the therapists tissue hypothesis.

### **ATFL (anterior talofibular ligament) sprain**

ATFL sprains in sport are injuries that are common in 15- to 35-year-old male athletes, the ATFL and CFL (Calcaneofibular ligament) often tear at the same time, when the ATFL goes beyond its plastic deformation stage the CFL often gives way also creating bruising and swelling around the ankle joint and loss of range of movement at the ankle including dorsiflexion (Alghadir, et al 2020).

Sprains of the lateral ankle ligament (ATFL, CFL & PTFL) are categorised into different grades. Grade 1 - patient has pain but can still weight bear and walk on ankle, grade 2 - is a partial tear where patient struggles to weight bear and grade 3 - is more severe and most or all the fibres in the ligament have torn there, which may require surgery (McCollum et al, 2013).

Common manifestations of an ATFL sprain injury would be bruising at the bottom of the foot laterally, accompanied by swelling at the base of the foot. Less common would be, no bruising and no swelling but an ankle sprain has occurred, which could then result in a prolonged recovery time due to the injury being exacerbated by patient and therapist not identifying the issue soon enough. A not to be missed issue at the ankle would be if the patient is displaying inadequate pulse activity, this could happen in and during a sporting event where the player has had trauma to the ankle joint complicating blood flow to the foot, this is a medical emergency (Alsheikhly et al, 2018).

### **Subjective signposts**

### **Mechanism of injury**

85% of lateral ankle sprains result from inversion mechanism with the ATFL being the main ligament failing (Terada et al, 2013). Ankle sprains happen when the foot is taken into 'excessive supination' (Nuhmani et al, 2013). Therefore, this injury occurs with ankle in inversion, ligament is taken beyond the plastic stage where a tear occurs (Simpson, 2019).

In the first 48 hours of the acute stage there is often a constant pain, with the pain quality being moderate to high and the location of the pain being the lateral side of the ankle (Briet et al, 2016). Pain is worse in the morning and evening because of inflammation present (Thong-on, et al 2019).

### **Aggravating factors**

Dorsiflexion is limited with a lateral ankle sprain. Walking up and down the stairs, or inverting the ankle, walking in general, exercise of the lower limbs. One of the reasons for these activities aggravating this injury is that dorsiflexion is limited as pain and swelling prohibits the ankle from moving at full range (Goetzel, 2018). Another aggravating factor for a lateral ankle sprain is the giving way of the joint, which also indicates to a therapist that a ligament tear has occurred. The patient's BMI is another factor in causing aggravation for an ankle sprain, if a person has a high BMI and is obese, this will cause further issues for the patient's injury and be a cause also (Vuurberg et al, 2019). Poor proprioception also causes a higher risk of an ankle sprain occurring for patients or athletes, as the athlete's ability to understand where to place foot in a high intensity moment of the game can be affected, causing an injury as the athlete was not able to react quickly enough due to lack of proprioception (Tengjia Ma et al 2021).

New 4G or 3G pitches are often blamed for ankle sprains as there is no give on the surface like there is with grass, footwear can cause injuries to the athlete also, diabetes is an aggravating factor as collagen becomes weaker and ligament sprains are more common in people with diabetes (Terada et al, 2013).

### **Easing factors**

PRICE method is the first approach immediately after ligament sprains or injury, at the acute stage PRICE is the standard protocol to be followed within the first 48 hours, to reduce initial swelling and to reduce pain, to then mitigate further complications, these measures are particularly effective during the initial phase of injury when most cases are diagnosed, NSAID's are commonly used to alleviate pain and reduce inflammation and may ease patient's discomfort (Thain et al, 2015). Sport therapists may utilise various manual therapy techniques, such as soft tissue mobilisation, joint mobilisation, or massage, to address any muscle imbalances, restrictions or tightness that may be contributing to the injury or hindering recovery, this would include specific exercises and functional movements to help

the individual to return to play sooner, the therapist will use a specific rehabilitation program to address the demands of the athlete's sport; bracing and taping ankle joints help prevent future sprains reoccurring according to some literature (Dabadghav, 2020).

