

PATIENT INFORMATION BOOKLET

Patellar Tendonitis

(Jumper's Knee)

Diagnosis, Treatment & Rehabilitation

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Contents

1. Understanding Your Patellar Tendon
2. What Is Patellar Tendonitis (Tendinopathy)?
3. Causes and Risk Factors
4. Symptoms and Diagnosis
5. Treatment Options
6. USS-Guided Injection Therapy
7. Surgical Treatment
8. Rehabilitation Programme
9. Monitoring Your Progress (VISA-P Score)
10. Frequently Asked Questions
11. When to Seek Urgent Help
12. Contact Information
13. References

1. Understanding Your Patellar Tendon

The patellar tendon is a strong, flat band of tissue that connects your kneecap (patella) to the top of your shinbone (tibia). It works together with the quadriceps muscle and quadriceps tendon to form the extensor mechanism of the knee — the system that allows you to straighten your leg, kick, jump, and run.

The patellar tendon is approximately 4–5 cm long and 3 cm wide. It transmits enormous forces during activities such as jumping, where loads of up to 8 times your body weight pass through the tendon. This makes it one of the hardest-working tendons in the body, particularly in athletes who perform repetitive jumping and landing movements.

The tendon attaches at two points:

Structure	Location	Function
Quadriceps muscle	Front of thigh	Generates the force to extend the knee
Quadriceps tendon	Above the patella	Transmits force from muscle to kneecap
Patella (kneecap)	Front of knee joint	Acts as a pulley to increase leverage
Patellar tendon	Below the patella	Transmits force from kneecap to shinbone
Tibial tuberosity	Top of shinbone	Anchor point for the extensor mechanism

