



30 mm Poly-Tape for Patellar Tendon Reconstruction - Rehabilitation Programme

The patient should be warned not to exceed the prescribed activity levels or to overload the repair before complete healing has occurred.

Please note: Patients are allowed to return to driving when adequate muscle control has been demonstrated.

Immediate post-operative care

- Drain *in situ* for 24 hours, TED stockings will be *in situ*, and no splint worn whilst in bed
- The patient should be instructed to carry out isometric glute and quad contractions 10 repetitions x 8 seconds hold hourly, also ankle circles whilst in hospital bed
- Remember to move non-operated knee into flexion and extension

Day 2

- Drain to be removed (if used)
- A removable splint is used initially for walking
- There is no need for CPM
- Patient provided with elbow crutches and taught 3 point gait (changed to reciprocal gait as soon as patient can manage). Teach heel toe gait, partial weight bearing
- Calf raises in standing, bilateral to begin with 1 repetition maximum
- Active ankle dorsiflexion, 1 repetition maximum
- Clam shell (glut med) 3 x 20 repetitions left and right:
 - Prone lying bent knee lifts, 10 repetitions x 10 seconds hold
 - Isometric buttock squeeze, 10 repetitions x 10 seconds hold
 - Bilateral bridges, 10 repetitions x 10 seconds hold, progressed to unilateral bridges, 10 repetitions x 10 seconds hold
- Terminal resistance band knee extension in standing 20 repetitions
- Hip abduction/adduction in standing with ankle weight/resistance band, 10 repetitions
- Hip hitching off small step 3 x 20 repetitions bilateral
- Hip medial and lateral rotation ROM in standing with resistance band
- Active/auto assisted/passive knee flexion to 45° (or range agreed with surgeon) hourly, 30 repetitions
- Static quads/glutes
- Multiplane hip straight leg raises, 8 repetitions hourly
- Patient taught patellar mobilisation
- Hamstring, hip flexor and triceps surae stretching 5 repetitions x 30 seconds hold

Day 3-7

- Continue with exercise programme (as detailed in Day 2)
- Mobilise hourly. Concentrate on heel-toe gait partial weight bearing
- Rest with leg elevated between times
- Maintain range of motion at knee
- Commence abdominal recruitment exercises ("core exercises")
- Resistance band plantar flexion with knee in extension and knee flexed, 20 repetitions, 4 x per day
- Resistance band dorsiflexion, 20 repetitions, 4 x per day
- Side lying hip abduction left and right 6 - 8 repetitions
- Heel slide into knee flexion
- Bilateral bridges, 10 repetitions x 8 seconds hold
- Continue with patellar mobilisations
- Quads activation with heel press-downs on rolled towel 10 repetitions x 8 seconds hold
- Inner range quads over rolled towel, maximum repetitions
- * If patient struggling to recruit quads then consider electrical stimulation

Day 8-21

- Increase repetitions of all of the exercises
- Commence exercise cycle
- Continue with bilateral heel raises
- Practice walking backwards and sideways with "support" (rails of treadmill or partner if on floor)
- Place ball/rolled towel between knees and squeeze knees together, hold 8 seconds, 8 repetitions

Continued...

Day 8-21 continued

- Commence step ups leading with non-operated leg, 20 repetitions
- Lateral step ups onto 10 cm (4 inch) step, 20 repetitions
- Heel-toe walking to enhance proprioception
- Towards end of week, try to walk with one crutch in opposite hand to operated leg
- Discard crutches when patient has normal reciprocal gait pattern
- Continue with knee flexion range
- Increase standing resistance band inner range knee extension
- Prone lying hip extension, 20 repetitions
- Sutures out around this time. If tissues in good condition commence massage to scar with vitamin E cream
- If wound satisfactory can commence pool work
- Walking in pool with water at waist height; forward, backwards, sideways, on tip toe. Squatting in water
- Discard brace when patient has full terminal knee extension control

Day 22-42

- Carry out heel walking
- Carry out toe walking
- Increase step height for step ups
- Begin balance exercise - bilateral balance eyes open 30 seconds -> eyes closed 30 seconds -> operated leg eyes open -> operated leg eyes closed
- Bilateral bridge 10 repetitions x 10 seconds
- Front plank 60 seconds, 4 x per day
- Commence proprioceptive training:
 - Unilateral standing on floor eyes open 30 seconds, 90 seconds rest, 5 repetitions
 - Unilateral standing on floor eyes closed 30 seconds, 90 seconds rest, 5 repetitions
 - Unilateral standing on rocker board DF/PF eyes open 30 seconds, 90 seconds rest, 5 repetitions
 - Unilateral standing on rocker board DF/PF eyes closed 30 seconds, 90 seconds rest, 5 repetitions
 - Unilateral standing on foam cushion with resistance band exercises to free leg
 - Unilateral standing on floor with reaction to external perturbations from therapist
- Side plank from knees 60 seconds left+right, 4 x per day
- Practice sit to standing from chair, 10 repetitions. Make sure weight is evenly distributed through both feet
- High sitting knee swings into flexion and extension (for mobility)
- High sitting knee extension to inner range towards by week 6 (42 days)
- Slider Slump mobilisation left and right x 30 seconds, 4 x per day
- Continue pool exercises with water at hip height
- Return to driving when adequate muscle control has been demonstrated

Day 43-72

- Commence wall squats to 30°, 3 sets x 20 repetitions
- Supported through range lunges
- Star excursion balance test: front part, progressing to whole test
- Elliptical trainer
- Open kinetic chain hamstring exercises (should produce reflex inhibition for knee flexion range)

Progress to wobble board:

- Unilateral standing eyes open 40 seconds, 2 minutes rest, 5 repetitions
- Unilateral standing eyes closed 40 seconds, 2 minutes rest, 5 repetitions

Progression:

- Patient balances on wobble board and controls balance after external perturbations
- Patient performs functional activities on various surfaces e.g. trampette, foam roller. Increase difficulty by increasing velocity

Day 84 (12 weeks)

- Unilateral leg press to 90° flexion, 20 repetitions
 - Full arc knee extension 0 - 90° 12 repetitions
- * Isokinetic evaluation can be carried out at this stage at slow speeds, e.g. 90°/second

- Commence low level plyometric drills
- Supported bilateral jumps 3 x 20 repetitions
 - > unilateral supported jumps 3 x 20 repetitions
 - > bilateral unsupported jumps 3 x 20 repetitions
 - > unilateral unsupported jumps 3 x 20 repetitions
 - > forward jump and catch 3 x 20 repetitions
 - > forward hop and catch 3 x 20 repetitions
- Commence walk-jog (50% walking/50% jogging) on treadmill with 0.5 km increments
- Add backward running and figure of eight runs
- Progress to jog-run (50% jog/50% run) on treadmill with 0.5 km increments

Return to activity when:

- Patient has improved confidence in knee
- There is no swelling following exercise
- Hamstring strength equal to contralateral side
- Quadriceps strength 70% of contralateral side
- Equal range of knee flexion and extension
- No compensation with squat
- Ability to jog in straight line without compensation
- Equal proprioception

This rehabilitation programme was developed in conjunction with Ian Horsley MSc, MCSP, Clinical Lead Physiotherapist, English Institute of Sport (EIS) North West, of BackinAction Physiotherapy and Sports Injury Clinic, Wakefield, UK.

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