### **24-hour pain pattern**

The patient will complain of discomfort and high pain severity in first 24 hours of injury in an ATFL ankle sprain, inflammation and swelling could be the cause of this pain, the patient or athlete complains of immediate pain following injury and describes pain quality as sharp and intense, the pain is located at the lateral side of the ankle, this then causes patient to hobble and affects movement, they may not be able to weight bear initially, this is followed by a throbbing pain, the nature of the pain is known as a chemical nature as inflammation is produced, the patient will then report pain being worse at night because of the inflammation, and circadian rhythm, patients with ATFL sprains have also complained of stiffness in the morning following an ATFL ligament tear (Briet et al, 2016).

### **Sleep disturbances**

As previously stated, sleep quality is affected by a lateral ankle sprain as pain is at its highest at night, this could be because of inflammation or because of the circadian rhythm and the pain being highest when in this state, patient may be woken by the pain at night because of inflammation and the circadian rhythm (Bumgamer et al, 2021).

### **Response to standard initial management including NSAIDS, ice, and compression**

NSAIDS (anti-inflammatory medication) can prolong the injury healing and is only necessary if a Dr suggests taking them. NSAIDS are useful in slowing down the inflammation, but patient should consider they may be slowing down their recovery time (Abdulkhaleq et al, 2018). Icing also has positives and negatives, the positive is bringing the swelling down and slowing inflammation, but the negative would be that cold therapy kills cells, and can cause burns if used incorrectly, it can also cause nerve damage if kept on for too long by the patient (Wang et al, 2021). Using anti-inflammatory drugs or steroidal drugs for a prolonged period can also cause osteoporosis, euphoria, and suppression of response to injury or infection (Abdulkhaleq et al, 2018).

### **Objective signposts**

#### **Range of movement**

ROM is affected with an ATFL injury as the patient will have limited dorsiflexion because of the injury, range of movement tests are an effective way to assess a joints mobility but should be in conjunction with all the other tests, range of motion testing by itself is limited in its clinical value, but it can give therapist indication of what the injury is because of pain and lack of range displayed by the patient (Alghadir et al, 2020).

#### **Manual muscle tests**

The therapist may test the tissues passing through ankle joint such as the tibialis anterior, extensor hallucis longus and extensor digitorum longus. The peroneal longus and brevis may be tested also. Manual muscle tests have a good clinical value as the patient's muscle is isolated by the therapist putting the patient in a position where the muscle in question is being isolated (Larkins et al, 2020).

#### **Ligament stress tests**

There are multiple stress tests for the ankle, if the therapist suspected a lateral ankle sprain, the therapist could use the ATFL stress test to determine if a sprain had occurred. To be thorough the therapist may test the CFL (calcaneofibular ligament) and PTFL (posterior talofibular ligament) with the CFL and PTFL stress tests (Lee et al, 2019).

## **Palpation**

The therapist could feel the lateral side of the ankle over the anterior talofibular ligament to determine if pain is displayed there. Palpation is of good clinical value as pain will be displayed when therapist presses tender area, patient will complain of pain (Verhulst et al, 2020).

## **Special tests (list of special tests and their clinical value)**

Some of the special tests for foot and ankle are; talar tilt test, has a sensitivity of 50% and specificity of 88% (Netterström-Wedin et al, 2022), this tests for the lateral ankle ligament sprain. The Thompson test is a test for an Achilles tendon rupture and has a sensitivity of 96%, and a specificity of 93% (Larkins et al, 2020). The tinels test tests for a compressed nerve and has a sensitivity of 62%, and a specificity of 93% (Ritter, 2023). The squeeze test tests for stable syndesmosis injury and has a sensitivity of 70%, and a specificity of 78% (Netterström-Wedin et al, 2021). According to Jain et al, (2017) the special tests are not reliable by themselves and need to be used in conjunction with other tests. The therapist would use these tests as these structures are based around the ankle

## **Functional tests**

Single leg heel raise could be used to assess an ankle issue, walking on the spot. sit to stand test, jog, squat, jump, and landing tests can also give an indicator for where problem lies for patient, testing patients' proprioception is a functional test, which tests the strength of the patient's proprioception and strength at the ankle (Mani et al, 2017).

### **Imaging based findings**

If the therapist is unsure or thinks it may be something worse than a ligament sprain, he or she may refer patient to be x-rayed or send patient for an MRI scan (Delahunt et al, 2018).