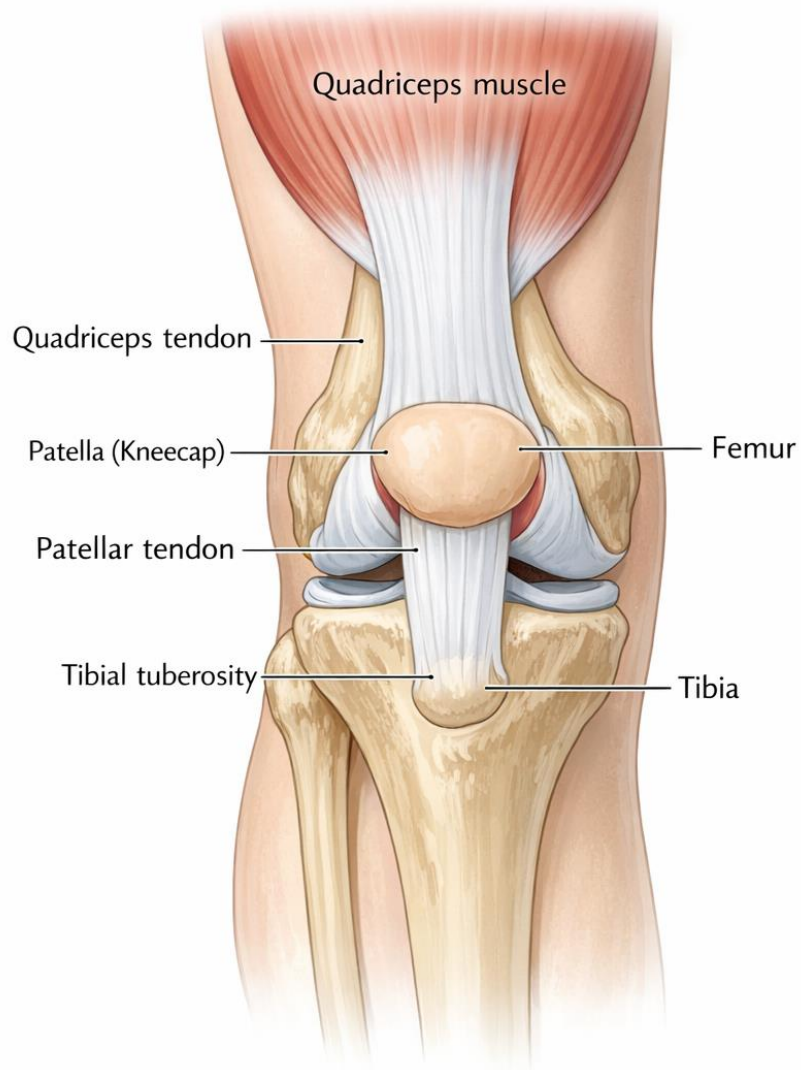


Figure 1: Anatomy of the patellar tendon and extensor mechanism of the knee

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2. What Is Patellar Tendonitis (Tendinopathy)?

Patellar tendonitis — more accurately called patellar tendinopathy — is a condition characterised by pain and dysfunction in the patellar tendon, most commonly at its attachment to the inferior pole (lower tip) of the kneecap. It is often referred to as "jumper's knee" because it is particularly common in sports involving repetitive jumping and landing.

Despite the name "tendonitis" (which implies inflammation), research has shown that this condition is primarily a degenerative process rather than an inflammatory one. The tendon undergoes structural changes including:

Change	Description
Collagen disorganisation	The normally parallel collagen fibres become disordered and lose their regular structure
Neovascularisation	New blood vessels grow into the tendon (normally tendons have very limited blood supply)
Increased ground substance	The matrix between collagen fibres becomes abnormal
Cell changes	Tendon cells (tenocytes) become rounded and more numerous
Tendon thickening	The affected area of tendon becomes swollen and thickened

This represents a failed healing response — the tendon attempts to repair itself but the repair process becomes disordered, leading to a weakened, painful tendon that is unable to tolerate normal loading.

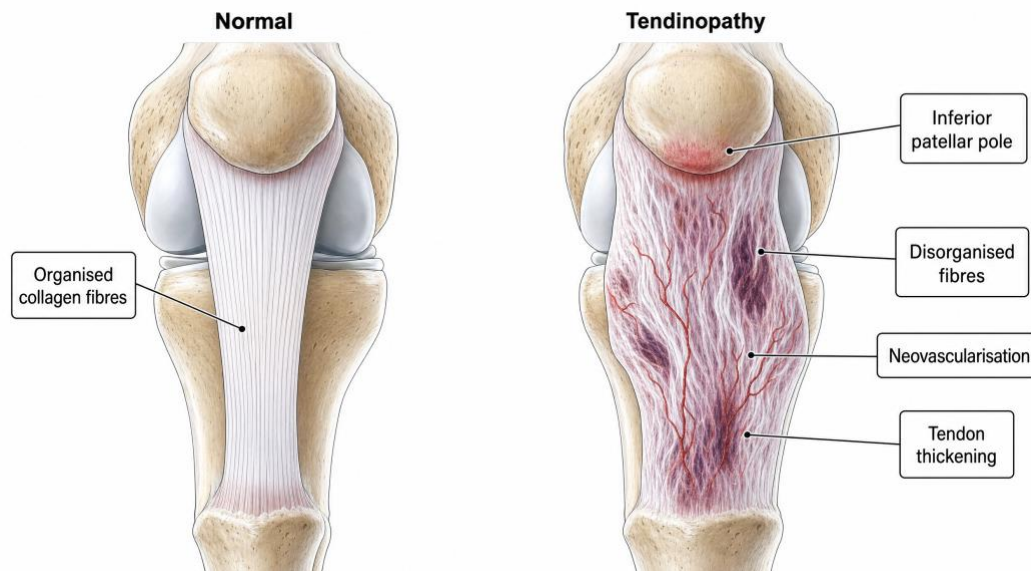


Figure 2: Comparison of normal patellar tendon (left) versus tendinopathy (right) showing collagen disorganisation, neovascularisation, and tendon thickening

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How Common Is It?

Patellar tendinopathy is one of the most common overuse injuries in sport. Research shows prevalence rates of 14–22% in elite athletes overall, rising to 32–45% in volleyball and basketball players. It can also affect non-athletes who perform repetitive loading activities or have sudden increases in activity levels.

