

Tendon Pathology

Viscoelastic tissue	Loading tendon slowly makes more it more compliant, loading tendon fast engages all fascicles
Iso-volumetric	Loading and changing shape of tendon does not change volume as tendons are dense
Cross-linking	Slow loading breaks more links than fast loading, therefore tendon stiffer with fast loading
Tendon stiffness	Greater compliance or greater stiffness both increase injury risk, muscle should be stronger than tendon is stiff

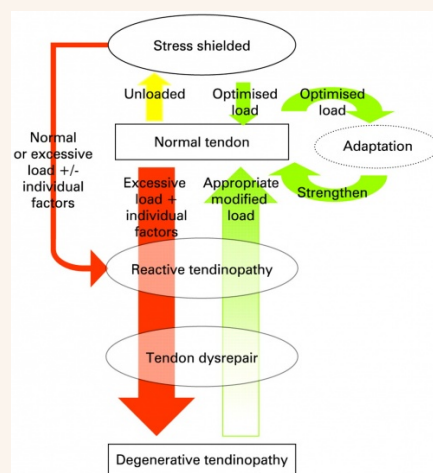
Prognosis

True tendinopathy can take months to years to heal

Types of Load on Tendon

Energy storage and release loads	Store and release energy, making movements faster and more metabolically efficient
Compressive loads	Compressive against bone or bursa, altering range may ease symptoms
Friction	Rubbing against the peritendon, may also be affected by an acute blow
Shear	Depending on the muscles involved

Tendon Continuum (Jill Cook)



Subjective Markers

- Warm up effect
- Localized pain with 1-2 fingers
- Often increase in activity
- Increased pain after a period of rest and is worse the next morning when first getting out of bed
- "Severe" or "sharp" during the early stages and sometimes as a "dull ache" once it has been present for some weeks
- Isometrics act as an analgesic

Objective Assessment

Observation	Muscle atrophy, swelling, asymmetry
Palpation	Tender to palpate, but we should try not to palpate too much
AROM/PROM	May be limited due to pain
Strength	May be decreased due to muscle atrophy or pain
Functional Tests	Tests that load the tendon to reproduce pain, and other loading tests that load alternative structures

Rehabilitation

- Patient education = load modification
- Isometric, isotonic and HSR loading **in comp** to target tissue structure change and muscle strength
- Slow stretch-shortening cycle **out of comp** to load as spring
- Fast stretch-shortening cycle **out of comp** to load as spring
- Sports specific exercises **out of comp**

Management

- Do not rest the tendons. Could cause more damage.
- Address the strength deficit. Heavy load 2-3 times per week. Compare with normative values not the contralateral limb.
- Tendons respond to heavy load, 70% 1RM. For approx. 5 mins then again in 6 hours.
- Type of muscle contraction does not affect collagen synthesis, other evidence points to eccentrics
- Allow enough time following high load for tissue recovery (every 2nd day)

Adjuncts to exercise

- Corticosteroid injection
- Shockwave therapy
- Platelet rich plasma
- Surgical management



By Jenna Ingola (jennaingola)

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