



## INJURY NAME /STRUCTURE

### Lateral Ankle Sprain

#### DESCRIPTION OF THE ANATOMY

An injury of the lateral ankle ligament complex is the most common type of ankle injury and is characterised by stretching or tearing of the ligaments to different degrees. The lateral ankle consists of 3 ligaments – the anterior talofibular ligament (ATFL), the calcaneofibular ligament (CFL) and the posterior talofibular ligament (PTFL). The role of these ligaments is to protect the ankle joints from excessive movement – particularly plantarflexion (pointing the toes downwards) and inversion (turning the soles of the feet inwards). Raina & Nuhmani (2014)

#### HOW THE INJURY COULD/USUALLY OCCURS

This injury usually occurs when the ankle is forced into plantarflexion and inversion. Landing on another player's foot after a jump, landing on the

outside of the foot or “rolling the ankle” are common examples of how this injury can occur. There are also intrinsic (internal) and extrinsic (external) factors that can play an important role for these type of injuries. Intrinsic factors include – the degree of ankle range of motion, balance deficits, ankle joint configuration and knee and foot alignment. Extrinsic factors include – type of sport (basketball, netball, volleyball and rugby have high incidence rates for lateral ankle injury), type of surface (grass vs. artificial turf vs. concrete court) and type of shoes/boots. Raina & Nuhmani (2014)

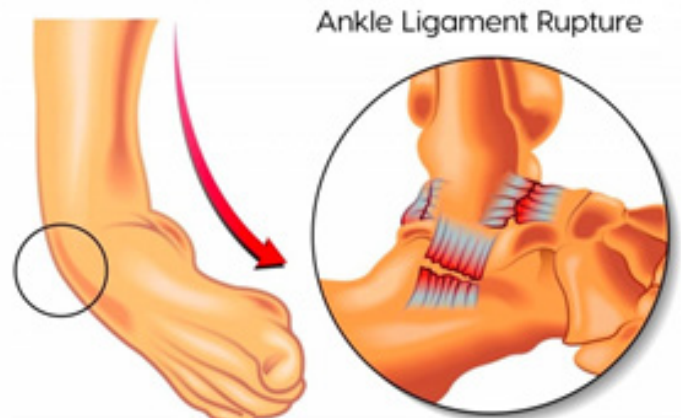
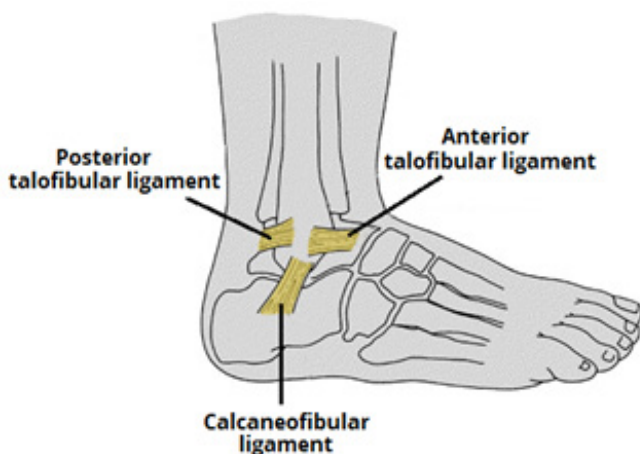
#### PRESENTATION (HOW TO IDENTIFY AT HOME/ ON FIELD)

At the time of the injury, it is important to assess whether or not there is a potential for a fracture. The Ottawa Ankle rules should be used to assess the need for an X-ray.

- Tenderness distal to the lateral malleolus (6cm below the bony prominence on outside of ankle)
- Tenderness distal to the medial malleolus (6cm below the bony prominence on inside of ankle)
- Tenderness of base of 5th metatarsal (protruding bone on outside of foot)
- Tenderness of navicular (protruding bone on inside of foot, just forward from the medial malleolus)
- Ability to weight bear 4 steps at time of injury and in the clinic

Retrieved from:

<https://boneandspine.com/ankle-joint-anatomy/>; <https://www.cookandsautter.com/chronic-ankle-sprains>



**Lateral ankle ligament injuries are usually categorised into three grades based on symptoms.**

**Grade 1.** Stretching or slight tear of the ligaments resulting in minimal/no swelling, pain around the lateral ankle, generally no ligament laxity/feeling of instability.