3. Causes and Risk Factors

Patellar tendinopathy develops when the tendon is subjected to loads that exceed its capacity to repair and adapt. This is typically a gradual process rather than a single traumatic event. The key contributing factors include:

Category	Risk Factor	Explanation
Training	Sudden increase in volume	Rapid increase in jumping, running, or training frequency
Training	High jump frequency	Sports requiring repetitive jumping (volleyball, basketball)
Training	Hard training surfaces	Increased impact forces on concrete or hard courts
Biomechanical	Quadriceps weakness	Inadequate muscle strength to absorb landing forces
Biomechanical	Reduced ankle dorsiflexion	Limited ankle mobility increases knee loading
Biomechanical	Poor landing mechanics	Stiff landing patterns with excessive knee load
Individual	Male sex	Higher prevalence in males (possibly due to greater training loads)
Individual	Body weight	Higher body mass increases tendon loading
Individual	Previous injury	Prior tendon problems increase recurrence risk

The most important modifiable risk factor is training load management. Sudden spikes in activity — such as returning to sport after a break, increasing training volume rapidly, or changing to a harder playing surface — are the most common triggers for developing patellar tendinopathy.

4. Symptoms and Diagnosis

Typical Symptoms

The hallmark symptom of patellar tendinopathy is well-localised pain at the lower pole of the kneecap. The pain typically follows a characteristic pattern:

Stage	Symptoms	Impact on Activity
Early	Pain only after activity, settles quickly	Minimal — can continue sport
Moderate	Pain at start of activity, warms up, returns after	Some limitation — may affect performance
Severe	Pain during activity that limits performance	Significant — unable to train fully
Advanced	Pain with daily activities (stairs, sitting, walking)	Unable to participate in sport

Other common features include morning stiffness that improves with gentle movement, pain with prolonged sitting ("cinema sign"), pain going up or down stairs, and tenderness when pressing on the lower tip of the kneecap.

How Is It Diagnosed?

Patellar tendinopathy is primarily a clinical diagnosis based on your history and examination. Mr Dehne will assess your knee and may request imaging to confirm the diagnosis and assess severity:

Investigation	What It Shows	When Used
Clinical examination	Localised tenderness at inferior patellar pole, pain with loading tests	All patients
Ultrasound scan (USS)	Tendon thickening, hypoechoic areas, neovascularisation on Doppler	Most patients — first-line imaging
MRI scan	Detailed tendon structure, bone oedema, partial tears	Complex cases or pre-surgical planning

Ultrasound is particularly useful as it can be performed in the clinic, allows dynamic assessment of the tendon, and can guide injection treatment if required.

5. Treatment Options

Treatment of patellar tendinopathy follows a stepwise approach, beginning with conservative (non-surgical) measures. The vast majority of patients improve with appropriate loading-based rehabilitation. Mr Dehne will discuss the most appropriate treatment plan for your individual situation.

Treatment Level	Options	Typical Duration
First line	Activity modification + structured loading programme	3–6 months
Adjunctive	USS-guided injection therapy (PRP or high-volume injection)	In combination with rehabilitation
Adjunctive	Shockwave therapy (ESWT)	3–6 sessions over 6–12 weeks
Surgical	Arthroscopic debridement of degenerate tendon	After 6+ months failed conservative treatment

Activity Modification

The first step is to modify activities that aggravate your symptoms. This does NOT mean complete rest — tendons need loading to heal, but the load must be at an appropriate level. High-energy storage activities (jumping, sprinting, rapid direction changes) should be reduced initially while a structured rehabilitation programme is commenced.

The key principle is: some pain during rehabilitation exercises is acceptable (up to 3/10 on a pain scale), but symptoms should settle back to baseline within 24 hours. If pain is worse the next day, the load was too much and should be reduced.

Patellar Tendon Strap

An infrapatellar strap (worn just below the kneecap) can provide symptomatic relief during activities by offloading the tendon insertion point. This is a useful adjunct during rehabilitation but does not replace the loading programme.

