6th Congress of ECOSEP
European College of Sports & Exercise Physicians
From Labs to the Pitch
Return-to-play after PRP injection for lower limb tendinopathy

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Introduction

Literature search

PRP Platelet-rich plasma Platelet concentrate ...

Rehabilitation Treatment Physiotherapy Exercise ...

(Nearly) no specific protocols
PRP and rehab: evidence is scarce!

Experience & reasoning
Effect of High-Volume Injection, Platelet-Rich Plasma, and Sham Treatment in Chronic Midportion Achilles Tendinopathy

A Randomized Double-Blinded Prospective Study
Boesen et al. AJSM Vol. 45, No. 9, 2017

Description of a standardized rehabilitation program based on sub-maximal eccentric following a platelet-rich plasma infiltration for jumper’s knee

J.-F. Kaux et al.

Consensus: Rehabilitation is essential after PRP injection

but it seems crucial to include progressive tendon loading as part of the treatment. For more than a decade, eccentric mechanical stimulation optimise the healing process of a tendon after PRP use. It has also been demonstrated
Rehabilitation after PRP: content

PRP injection

Tendinopathy 1st symptoms
[> 3 months]

[.. other treatments → failure...]

Start rehab
[4-6 days]

(Isometric) Eccentric

Strength

Speed & power

Plyometrics & Specific to sport

[Small to very small steps]

Load

Time

[4-6 days]
1st step: start loading

Isometric exercise induces analgesia and reduces inhibition in patellar tendinopathy

Ebony Rio,1 Dawson Kidgell,2 Craig Purdam,3 Jamie Gaida,1,4 G Lorimer Moseley,5 Alan J Pearce,6 Jill Cook1

Do isometric and isotonic exercise programs reduce pain in athletes with patellar tendinopathy in-season? A randomised clinical trial

Mathijs van Ark a, b, c, Bill J. Cook 1, Sean L. Docking 3, Johannes Zwerver 4, James F. Gaida 1, 4, 6, 7 Inge van den Akker-Scheek 8, Ebony Rio 9

Isometric Contraction Are More Analgesic Than Isotonic Contractions for Patellar Tendon Pain: An In-Season Randomized Clinical Trial.

Rio E1, van Ark M, Docking S, Moseley GL, Kidgell D, Gaida JE, van den Akker-Scheek I, Zwerver J, Cook J1, 6, 7, 8
Isometric exercise for acute pain relief: is it relevant in tendinopathy management?

Karin Gravare Silbernagel, Bill T Vicenzino, Michael Skovdal Rathleff, Kristian Thorborg


Isometric exercise as an initial treatment and in-season pain management for tendinopathies has become the latest trend, yet clear evidence in support of this approach is lacking. This new approach is...
1st step: Eccentric contractions

Isolated sub-maximal eccentric contractions

- (3)-7*/week
- 1-2*/day
- 2-3 series of 15-30 reps
- Rest time = adapted
- Body weight
- Pain management

Eccentric decline squat protocol offers superior results at 12 months compared with traditional eccentric protocol for patellar tendinopathy in volleyball players

M A Young, J L Cook, C R Purdam, Z S Kiss, H Alfredson

Can eccentric contractions / exercises be painful?

And with 10 being the highest, you’re sure you’re only at a 6?

Should exercises be painful in the management of chronic musculoskeletal pain? A systematic review and meta-analysis

Smith et al. BJSM 2017
Exercises and pain

What are the findings?

- Protocols using exercises into pain for chronic musculoskeletal pain offer a small but significant benefit over pain-free exercises in the short term.
- Adults with musculoskeletal pain can achieve significant improvements in patient-reported outcomes with varying degrees of pain experiences and postrecovery time with therapeutic exercise.
- Pain during therapeutic exercise for chronic musculoskeletal pain need not be a barrier to successful outcomes.
- Protocols using exercises into pain typically have higher loads and dose of exercise.

<table>
<thead>
<tr>
<th>During exercises</th>
<th>Tendinopathy</th>
<th>After exercises session</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 5/10</td>
<td></td>
<td>➤ night and/or day after</td>
</tr>
<tr>
<td>3-4/10</td>
<td></td>
<td>➤ temporary (few hours)</td>
</tr>
<tr>
<td>0-2/10</td>
<td></td>
<td>No increase</td>
</tr>
</tbody>
</table>

Smith et al. BJSM 2017
2nd step: improve strength

- 3 sessions/week
- 3-4 exercises/session
- 3-4 series/exercise
- Slow velocity
- Rest intervals: long
- 15RM → 12RM → 10RM → 8RM → 6RM
- ≈ 70 → ≈ 85% 1RM

Patellar tendinopathy

Achilles tendinopathy + ...

+ ...
3rd step: speed & power

(2-)3 sessions/week:
- 1 session = strength (6-8RM)
- (1-)2 sessions = speed & power

1. Flat ground
   - Soft ➔ hard ground
   - Progressively from 60% to 100% of maximal speed
   - Importance of running technique

2. Decline ground

   - 2-4 exercises/session
   - 3-4 series/exercise
   - Fast velocity
   - Rest intervals: long
   - 30 ➔ 60% 1RM
   - ≈ 6 reps/ex
4th step: plyometrics & sport-specific
Importance to individualise rehab

- Personal history
- Sport goals
- Age
- Physical fitness
- ...

Individualised rehab

60-70% = Athlete
- Steps 1 to 4
- Small steps progression
- Importance of load management before & after RTP

30-40% = Sedentary people
- Steps 1 & 2, steps 3 & 4
- Very small steps progression
- Importance of becoming active

Ex: Achilles tendinopathy
Is there a place for passive treatments?

- Stretching
- US
- Deep transverse massage
- Osteopathy – manual therapy
- Taping
- Dry needling
- ...

No high scientific evidence

Progressive loading is the main treatment
Conclusion

- Rehabilitation programs after PRP injections for tendinopathy do not really differ from usual tendinopathy rehabilitations.
- The main objective = increase of tendon capacity ➔ progressive loading is the key treatment.
- A progressive 4-stage rehabilitation continuum includes:
  - Analytical progressive loading (isometric and especially eccentrics)
  - Strength training
  - Speed and power training
  - Plyometrics and sport-specific training
- Pain management is a key component for every stage.
- Rehabilitation content and progression have to be individualised.
Thank you for your attention!