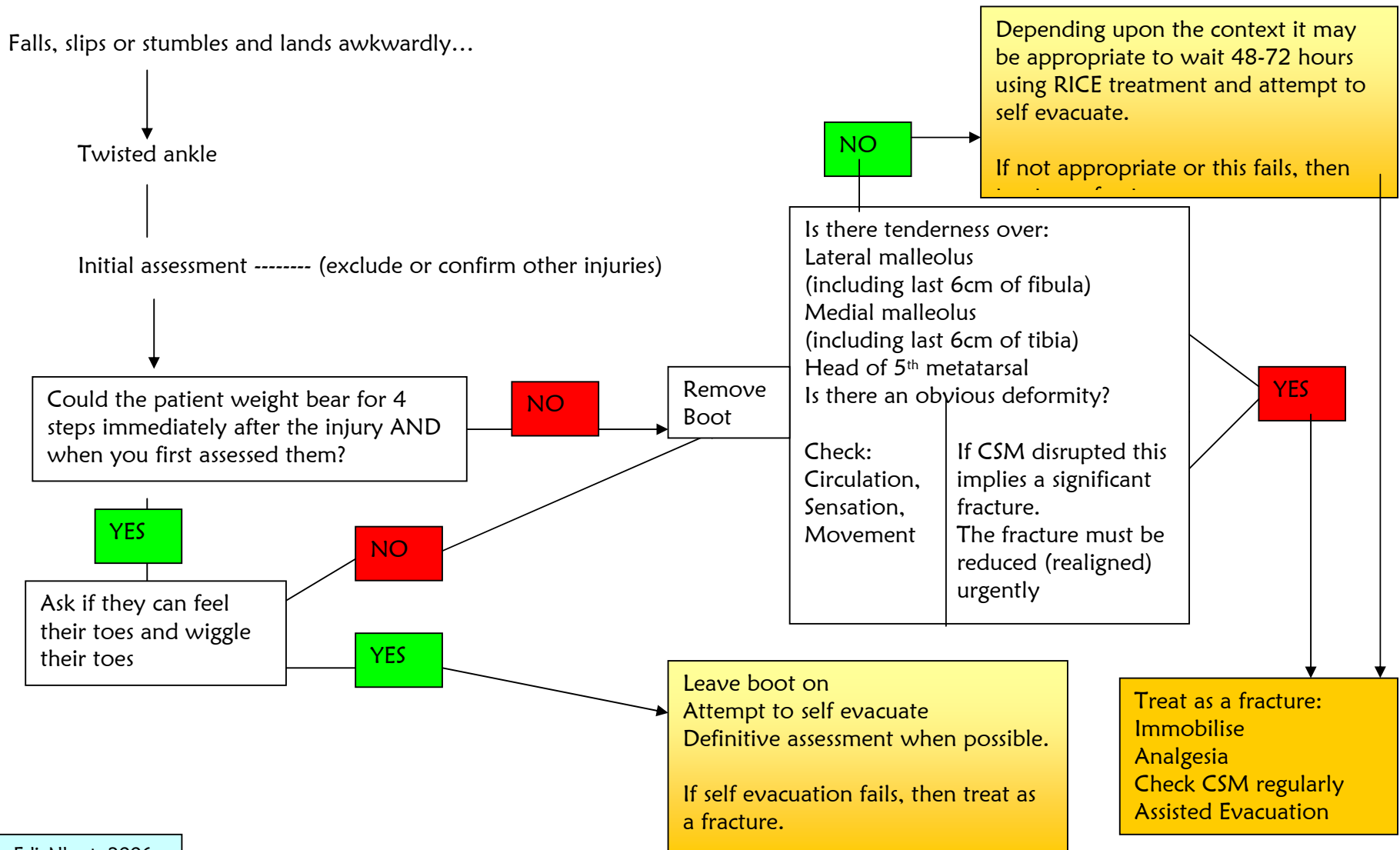


## Flow chart for the assessment and management of ankle injuries in the wilderness.



## Notes to accompany the flow chart on the assessment and management of ankle injuries in the wilderness

### *Background*

Ankle injuries are one of the commonest injuries seen in outdoor sports. Sometimes it is very easy to tell if the ankle has been fractured, such as when there is a deformity. Sometimes it is clear that the patient only has a minor sprain, such as when they are up and walking around within a few minutes. At both extremes of the continuum diagnosis and management is straightforward. However, it is not uncommon to be faced with a more difficult assessment and set of decisions.