6. USS-Guided Injection Therapy

For patients who have not responded adequately to initial rehabilitation alone, ultrasound-guided injection therapy can be a valuable adjunct to accelerate recovery. Mr Dehne performs these injections under real-time ultrasound guidance to ensure precise needle placement.

Platelet-Rich Plasma (PRP) Injection

PRP involves taking a sample of your own blood, processing it to concentrate the platelets and growth factors, and injecting this concentrated solution directly into the damaged area of tendon. The growth factors stimulate the tendon's natural healing response.

Aspect	Detail
Procedure	Blood drawn → centrifuged → PRP extracted → injected under USS guidance
Duration	Approximately 30 minutes
Anaesthesia	Local anaesthetic to the skin
Number of injections	Typically 1–3, spaced 2–4 weeks apart
Evidence	Significant improvement in VISA-P scores (Barman et al. 2022, van der Heijden et al. 2024)
Recovery	Relative rest for 48–72 hours, then graduated return to loading programme

High-Volume Image-Guided Injection (HVIGI)

This technique involves injecting a large volume of fluid (typically 40ml of local anaesthetic and normal saline) under ultrasound guidance at the interface between the patellar tendon and Hoffa's fat pad. The high volume mechanically disrupts the abnormal new blood vessels (neovascularisation) that are associated with pain in chronic tendinopathy.

Aspect	Detail
Solution	10ml 0.5% bupivacaine + 25mg hydrocortisone + 30ml normal saline
Target	Interface between patellar tendon and Hoffa's fat pad
Mechanism	Mechanical disruption of neovascularisation and associated nerve fibres
Evidence	Effective in chronic recalcitrant cases (Morton et al. 2014, Crisp et al. 2008)
Recovery	Resume loading programme within 5–7 days

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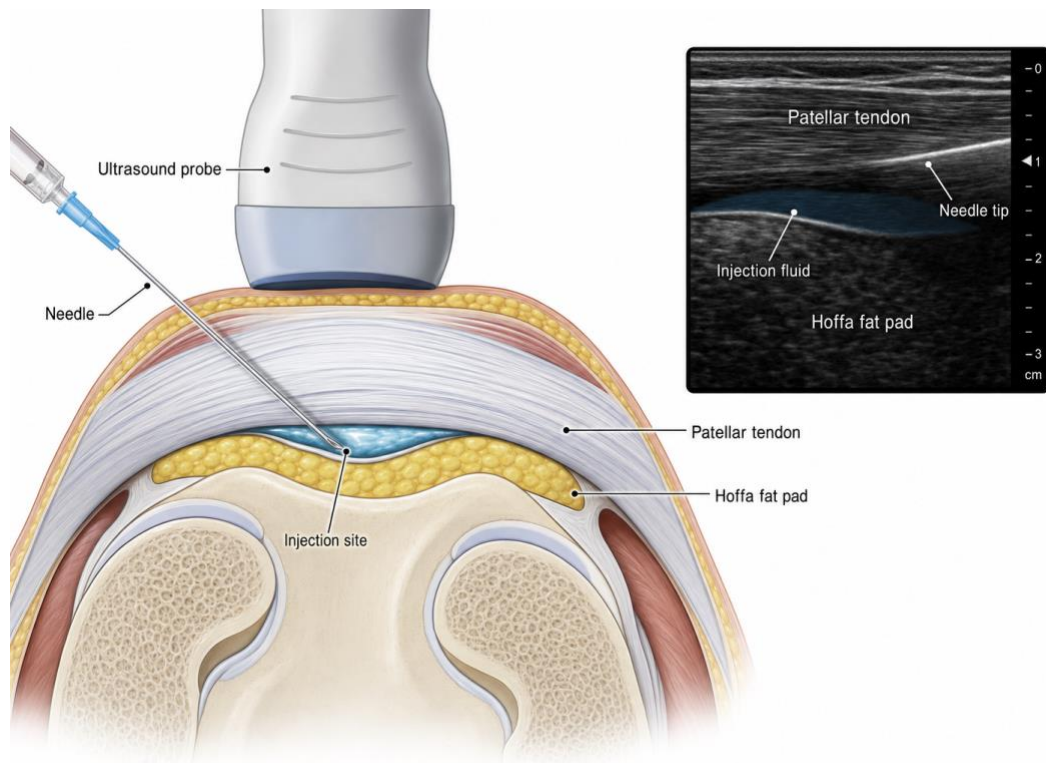