### **Other MSK conditions and injuries**

- The medial deltoid ligament sprain is another MSK injury of the ankle
- CFL ligament tear normally occurs when ATFL is sprained.
- Tarsal dislocation
- Metatarsal break
- Ankle dislocation

### **Red flags examples are;**

If there is no pulse at the ankle immediately after injury (Eglin et al, 2017).

If there is no feeling in the person's foot (Eglin et al, 2017).

Itchy and red and hot calf will also be a red flag as this could potentially be a blood clot in the calf (Gupta et al, 2015).

Pins and needles in the foot (Eglin et al, 2017).

### **Non MSK injuries are as follows;**

Bunion of the foot is a non MSK issue that therapist will refer patient (Hendry et al, 2018).

Foot verruca is a non MSK issue that will be referred by the therapist (Hood et al, 2018).

In growing nail will be referred by therapist as it is a non MSK condition (Gera et al, 2019).

### **Referrals and surgical interventions**

A referral is necessary when it is outside the therapist's scope of practice, such as a bunion of the foot or a verruca on the foot.

A referral would also be necessary if the patient is presenting erythema of the calf accompanied by heat and itching.

The therapist may email doctors surgery or email practitioner directly to refer patient or write out a referral.

## **Conclusion**

To summarise, therapists employ various assessment techniques, including range of movement tests and observational examinations to diagnose an injury. The therapist evaluates the patients pain scale asking them how painful it is and asking the patient what sort of pain they have. In the case of pitch side first aid it is vital to avoid overlooking crucial factors such as an absence of a pulse, pins and needles, or loss of sensation.

The use of anti-inflammatory drugs should be used with care to prevent delays in healing, showing the importance of working with other health professionals to ensure the therapist is not working outside their scope of practice so refer for imaging or referring to a GP.

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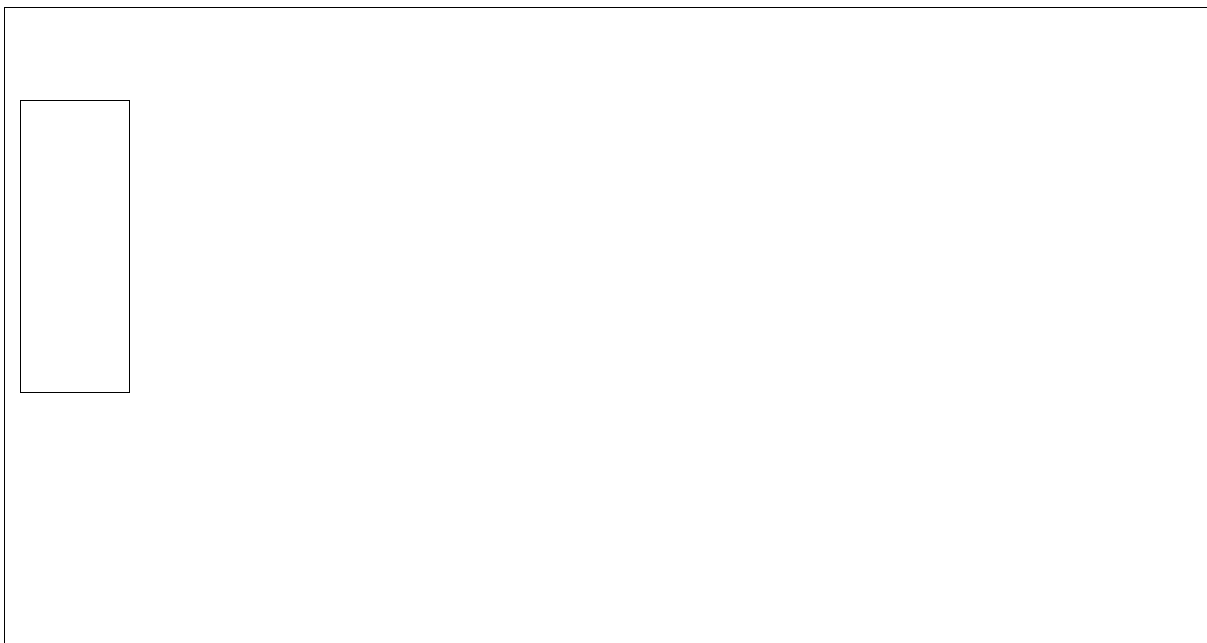
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