

Figure 1 Risk of injury from a road traffic accident (RTA) when running.

example given above of tibial fractures in football may look similar.

If we are to accept the notion of an injury being caused by overuse, we must see that the relation of injury to activity is not one of proportionality. At some point on the curve that relates injury risk to activity level, the risk must exceed the risk predicted if it continued to rise proportionally with activity.

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Figure 2 provides further hypothetical data. In this, the risk of plantar fasciitis rises proportionally to activity, and this is compatible with a traumatic causation. Achilles tendinitis, however, only occurs above a threshold activity level and so is compatible with the notion of overuse as cause. The examples are clearly simplified relative to data that may realistically be collected. The influence of contributory factors would distort the relation in real charts.

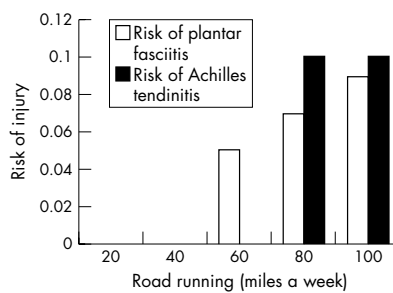


Figure 2 Risk of injury in runners.

HOW MIGHT SPORTS PHYSICIANS MISINTERPRET THEIR EXPERIENCE IN CLINIC?

If a type of injury was due to overt trauma and that trauma was equally likely for each unit of activity, the relation between number of injuries and level of activity would mirror the example of road traffic accidents in runners given above. If all runners presented to a sports physician, he/she would see four runners with this type of injury from the highest mileage group to every one from the lowest mileage group. If the moment of occurrence the same, then the sports physician will blame the one thing that appears to have brought most athletes to the consulting room with this problem: the amount of running. There appears to be no other explanation, and so the injury is blamed on running too much and categorised as overuse. This experience could be repeated time and time again for various types of problems and each experience compounds the sports physician's opinion that overuse causes many injuries that he/she is called upon to treat. Only carefully conducted and

interpreted research could show whether he/she is right.

ALTERNATIVE THEORY

If overuse is not the cause of some or all of the injuries thus categorised, what is? We need to consider the possibility that there may be an acute injury that was not apparent by obvious trauma with pain and or loss of function occurring at the time. It is reasonable to speculate that the pain may not start at the moment that the pathological process starts. Such an injury, like all sports injuries, would relate to use not overuse. There may be another explanation for these injuries.

CONCLUSION

This all highlights the challenge for those researching the cause of sports injuries to prove whether the concept of overuse as a causal factor is correct. I propose that, until this proof is available, we stop using the term overuse injuries. We will then be less inclined to fall into the trap of assuming that rest will be therapeutic and that restriction of activity is a justified preventive measure.

My apologies to Slocum and James¹ who coined the phrase overuse injury.

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Sprained ankle management

Management of the sprained ankle

C N van Dijk

Non-operative treatment with early functional rehabilitation is the treatment of choice

Inversion injuries of the ankle ligament are among the most common injuries, accounting for about 25% of all injuries to the musculoskeletal system. The most commonly injured part of the lateral ligament complex is the anterior talofibular ligament (ATFL). Although ruptures of the ankle ligaments are very common, treatment selection remains controversial. In a recent systematic review of the available literature, it was

found that treatment of an acute lateral ligament rupture that was too short in duration or that did not include sufficient support of the ankle joint tended to result in more residual symptoms. It was concluded that a "no treatment" strategy for acute ruptures of the lateral ankle ligament leads to more residual symptoms.¹ After a supination trauma, it is therefore important to distinguish a simple distortion from an acute grade II

or III ankle ligament rupture, because adequate treatment is associated with a better prognosis.

Although ruptures of the ankle ligament are very common, treatment selection remains controversial.

Because of the suspected poor reliability of physical diagnosis of ligament ruptures after inversion trauma of the ankle, stress radiography, arthrography, magnetic resonance imaging, and sonography are often performed simultaneously.² However, these methods are expensive, and their reliability is debatable. The reliability of physical examination can be enhanced when the investigation is repeated a few days after the trauma. The accuracy of physical

examination has been determined in a series of 160 patients, comparing physical examination performed within 48 hours of the injury and five days after injury. All patients had arthrography, but the outcome was not disclosed to the patient or the investigator until after the second delayed physical examination. The specificity and sensitivity of the delayed physical examination for the presence of absence of a lateral ankle ligament rupture were 84% and 96% respectively. It is therefore concluded that a precise clinical diagnosis is possible.^{3,4}

The most important features of physical examination are swelling, haematoma discoloration, pain on palpation, and the anterior drawer test. Physical examination is unreliable in the acute situation because of the pain: the anterior drawer test cannot be adequately performed. Moreover there is diffuse pain on palpation and it is often difficult to judge whether the cause of the swelling is oedema or haematoma. A few days after the trauma, the swelling and pain have diminished and it becomes obvious whether the cause of the swelling was oedema or haematoma. The pain on palpation has become more localised and the anterior drawer test can be performed.

The site of pain on palpation is important. If there is no pain on palpation on the ATFL, there is no acute lateral ligament rupture.⁴ Pain on palpation on the ATFL cannot in itself distinguish between a rupture or a distortion. If there is pain on palpation on the ATFL and haematoma discoloration, however, there is a 90% chance that there is an acute lateral ligament rupture.⁴

A positive anterior drawer test has a sensitivity of 73% and a specificity of 97%.⁵⁻⁹ It is sometimes possible to detect the occurrence of a skin dimple when performing the anterior drawer test. If a skin dimple does occur during the anterior drawer test, there is a high correlation with a rupture of the lateral ligaments (predictive value 94%). A skin dimple will occur, however, in only 50% of patients with a lateral ankle ligament rupture.⁶ A positive anterior drawer test in combination with pain on palpation on the ATFL and haematoma discoloration has a sensitivity of 100% and

specificity of 77%. It has been shown that the interobserver variation for the delayed physical examination is good with an average κ of 0.7.⁵

When a diagnosis has been made, it is generally agreed that non-operative treatment with early functional rehabilitation is the treatment of choice.² A recent meta-analysis showed operative treatment to be superior to functional treatment.¹ There are reasons to question the selection of operative treatment as a treatment of choice. Operative treatment is associated with increased risk of complications and is also associated with higher costs. Because of the high prevalence of ankle injuries, operative treatment may be performed by surgeons in training, which may affect the outcome. Finally when conservative treatment fails, secondary operative reconstruction of the elongated ligaments can be performed with similar good results, even years after the initial injury.¹⁰ Functional treatment therefore remains the treatment of choice.

Delayed physical examination provides a diagnostic modality of high sensitivity and specificity

Application of an inelastic tape bandage is only effective when it is applied at the moment that the swelling has diminished. This kind of treatment is cheap and not a burden to the patient. The same is true for delayed physical examination. Before the decision is made to apply the inelastic bandage or a lace up support, a delayed physical examination must be performed to obtain a diagnosis and to decide whether this treatment is really necessary. Does performing an anterior drawer test four to five days after injury disturb wound healing? Cell lysis, granulation, and phagocyte activity take up to six days to occur after injury, and fibroblasts start to grow into the wound at five days. Subsequently, collagen grows along a fibrin mesh. After 10 days, the defect is filled with vascular inflammatory tissue.^{11,12} Performing an anterior drawer test four to five days after the trauma will therefore not disturb wound healing. Delayed physical examination provides a

diagnostic modality of high sensitivity and specificity. This has been proposed to be the strategy of choice in an editorial of the *British Journal of Bone and Joint Surgery*.¹³

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