



CASE STUDY: Patellar Tendinopathy

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INTRODUCTION

It has been reported that the prevalence of patellar tendinopathy ("Jumper's Knee") in basketball players is approximately 35-40% (Bahr et al., 2005). *Jumper's knee* is an insertional tendinopathy that most commonly affects the origin of the patellar tendon at the inferior pole of the patella (Hoksrud et al., 2007). The following case study demonstrates a multi-faceted approach to managing the jumping athlete with a combined treatment regimen of custom foot orthoses, eccentric exercise, dextrose injections and bracing.

CASE STUDY

History:

A 21 year old male, basketball player (6'4"; 225 lbs) presented to the clinic with a 6-month history of slow onset, inferior patellar pole pain. The pain presented on the dominant side and led to a decrease in vertical jump performance. Performance wise, this athlete was a top jumper and rebounder. When he visited the clinic he was limping and was having difficulty warming up and experienced pain. Pain intensity increased with kneeling and/or stair descent.

At the time of presentation, this gentleman had been icing before and after physiotherapy appointments 4 times per week. He had been wearing a Generation II FX patellar stabilizing brace and custom foot orthoses, and was taking 3 Advil tablets per day.

Physical:

The patient (height: 193cm; weight: 102kg) exhibited:

- Increased Q-angle and squinting patella
- 6cm genu varum
- ITB tightness
- Hip abductor and core weakness
- Mobile, lateral tracking patella
- Positive apprehension sign
- VMO atrophy
- Static rearfoot varus ~ 8 degrees
- Static forefoot varus ~ 10 degrees



Figure 1: Intra-tendinous tears

Testing:

High resolution, ultrasound investigation revealed microtears (Figure 1: longitudinal view; Figure 2: transverse view) and neo vessels in the patellar tendon.



Figure 2: Intra-tendinous tear

Treatment:

This patient-athlete had been wearing soft orthoses with noticeable material fatigue. A *Sport Impact* orthosis was prescribed and a basketball shoe with a 3/4 height heel counter was recommended for increased support. The patient was advised to continue wearing the GII FX patellar stabilizing brace (Figure 3). Exercise prescription and physiotherapy included: 1) an eccentric drop squat program that progressed to single leg squats (Figure 4), 2) core strengthening, and 3) hip abductor strengthening.

In addition, this gentleman received three, 25% dextrose injections, 6 weeks apart. Injections were aimed at primarily the microtears.

CASE STUDY:

Patellar Tendinopathy (cont'd)

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Figure 3: GII FX patellar stabilizer



Figure 5: Eccentric drop squat

Dextrose Injections:

Prolotherapy is becoming a more common method of treating chronic musculoskeletal injuries and involves injecting a small volume of irritant solution at multiple sites on a painful tendon or ligament (Rabago et al., 2005). It has been suggested that osmotic substances (i.e. dextrose) stimulate fibroblastic leading to collagen growth and eventual connective tissue repair (Dagenais et al., 2005).

This type of treatment has been used in sports medicine practice to manage a number of injuries including: 1) Achilles and patellar tendinopathies, 2) lateral and medial epicondylitis, 3) sacroiliac instability, 4) recurrent ankle sprains and joint laxity (Reeves et al., 2003), and plantar fasciitis (Figure 4).



Figure 4: Dextrose injection

Eccentric Drop Squat Program:

One of the more effective exercise programs to strengthen the quadriceps is the Eccentric Drop Squat program.

To perform this exercise, the participant begins by standing with feet shoulder width apart and the center of the kneecap lined up over the second toe (Figure 5, left). Initially in the first week, the patient should perform slow squats at a comfortable speed and within the limits of pain.

In the weeks that follow, the patient will progress to fast drops that involve a rapid drop into a ¼ squat and a slow return to standing upright (Figure 5, right). The key to this exercise is to allow your knees to momentarily collapse and then rapidly contract the quadriceps to stop further collapse.

The general idea is that the exercise protocol progresses gradually over several weeks and is followed by maintenance exercises. Maintenance exercises will help to prevent a recurrence of the injury.

Follow up:

At 6 months, this athlete returned with an 80% improvement in symptoms. He is playing basketball with minimal to no pain, and exhibits minimal pain with stair descent and during jumping tasks. Vertical jump performance had improved by 1.5 inches.