

QuadsTape System™ Rehabilitation Programme

For Quadriceps Tendon Reconstruction

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 removed
- Patient provided with hinged splint for walking locked to predetermined angle set at time of surgery
- Patient provided with elbow crutches and taught 3 point gait (changed to reciprocal gait as soon as patient can manage). Teach heel toe gait
- Calf raises in standing, bilateral to begin with
- Terminal resistance band knee extension in standing, 20 repetitions
- Hip abduction/adduction in standing, 10 repetitions
- Hip medial and lateral rotation ROM in standing
- Glute clams in side lying work to inner range repeat, 10 repetitions left and right
- Active/auto assisted/passive knee flexion to 45° (or range agreed with surgeon) hourly
- Static quads/glutes
- Patient taught patellar mobilization

Day 3-7

- Continue with above programme
- Mobilize hourly, concentrate on heel-toe gait
- Rest with leg elevated between times
- Maintain range of motion at knee
- Commence abdominal recruitment exercises ("core exercises")
- Resistance band plantarflexion 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 slides into flexion
- Continue with patellar mobilizations
- Hamstring and calf stretches hold 30 seconds, 4 x per leg

Day 8-21

- Increase repetitions of all of the exercises.
- Continue with bilateral heel raises
- Practise walking backwards and sideways with support using elbow crutches or brace.
- Begin inner range quadriceps work; place rolled towel under heel and press heel down into towel and contract quadriceps at same time - hold 8 seconds. Repeat x 8
- Place ball/rolled towel between knees and squeeze knees together, hold 8 seconds. Repeat x 8
- Commence step ups leading with non-operated leg, 20 repetitions
- Towards end of week, try to walk with one crutch in opposite hand to operated leg
- 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

Day 22-42

- Begin to increase range of knee flexion approximately 10 - 15° per week. Alter range on brace as needed
- Increase walking with 1 elbow crutch
- Carry out heel walking
- Carry out toe walking
- When knee flexion reaches 90° commence static cycling with minimal resistance for range of movement for 15 minutes, 4 x per day

Continued...

Day 22-42 continued

- 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
- Side plank from knees 60 seconds left and right, 4 x per day
- Practise 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 day 42
- Slider Slump mobilization left and right 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

- Brace and crutches should be discarded if gait is even
- Continue to use bike to increase range of knee flexion
- Femoral nerve mobilization for 30 seconds, 4 x per day
- Commence unilateral bridges, work towards 8 repetitions x 8 seconds hold
- Prone lying knee flexion, hip extension, 8 repetitions x 8 seconds, 4 x per day
- Step downs from 7.5 cm (3 inch) step. Maintain alignment of hip, knee and ankle, 20 repetitions left and right
- Swiss ball asymmetric squats, operated leg forward, 20 repetitions
- Chair sit to stand no hands, weight even, 20 repetitions
- Swiss ball assisted heel raises against wall
- Swiss ball hamstring roll out, 6 repetitions
- Swiss ball bilateral bridges, 10 repetitions
- Bird dog 8 repetitions x 8 seconds hold
- Can use rowing machine/stepper/cross trainer with low resistance
- High sitting inner range hip flexion holds, maintain lumbar lordosis, 8 repetitions x 8 seconds hold
- Once full range of knee flexion has been achieved, commence with increased resistance on exercises
- Quadriceps stretches



Day 84 onwards (week 12)

- Standing lunges: forward, keep knee over middle toe, 12 repetitions left and right
- Free standing squats to 90° knee flexion without weight, 50 repetitions
- Dead lifts supervised, 15 repetitions x 5 sets, 90 seconds rest between sets
- Single leg calf raises, 15 repetitions x 5 sets, 90 seconds rest between sets
- Ab/adduction machine, 15 repetitions x 5 sets, 90 seconds rest between sets
- Weighted step ups/leg press, 15 repetitions x 5 sets, 90 seconds rest between sets
*Leg extension machine to be avoided
- Single leg balance on unstable surface with eyes open 30 seconds -> eyes closed 30 seconds
- Supported bilateral jumps

Progression:

- Bilateral vertical jumps with support. Work towards 3 x 20 repetitions
- Bilateral bounds, small amplitude. Concentrate on quiet, controlled landing. Work towards 3 x 20 repetitions

Look for left/right symmetry:

- Unilateral hops for height: quiet, controlled landing. Progress to tuck jumps
- Unilateral hops for distance: controlled landing. Begin with short distance and “stick” landing (no movement of landing foot and maintaining balance). Jump left and right
- Unilateral lateral hops for distance: control and “stick” landing. Jump left and right

Functional test:

- Triple hop, repeat x 3, distance must be similar left + right
- Commence function training

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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