Figure 3: USS-guided injection of the patellar tendon showing ultrasound probe, needle placement, and the target zone between tendon and Hoffa's fat pad

7. Surgical Treatment

Surgery is reserved for patients who have failed to improve after at least 6 months of appropriate conservative treatment including a structured loading programme and injection therapy. Approximately 10–20% of patients with patellar tendinopathy will eventually require surgical intervention.

Arthroscopic Debridement

Mr Dehne's preferred surgical technique is arthroscopic (keyhole) debridement of the degenerate tendon tissue. This minimally invasive approach offers several advantages over traditional open surgery:

Advantage	Detail
Minimally invasive	2–3 small incisions (5mm) rather than a large open incision
Direct visualisation	Camera allows precise identification of abnormal tissue
Selective debridement	Only degenerate tissue removed, healthy tendon preserved
Faster recovery	Earlier return to rehabilitation and sport
Lower complication rate	Reduced infection risk, less post-operative pain

What Does the Surgery Involve?

The procedure is performed under general anaesthesia as a day-case (you go home the same day). Through small keyhole incisions, Mr Dehne uses a camera and specialised instruments to:

1. Inspect the patellar tendon from behind (the deep surface)
2. Identify areas of degenerate, abnormal tendon tissue
3. Carefully debride (remove) the degenerate tissue
4. Resect the inferior pole of the patella if there is bony impingement
5. Stimulate a healing response in the remaining healthy tendon

Surgical Outcomes

Published evidence demonstrates excellent outcomes following arthroscopic treatment of chronic patellar tendinopathy:

Study	Findings
Systematic review (2025)	Success rate >77%, high return-to-sport rates across all surgical techniques
Figuerola et al. (2020)	Significant improvement in IKDC and Lysholm scores, faster recovery with arthroscopic vs open
Brockmeyer et al. (2015)	Arthroscopic resection yields excellent clinical results in chronic cases
Everhart et al. (2017)	Surgical management results in improved outcomes and high return to sport

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8. Rehabilitation Programme

Structured, progressive loading is the cornerstone of treatment for patellar tendinopathy — whether as the primary treatment or following injection therapy or surgery. The programme follows the evidence-based Malliaras 4-stage protocol, which uses a criterion-driven approach (you progress based on achieving specific goals, not fixed timescales).

The key principle throughout rehabilitation is the 24-hour pain monitoring rule: use a single-leg decline squat as a daily pain test. If your pain returns to baseline within 24 hours of an exercise session, the load was tolerated. If pain is worse the next day, the load was too much and should be reduced.

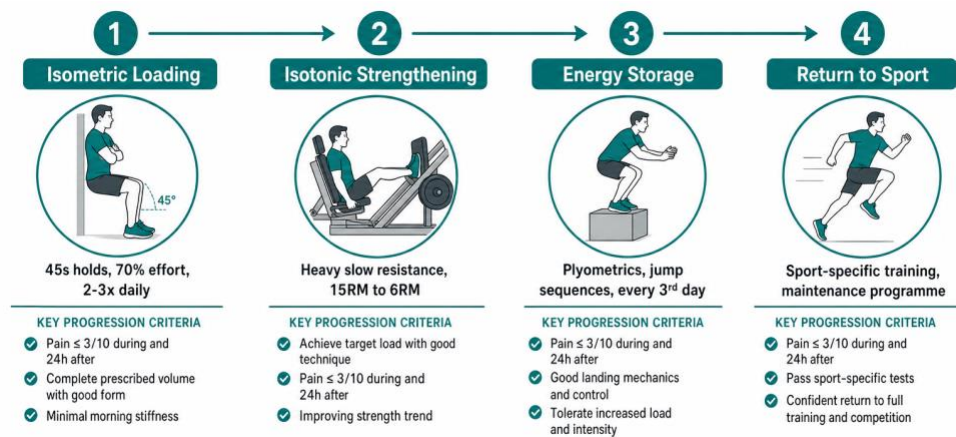


Figure 4: The 4-stage rehabilitation programme for patellar tendinopathy with progression criteria