**Grade 2.** A more significant tear of the ligaments resulting in swelling, moderate pain around the lateral ankle, slight degree of ligament laxity/feeling of instability.

**Grade 3.** A complete tear of the ligaments resulting in swelling, severe pain around the lateral ankle that may dissipate, marked degree of ligament laxity/instability.

## AT HOME WAYS TO ASSESS THE INJURY

- Self-perceived laxity through range of motion and feelings of instability with ankle movements
- Tenderness when palpating the lateral ankle
- Degree of swelling (can aid in diagnosing the severity of the injury)
- Pain with ankle movements, especially plantarflexion and inversion

## AT HOME TREATMENT (1-10 DAYS)

### P.E.A.C.E & L.O.V.E

**Protection** – avoid activities and movements that increase pain for the first few days.

**Elevation** – elevating the leg when lying down can help with circulation.

**Avoid anti-inflammatories** – these do have a place in some instances, however they reduce tissue healing.

**Compression** – using a bandage or tape around the ankle can help to reduce swelling.

**Education** – your body knows best, avoid unnecessary treatments and scans.

**Load** – let pain guide your return to normal activities.

**Optimism** – condition your brain for optimal recovery by being positive and confident.

**Vascularise** – choose pain free cardiovascular exercise such as biking to increase blood flow.

**Exercise** – focus on exercises that improve strength, balance and mobility.



## PROPRIOCEPTIVE EXERCISES

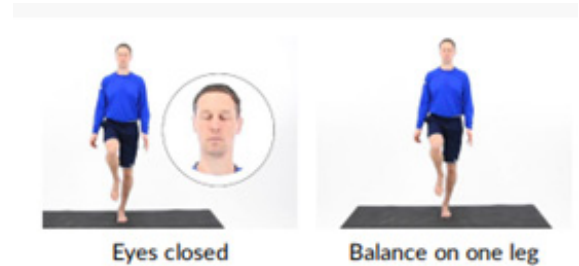
Proprioception is the perception of the movement and position of a body part. Proprioception of the ankle can be negatively impacted with a lateral ankle sprain and proprioceptive exercises can begin early.

### SINGLE LEG STAND

Single leg stand for time. If you can stand for greater than 30 seconds without difficulty, try standing with the eyes closed for more of a challenge. Perform 3 sets for 30 seconds to 1 minute two times daily.

#### Execution:

- Stand and balance unsupported with your eyes closed.



## ISOMETRIC EXERCISES

Isometric exercises are a great way to start strengthening the muscles around the ankle without placing too much load on the ankle. Isometric exercises can also be used for pain modulation.

### CALF RAISE ISOMETRIC | BILATERAL

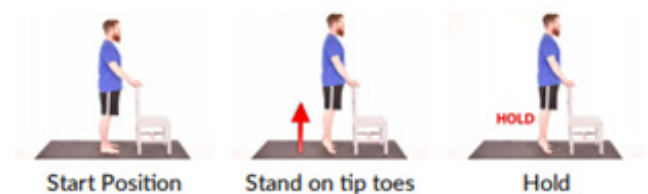
Bilateral calf raises isometric (3 sets of 30-45 seconds, 1-2 minute rest in between sets, 1 times daily). Start by standing with the feet roughly shoulder width apart and slowly rise up on to the toes in a controlled manner, squeezing the calf muscles. Hold this for 30-45 seconds and slowly lower back down. Rest for 2 minutes and repeat.

#### Preparation:

- Stand holding a chair, as shown.

#### Execution:

- Stand on your tip toes lifting your heels as high as you can.
- Hold.



### ANKLE INVERSION ISOMETRIC

Ankle inversion isometric with towel between feet (3 sets of 30-45 seconds, 1-2 minute rest in between sets, 1 times daily).

#### Preparation:

- Sitting with a towel between feet.
- Rest the inside borders of feet against the towel.

#### Execution:

- Squeeze your feet against each other.
- There should be no movement.



## RANGE OF MOTION EXERCISE

It is important to keep the ankle moving as much as possible in a pain free manner; motion is lotion.

### ANKLE ALPHABET

Trace the alphabet with your ankle 1-2 times daily.

#### Preparation:

- Sit in a chair with good posture.
- Rest the edge of your heel on the floor, as shown.



