OS Clinic

Rehabilitation Protocol

Partial Knee Replacement Surgery (PKA)

The following rehabilitation guidelines for PKR are to be progressive and based on achieving goals and step by step criteria. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, associated injuries, pre-injury health status, motivation, rehabilitation compliance and injury severity.

Early post-operative phase (weeks 0-3)

Appointments – Appointments in this phase should be 2-3 times per week with the first appointment being 2-3 days post op.

Rehabilitation goals

5-7 days

- Reduction of oedema
- Home management (ice therapy)
- Regaining quadricep function
- Ability to perform straight leg raise (SLR)
- Increasing ROM
- By 6 – 7 days, increase of ROM to 90degrees flexion

1-3 weeks

- No effusion remaining
- Ability to have full ROM relative to pre-operative ranges but still between 110-120 degrees flexion.
- Gait re-education weight bearing as tolerated WBAT/full WB
- Encourage use of an assistive device until no limping is present, and full extension at heel strike is present

Precautions

1. Use assistive device for normal gait
2. WBAT + wound protection
3. Ensure full ROM into extension and flexion
4. No unilateral leg loading in lunge-like positions for (until 8 weeks)

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IMPORTANT: Monitor wound

If you have any concerns about your wound immediately contact us on:
OS Clinic: 0207 046 8000

- This would include any of the symptoms or observations below:
  - wound leakage – blood or discharge
  - redness around the area
  - excessive or worsening pain
  - raised temperature

- **IMPORTANT: DVT awareness**

If you have any concerns that you may have developed a DVT (deep vein thrombosis) immediately contact us on this number:

- **WARD (please insert):**
- **OS Clinic: 0207 046 8000**

- This would include any of the symptoms or observations below:
  - sudden calf pain and swelling
  - pain, swelling and tenderness in one of your legs (usually your calf)
  - a heavy ache in the affected area.
  - warm skin in the area of the clot.
  - red skin, particularly at the back of your leg below the knee.
  - shortness of breath and chest pain (very rare)

Manage swelling

- Cryotherapy is advised
- **PHYSIOLAB portable S1 device** is the preferred cryo-pneumatic device of OS Clinic. See Appendix B for contact details.

Reduce mobility

- Rest as much as possible
- Limited walking to around the house
- If using crutches, please see appendix A for instructions on advice on their use.

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Rehabilitation outline

- Supine heel slides, gravity assisted flexion sitting at edge of bed
- Supine heel props for gravity assisted extension holds
- Stationary bike full or partial revolutions dependent on ROM, minimal to no resistance
- Quadriceps set, SLR, ankle pumps, hip abduction, short arc quadriceps, standing hip active range of motion (AROM) with and without bands
- If effusion is problematic, quad sets need to be done in elevated position while at home
- Patella mobilizations

Criteria to progress to next stage of rehabilitation

✓ Normal gait with assistive device on level indoor surfaces
✓ No extensor lags
✓ Full proximal hip strength
✓ Double leg squat to 45° knee flexion

Middle phase of rehabilitation (1 – 3 weeks)

This phase of rehab should only begin when all the previous phase criteria is achieved.

Appointments – patient should be seen 1-2 times per week based on progression with HEP

Rehabilitation Goals

- Regain muscular strength (focus on quadriceps)
- Progress off assistive device for all surfaces and distances, if able
- Gait on stairs by 6 weeks
- Knee flexion range at 6 weeks should be at 80-120% of what is expected for final outcome, depending of course on ROM going into surgery
- Double leg sits to stand from chair with no upper extremity assist

Precautions

1. Post-activity soreness should resolve within 24 hours
2. No impact activities

Rehabilitation outline

- Progressions from early post op phase to begin including increased resistance
- Progress ROM exercises with the goal of 80% of full ROM
- Begin neuromuscular re-education to minimize compensatory movements
- Treadmill if tolerable pain free

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- If the incision has closed/healed (normally 4+weeks) hydrotherapy exercises can be added to the rehab
- Stationary bike full or partial revolutions dependent on ROM, progressively increasing resistance

Criteria to progress to next stage of rehabilitation

✓ Regain muscular strength (main focus on quadriceps)
✓ Progress of off assistive devices for all surfaces and distances if able
✓ Double leg sit to stand and with no upper extremity assist
✓ Ability to put sock on in standing
✓ Single leg balance no errors for 15 seconds
✓ Full ROM should be achieved by week 6

Late stage of rehabilitation (Week 6+)

Appointments - based on patient progression should be a follow up session once every 1-3 weeks.