Stage 1: Isometric Loading (Pain Reduction)

The goal of Stage 1 is to reduce pain and begin loading the tendon in a controlled, pain-free manner. Isometric exercises (holding a position without movement) have been shown to provide immediate analgesic (pain-relieving) effects on the patellar tendon.

Exercise	Prescription	Notes
Isometric knee extension (mid-range)	5 x 45 seconds at 70% effort	Knee at 30–60° flexion
Spanish squat (with strap)	5 x 45 seconds	Lean back against strap, hold position
Wall sit	5 x 45 seconds	Back against wall, knees at 45°
Frequency	2–3 times per day	Can be used pre-activity for pain relief

Progression criteria to Stage 2: Pain ≤ 3/10 during and 24 hours after exercises, able to complete prescribed volume with good form, minimal morning stiffness.

Stage 2: Isotonic Strengthening (Muscle Bulk and Tendon Adaptation)

Once isometric loading is tolerated, the programme progresses to isotonic (through-range) exercises using heavy slow resistance. This builds quadriceps strength and stimulates tendon remodelling.

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Exercise	Prescription	Progression
Leg press	3–4 sets, 15RM → 6RM	Double leg → single leg
Hack squat / Smith squat	3–4 sets, 15RM → 6RM	Increase depth as tolerated
Seated knee extension	3–4 sets, 15RM → 6RM	Range 10–60° initially → 90°+
Split squat	3–4 sets, 15RM → 6RM	Add load progressively
Frequency	Every second day	Stage 1 exercises on alternate days

Progression criteria to Stage 3: Achieve target load with good technique, pain $\leq 3/10$ during and 24 hours after, improving strength trend on testing.

Stage 3: Energy Storage Loading (Power and Load Tolerance)

This stage introduces plyometric (jumping and landing) exercises to prepare the tendon for the high-speed, high-force demands of sport. The tendon must be able to store and release energy rapidly.

Exercise	Prescription	Progression
Bilateral leg press at 3x body weight	Entry test — must achieve before starting	Confirms readiness
Box drops with stop landing	3 sets x 5 reps	Increase height gradually
Countermovement jumps	3 sets x 5 reps	Add distance/height
Single-leg hops	3 sets x 5 reps	Progress to multi-directional
Acceleration/deceleration drills	Sport-specific patterns	Increase speed and complexity
Frequency	Every third day	Continue Stages 1 & 2 on other days

Progression criteria to Stage 4: Pain $\leq 3/10$ during and 24 hours after, good landing mechanics and control, tolerate increased load and intensity without flare-up.

Stage 4: Return to Sport

The final stage involves a graded return to full training and competition. Initially, training should match the volume and intensity of Stage 3 exercises, then progressively increase to meet the demands of your specific sport.

Week	Activity Level	Maintenance
1–2	Modified training (reduced volume, no full matches)	Stage 2 exercises 2x/week
3–4	Full training, limited match play	Stage 2 exercises 2x/week
5–6	Full training and match play	Stage 1 exercises pre/post training
Ongoing	Full unrestricted sport	Maintenance programme 1–2x/week

9. Monitoring Your Progress (VISA-P Score)

The VISA-P (Victorian Institute of Sport Assessment — Patellar Tendon) questionnaire is a validated outcome measure specifically designed to monitor the severity of patellar tendinopathy and track your progress over time. It consists of 8 questions about pain and function, scored from 0 to 100.