#### Execution:

- Write the letters of the alphabet A to Z with your big toe.

## AT HOME TREATMENT | SUB ACUTE (UP TO 6 WEEKS) ISOTONIC EXERCISES

Once the pain and swelling has settled, isotonic exercises and progressions of the acute exercises can begin.

### ANKLE INVERSION CONCENTRIC

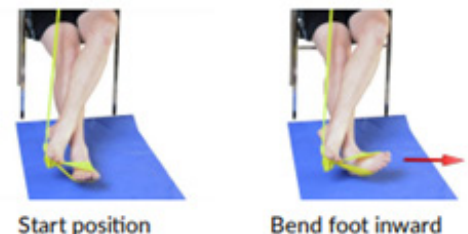
Theraband inversion (3 sets of 10-15 repetitions), Bilateral calf raise isotonic exercise (3 sets of 10-15 repetitions) – this can be progressed eventually to single leg calf raises

#### Preparation:

- Sit with your leg straight in front of you.
- Wrap the band around your foot.

#### Execution:

- Bend your ankle against the resistance, pointing your toes towards the middle.
- Relax your foot back to the start position in a controlled manner.



### ANKLE INVERSION ECCENTRIC

Theraband inversion (3 sets of 10-15 repetitions), Bilateral calf raise isotonic exercise (3 sets of 10-15 repetitions) – this can be progressed eventually to single leg calf raises

#### Preparation:

- Sit with your leg straight in front of you.
- Turn your ankle inwards.

#### Execution:

- SLOWLY relax your ankle, letting the resistance pull your foot outwards in a controlled manner.
- Turn your ankle back inwards against the resistance, returning to start position.



- Proprioception exercise progression – you can progress the single leg balance by increasing the time balancing, standing on a pillow, and standing on a pillow whilst closing the eyes.
- If wanting to make this exercise more challenging, try single leg standing on a pillow and have a housemate/partner throw an item to catch just out of your reach (tennis ball) while trying to maintain your balance. Perform 3 sets of 10-20 repetitions 1 times daily.
- Continue with range of motion and cardiovascular exercises (stationary bike exercise is recommended)
- Degree of swelling (can aid in diagnosing the severity of the injury)
- Pain with ankle movements, especially plantarflexion and inversion

## AT HOME TREATMENT | CHRONIC (6 WEEKS ONWARDS)

Once you believe you have restored range of motion in the ankle, you are able to single leg calf raise for 3 sets of 10-12 repetitions without pain/difficulty, and swelling is no longer existent. Task-related exercises can be included into the program (such as sport related exercises). This also includes returning to running in a progressive manner.

Although the ankle may be feeling better, it is important to continue with strengthening, proprioception and range of motion exercises, as the re-injury rate is relatively high.

## PROGRESSION

It is important to note that the below healing time frames are only general timeframes and do not fit every individual's situation and also depends on the amount structures damaged.

|                          |            |
|--------------------------|------------|
| <b>Grade 1 injuries.</b> | 2-3 weeks  |
| <b>Grade 2 injuries.</b> | 3-6 weeks  |
| <b>Grade 3 injuries.</b> | 6-12 weeks |

Brukner & Khan (2017)

## WHEN TO RETURN TO NORMAL ACTIVITY

As the re-injury rate for lateral ankle sprains is high, it is best to see a physiotherapist for a safe return to sport. This decision is made based on sports specific movement and outcome measures that assess balance, function, strength and range of motion. Examples include the hop test, Y-balance test, knee to wall test, the ability to single leg calf

raise for repetitions and more (depending on the physiotherapist's clinical reasoning). Wikstrom, Mueller & Cain (2019)

Strapping the ankle for trainings and games can be very useful and is encouraged after any ankle injury.

References:

Brukner, P., Clarsen, B., Cook, J., Cools, A., Crossley, K., Hutchinson, M., McCrory, P., Bahr, R., & Khan, K. (2017). Clinical Sports Medicine (5th edition). doi: 10.3138/ptc.66.1.rev2

Wikstrom, E. A., Mueller, C., & Cain, M. S. (2019). Lack of Consensus on Return to Sport Criteria Following Lateral Ankle Sprain: A Systematic Review of Expert Opinions, 29(1), 1-20. doi:10.1123/jsr.2019-0038

