

CLASSIFICATION OF MUSCLE INJURIES

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When classifying muscle injuries, it should be kept in mind that muscles and tendons function together like a unit. An injury can therefore occur in the muscle itself, in the muscle-tendon junction, in the tendon itself or in the insertion of the tendon into bone.

The pure muscle ruptures can be divided into distraction ruptures and compression ruptures. The ruptures can also be divided into total ruptures and partial ruptures.

It is very interesting to note that most distraction ruptures of muscles occur in those muscles that move two joints – the hamstring muscles for instance. In the quadriceps group it is the rectus femoris that most often ruptures because it is an extensor of the knee and a flexor of the hip. The vasti seldom rupture. One can speculate why these two-joint muscles rupture more often than the one-joint muscles. We have tried to record telemetric EMG of a hamstring rupture. We collected a group of runners who often suffered hamstring ruptures and asked them to run as fast as possible with EMG electrodes on several muscles. They were also filmed and the EMG superimposed on the running picture. Unfortunately (or should we say fortunately) no hamstring ruptures occurred during our experiments. The day after the study one of our runners tore his hamstrings, though. Our theory is that something goes wrong with the sensitive neuro-muscular system, when the muscle is tired.

Compression ruptures are common in soccer, often caused by a kick on the muscle.

The prognosis of a muscle rupture is largely dependent on the degree of haematoma formed at the time of rupture. These haematomas can either be intra-muscular or inter-muscular. The intra-muscular bleedings increase the pressure and counteract further bleeding but also counteract healing. A compartment syndrome could occur. The swelling lasts for up to 48 hours.

The inter-muscular haematomas do not cause an increase in pressure and do not cause so much swelling. The blood will accumulate distally due to gravity.

In the acute phase all energy should be aimed at reducing the amount of bleeding.
