

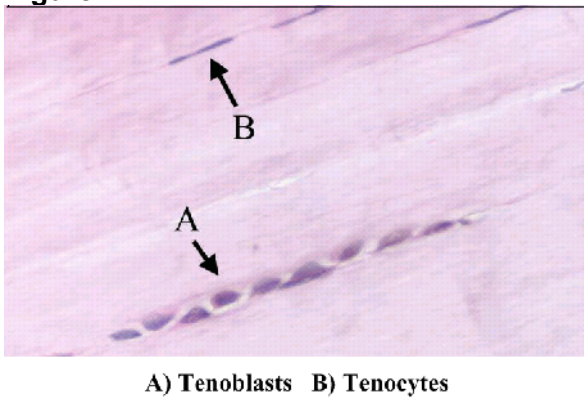
SPORTS MEDICINE

Sports medicine and orthopedics share the same target tissues (tendon, ligament, cartilage). Sports medicine also care muscle lesions and rehabilitation programs.

TENDINOSIS or TENDONITIS or DEGENERATIVE TENDINOPATHY

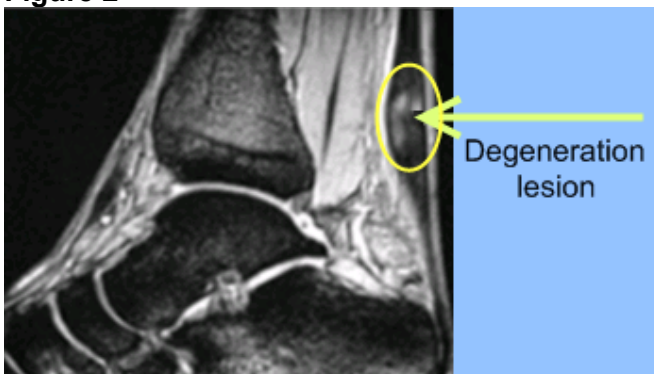
Tendinosis or tendonitis is a relatively frequent chronic tendon injury which is painfully and impairs function for six weeks to six months, depending on the chronicity. This condition is caused by degeneration of the tendon with partial rupture of the fibers. Acute tendinosis has also vascular disruption. Chronic degenerative tendinopathy is an intratendinous degeneration due to aging, overload, or microtrauma. In these lesions collagen disorientation, disorganization and fiber separation occur. In Achilles or elbow injured tendons function is limited because of multiple microscopic tears of the tendon. The tendon has limited ability to repair itself. If the circulation to the tendon is somehow impaired (e.g. diabetes; heavy smokers) the ability to heal these microscopic tears is limited and tearing of the tendon continues. Eventually, the tendon begins to thicken and weaken, and gets quite painful. **Local infiltration of PRP or platelet gel is effective to repair tendinosis.** The target of the platelet-derived growth factors are the tendon cells entrapped within the tendon fibres (tenoblasts and tenocytes, figure 1).

Figure 1



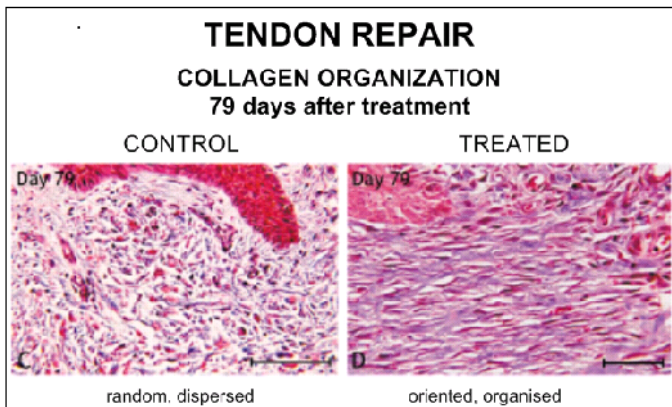
An example of Achilles degenerative tendinopathy is depicted in figure 2.

Figure 2



In addition to the healing time, a striking effect of the PRP treatment on tendon injury is observed on the tissue remodelling. During healing in experimental lesions (horse) the collagen fibers get optimal organization much more quickly in the PRP group than in the control group (figure 3)

Figure 3



Elbow epicondylar tendinosis is a common problem for patients whose work or activities require strong gripping or repetitive movements. Dr. Allan Mishra reported a study on elbow epicondylar pain treated with a single percutaneous application of PRP. Eight weeks after the treatment, the PRP patients noted a 60% improvement in their visual analog pain scores versus a 16% improvement in control patients (local analgesic pubivicaïne)

SKELETAL MUSCLE

Cell proliferation, satellite cells differentiation and angiogenesis occur when the skeletal muscle tissue is challenged with the platelet-derived factors.

Quick healing after an acute muscle injury has occurred is particularly appreciated in athletes. In a study presented by Sanchez M et al. at the II° World Congress on Regenerative Medicine held in Leipzig, Germany, 2005, the PRP was injected into the injured area after echoguided haematoma evacuation. The number of the injections at one week intervals depended on the severity. This treatment diminished swelling and reduced pain. **Full recovery of functional capabilities was restored as early as half of the expected recovery time.** Echo-graphic images showed full regenerated muscle tissue after treatment. Remarkably, **fibrosis did not appear in any of the treated cases.** No re-injuries occurred, in any athlete, after resuming their normal activities.

A paradigmatic evidence of skeletal muscle repair is illustrated in the figure 4.

Figure 4