One of the problems here is that people are taught about “sprains” and how to manage them, and “fractures” and how to manage them too. What they then struggle with is how to tell the difference. They are caught in the dilemma of worrying about calling in outside help for “only” a sprain, or missing a fracture and risking “doing more damage”, or perhaps worse still: being sued.

The Ottawa Ankle Rules were introduced into the medical profession a few years ago to solve a similar dilemma amongst doctors working in emergency departments. Too many X-rays were being performed (as evidenced by the fact that most were normal) yet doctors didn’t want to risk missing a fracture.

In both cases the preoccupation with trying to tell the difference between a sprain and a fracture was the wrong approach. What mattered in the emergency department was deciding which injuries required an X-ray.

Similarly, in the wilderness situation what matters is whether it is feasible to either continue the activity or at least arrange self-evacuation (always the preferred approach) or whether assisted evacuation is required.

The Ottawa Ankle Rules provide a decision making tool that is simple to apply in practice. Research has shown that these rules, when properly applied will drastically reduce the number of X-rays performed without missing a fracture.

The flow chart presented here has been developed from the Ottawa Ankle Rules and placed into the context of an injury occurring in the wilderness. This flow chart has not yet been prospectively validated (proven to work) yet is logically consistent with the Ottawa Ankle Rules which have been shown to work. The only problem with trying to apply the Ottawa Ankle Rules in the outdoor setting is that the boot gets in the way. One question often asked on first aid courses is whether or not to remove the boot. You need to remove the boot to perform a full assessment, yet the boot may provide the best form of splinting available and once taken off swelling may make it difficult or impossible to replace. The flow chart helps first aiders deal with this issue.

To restate, in the wilderness setting the aim is not so much to make a definitive diagnosis (which in any case may be impossible), but rather a functional assessment that will allow the first aider to make an appropriate management plan.

A severe ligament sprain may incapacitate a person for several weeks and require immediate treatment as if it were a fracture. A minor undisplaced fracture of the lateral malleolus is still a fracture, yet in some contexts in some patients self-evacuation may be possible.

Another common assumption is that after the assessment of the patient is made that there needs to be a complete and definitive plan made immediately. In medicine we often play a “wait and see” game: this may be applicable with some ankle injuries in a wilderness setting.

### *Using the flow chart*

The flow chart can be used following a fall, slip or stumble in which the patient reports pain in the ankle. Clearly before focussing on the ankle you will need to exclude or confirm other injuries, and if these have a higher priority treat these first. On the assumption there are no other injuries (or at least they are either trivial or adequately assessed) you can apply the flow chart.

Naturally, as with any problem, you will take a history: find out what happened and why. How far did they fall, mechanism of injury, what caused them to fall etc

The first key question is:

**Could they walk 4 steps unassisted immediately after the injury AND when you assess them?**

If the answer to either question is no, then you will need to remove the boot and assess more fully (see below).

If the answer to both questions is yes, then you should ask if they can wriggle and feel their toes. If they can then it is reasonable to leave the boot on. It isn't exactly a full assessment of circulation, sensation and movement (CSM), but then again it is hard to conceive of a fracture that is unstable enough to disrupt CSM, yet is stable enough on which to weight bear.

Exactly what happens next depends upon the situation, but it is certainly reasonable to encourage the patient to continue under their own steam, possibly with a makeshift walking stick, crutch or someone else for support. One might imagine the patient returning to base camp, making for the nearest road etc. Analgesia should be given and a positive attitude and encouragement should be balanced with careful observation to be sure that the patient is coping. Clearly, if self evacuation fails you will need to resort to the “treat as a fracture” option.

For patients who could not weight bear for 4 steps, the boot is removed and the second part of the Ottawa Ankle Rules is tackled:

**Is there tenderness over either the medial or lateral malleolus (including 6cm above the tip) or the base of the fifth metatarsal?**

These three locations are where fractures may occur after twisting the ankle (inversion or eversion injury).

(Other fractures may occur from falling from a height onto the feet, but these do not concern us here, and in any case are assessed as per normal: look for inability to weight bear, pain, tenderness, swelling and deformity and if in doubt treat as a fracture).

If there is tenderness over one of these three areas you will need to treat as for a fracture: analgesia, immobilise, check CSM ( initial assessment and regularly thereafter) and arrange assisted evacuation.

If there is no bony tenderness, Ottawa Ankle Rules recommend X-raying the patient for a definitive diagnosis. In a wilderness setting this is obviously not possible. As with all wilderness injuries, context is everything, and in some

situations it may be reasonable to assist the patient to a camp where they can wait 48-72 hours (using RICE treatment) and undergo reassessment of their ability to weight bear. Thereafter they may be able to walk out, failing that assisted evacuation will be required.