

P014 Evidence for Increased Elastin Turnover in Achilles Tendon Pathology

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The biomechanical properties of tendon tissue are primarily determined by its extracellular matrix (ECM). We have investigated the expression and organisation of elastin, an ECM protein associated with the elastic properties of tissues, in human Achilles tendon. Tendons were obtained either post-mortem from individuals with no known history of tendon pathology (normal) or from operations on chronic degenerative tendinopathy (painful) or ruptured tendon. In normal mid-tendon samples elastin was present in long fibres parallel to the tendon structure, whereas in painful samples the elastin appeared much less organised. Elastin immunoblotting of tendon protein extracts revealed predominant bands consistent with non cross-linked elastin. Elastin mRNA levels were significantly higher in the painful tendon samples compared to the normal group, whereas the mature, cross-linked elastin content of painful samples was significantly lower. The highly-organized fibrous structure of elastic fibres within normal Achilles tendon is consistent with its expected mechanical role. In chronic painful pathology, higher levels of elastin mRNA and lower levels of mature elastin cross-links suggest that elastin turnover is increased, and these changes may profoundly affect the material properties of the tissue.