Score Range	Interpretation	Typical Stage
0–30	Severe tendinopathy — significant pain and functional limitation	Unable to participate in sport
31–50	Moderate tendinopathy — pain limits activity	Stage 1–2 rehabilitation
51–70	Mild-moderate — improving but still symptomatic	Stage 2–3 rehabilitation
71–85	Mild — near-normal function with occasional symptoms	Stage 3–4 rehabilitation
86–100	Normal or near-normal — asymptomatic or minimal symptoms	Return to sport achieved

Mr Dehne will ask you to complete the VISA-P questionnaire at each clinic visit to objectively track your improvement. A change of 14 points or more represents a clinically meaningful improvement. Your physiotherapist may also use this score to guide progression decisions.

10. Frequently Asked Questions

How long does patellar tendinopathy take to recover?

Recovery typically takes 3–6 months with a structured loading programme. Some patients improve faster, while others with chronic or severe tendinopathy may take 9–12 months. The key is consistent adherence to the rehabilitation programme rather than rushing through stages.

Should I rest completely?

No. Complete rest is not recommended as it leads to tendon deconditioning and muscle weakness. The tendon needs appropriate loading to stimulate healing and adaptation. The goal is to find the right level of activity — enough to stimulate repair without overloading the tendon.

Can I still exercise?

Yes, but you should modify your activities. Avoid high-energy storage activities (jumping, sprinting) initially, but continue with low-impact exercise such as cycling, swimming, and your prescribed rehabilitation exercises. Cross-training helps maintain fitness while the tendon recovers.

Is it safe to exercise with some pain?

Yes. Pain up to 3/10 during rehabilitation exercises is acceptable and does not indicate damage. The key rule is that your pain should return to baseline within 24 hours. If it does, the load was appropriate. If pain is worse the next day, reduce the load.

Will I need surgery?

Most patients (80–90%) recover with conservative treatment alone. Surgery is only considered after at least 6 months of appropriate rehabilitation has failed to produce adequate improvement. If surgery is needed, arthroscopic debridement has excellent outcomes.

Can patellar tendinopathy come back?

Yes, recurrence is possible, particularly if you return to high-load activities too quickly or abandon your maintenance programme. Continuing Stage 2 exercises 1–2 times per week after returning to sport significantly reduces recurrence risk.

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What about cortisone injections?

Cortisone (corticosteroid) injections are generally NOT recommended for patellar tendinopathy. While they may provide short-term pain relief, evidence shows they can weaken the tendon structure and increase the risk of rupture. PRP and high-volume injections are preferred alternatives.

When can I return to sport?

Return to sport is criterion-based, not time-based. You should be able to complete Stage 3 exercises without pain flare-up, have a VISA-P score above 80, and demonstrate good single-leg strength and landing mechanics before returning to full sport.

Do I need to wear a knee brace?

A knee brace is not typically required. However, an infrapatellar strap (worn just below the kneecap) can provide symptomatic relief during activities and is a useful adjunct during rehabilitation.

Is this the same as Osgood-Schlatter disease?

No. Osgood-Schlatter disease affects the growth plate at the tibial tuberosity in adolescents and is a different condition. However, both involve the patellar tendon region and can present with similar symptoms in young athletes.

11. When to Seek Urgent Help

While patellar tendinopathy is not a dangerous condition, there are certain situations where you should seek urgent medical attention:

Warning Sign	Possible Concern	Action
Sudden severe pain with a 'pop' or 'snap'	Possible tendon rupture	Attend A&E immediately
Inability to straighten the knee or lift the leg	Possible tendon rupture	Attend A&E immediately
Visible gap or defect below the kneecap	Tendon rupture	Attend A&E immediately
Significant swelling with redness and warmth	Possible infection (if post-injection)	Contact clinic urgently
Fever following an injection procedure	Possible infection	Contact clinic urgently
Worsening night pain unrelated to activity	Consider alternative diagnosis	Book urgent clinic review

If you experience any of the above symptoms, please contact the clinic immediately or attend your nearest Emergency Department.

12. Contact Information

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For urgent queries outside of clinic hours, please contact the hospital switchboard where your procedure was performed and ask for the on-call orthopaedic team.

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