Tendon pain - an update on mechanisms and rehabilitation

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Treating tendon pain

Old school Vs new school

PT - how current evidence has shaped the evaluation & rehabilitation of tendinopathy

Old school

It's inflamed and therefore needs lots of rest
The Imaging will = your diagnosis
Collagen is torn and that is causing your pain
PT Treatment will involves U/S , TNS , RICE, pain free exercise, massage , joint mobilization ,Taping, orthotics,

New school

Continuum model- reactive, dysrepair, degenerative
Imaging is used as it correlates to the history & functional capacity as well as for stage
Treatment is focused around education, and load management
Eccentrics .... HSR .... strength... isometrics... energy return ...
Modalities and manual therapy are adjuncts for increasing tolerance to load and move efficiently

 Loads progression - reality
Why does my tendon hurt?

- Nociceptor
- Compression
- Collagen damage
- Loss of lubricin: sheath slide and glide
- Increase in Matrix proteins
- Sensory changes
- NeoVascularization
- Neurogenic
- Centralized pain (upper limb)

What works?
1. Heavy, slow resistance
2. A combination of HSR, eccentrics, isometrics, concentric and energy return

Imaging not directly related to severity of symptoms

Corticosteroid injections, eccentric decline squat training and heavy slow resistance training in patellar tendinopathy

What works?

- Minimise compression and aggressive stretching on insertional tendon pain
- Isometrics are valuable in the reactive phase

Tendinopathy: Is imaging telling us the entire story?

Isometric exercise induces analgesia and reduces inhibition in patellar tendinopathy

- Isometrics are valuable in the reactive phase
Continuing to load in low pain activities is valuable (eg running)

Rehabilitation of tendon pain

- Examine
- Educate
- Treat
- ...repeat

Exam / Management

- History - are they actually a tendon?
- Is there an onset of pain that is related to a change in loading (under/over/chronic/acute workloads)?
- Can pain be clearly localized to a tendon by the patient? (two-finger rule)?
- Does load provoke pain?
- Do higher loads create more pain?
- Determine the tendon's load capacity strength, mobility, flexibility, quality of their movement

Determine the patients' safest load / duration or volume for each exercise as well as a reassessment sign (load capacity test)

manageable pain
Based on your clinical exam and their history

Load capacity & irritability

- How much can they do before pain significantly impairs function?
- How severe, lasting or escalating is this pain?
- 24 hour rule - if the next day the load capacity test is the same - carry on - if not, modify the load 20-50% for one day

History / Exam

- Stage the problem, it's severity and irritability
- Create a practical, and mutually agreed upon plan with
  - Objective benchmarks of progression
  - Reasonable time frames
  - Options for the inevitable 'bumps' in progress
- Identify the factors that will slow recovery or require imaging/further referral
Identify the risk factors for a slower recovery or the need to refer out
- High BMI
- Diabetes
- Psoriatic arthritis
- Ankylosis spondylitis
- Stress
- Age

Other Risk factors that slow progress
- Occupational (workers comp, litigation, vibration, repetitive use...)
- Historical (prior injury, radiculopathy, ligament rupture, central pain or fear avoidance based behaviour, poor exercise habits)
- Physical (weakness, poor movement awareness, severe mobility restrictions, miserable malalignment)

Treatment - S.I.M.P.L.E
- S. - strengthen - what is the best type of exercise
- IM - integrated movement with quality
- P. - pain management
- L. - length / flexibility
- E. - education re the causes of tendon pain

Typical exercise progressions
- Isometrics / Eccentric / Isotonic / Resistance, Free weights
- Energy return activities, Plyometrics and complex work and sport specific patterns
- These should dominate the amount of time spent on rehab

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<thead>
<tr>
<th>Isometrics</th>
<th>Typical session</th>
<th>Progression</th>
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<tbody>
<tr>
<td></td>
<td>2x45sec x 6-10 per day</td>
<td>Add load or secondary joint challenges</td>
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<table>
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<tr>
<th>Eccentric/ eccentric</th>
<th>Typical session</th>
<th>Progression</th>
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</thead>
<tbody>
<tr>
<td>2x20reps, 2x per day</td>
<td>Once weight is added move to every 2nd day</td>
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<table>
<thead>
<tr>
<th>Energy return</th>
<th>Typical session</th>
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<tr>
<td>5x5 full rest between sets</td>
<td>Every three days increase</td>
<td>Take two days rest from ER</td>
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Other good stuff P.T’s do!

- Graston, Astym
- Kinesio tape
- Blood flow restriction
- Shockwave
- Manual therapy

These should occupy no more than 10% of the rehab

Rehab MUST include….

- Frequent high movement quality loading at the right intensity balanced by adequate recovery and modification of risk factors
- Education about the likely causes of tendon pain and the time frames for recovery
- Individualised care plans that acknowledge how tendon pain affects the patients life and sense of self.