Rehabilitation goals

- Improve muscle strength and endurance
- Good control and no pain will all activities of daily living
- Work specific movements should all be pain free
- Ability to walk a mile with normal gait

Precautions

1. Continued precaution with post activity soreness resolving within 24 hours
2. At this stage no impact activities

Rehabilitation outline

- Strength and balance exercises progresses from previous phase of rehabilitation
    - Double leg exercises to single leg
    - Single leg plane drills to multi plane drills
- Dynamic control exercise beginning with low velocity, single plane activities and progressing to higher velocity also multi plane movements
- Proprioceptive drills with work/sport specific movements
- Progression of hip, glute and core strengthening

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- Non-impact portions of sports are acceptable e.g. static cycling (replicate sports specific demands with non-impact)
- Eight plus week suggested goal of return to lunges versus bodyweight without discernible discrepancy over 5-10 reps
- Single leg squat versus bodyweight x 5-10 reps, or leg press to match unaffected side or within a certain percentage.

Criteria to progress to non-impact sports specific training

✓ Normal gait on all surfaces, including longer distances (1mile)

✓ Dynamic neuromuscular control with multiplane activities without any sign of pain or swelling

✓ No impact work should begin before 6 months post-op

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Suggested outcome measures tests to be used to monitor progression throughout the rehabilitation

Single leg Stance test
Instructions for the Patient
(Eyes Open, SLS)

Stand on one leg, place your arms across your chest with your hands touching your shoulders and do not let your legs touch each other. Look straight ahead with your eyes open and focus on an object in front of you. Ideally do this with the shoes off.

Criteria to stop timing the test

The legs touched each other, the feet moved on the floor, their foot touches down, or the arms moved from their start position.

Instructions for the Patient
(Eyes Closed, SLS)

Stand on one leg, place your arms across your chest with your hands touching your shoulders and do not let your legs touch each other. Close your eyes once you have gotten in position. Ideally do this with the shoes off.

Criteria to stop timing the test:

The legs touched each other, the feet moved on the floor, their foot touches down, the eyes open during the eyes closed test, or the arms moved from their start position.

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Qualitative Analysis of Single Leg Loading

Single leg squat
Single leg step down
Single leg hop for distance

- See page 12 for test descriptions
- Score a zero if the appropriate strategy is used and one for inappropriate movements. (Best overall score is 0, worse is 10 points)

Date:

Patient:

Condition:

Left:

Right:

Bilateral:

QASLS		Left	Right
Arm strategy	Excessive arm movement to balance		
Trunk alignment	Leaning in any direction		
Pelvic plane	Loss of horizontal plane		
Thigh motion	WB thigh moves into hip adduction		
Knee position	Patella pointing towards 2nd toe (noticeable valgus)		
	Patella pointing past inside of foot (significant valgus)		
Steady stance	Touches down with NWB foot		
	Stance leg wobbles noticeably		
	Total:		

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Qualitative Analysis of Single Leg Loading – Test Descriptions

Single leg step down

- Participant stands on a 30cm box
- Instructed to step off the box onto a mark, 30cm from the box and 5cm on the contra-lateral side to the midline

Single leg hop for distance

- Participant stands on mark at side of standard tape measure
- Hands resting on iliac crests
- Attempts to hop as far as possible staying parallel to the tape

Cross Over Hop Test

- Subject stands by two parallel lines 20cm apart extending at least 5m
- Undertakes four consecutive hops without pause crossing the grid lines each time

Star Excursion Balance Test

- Subject stands on leg to be tested in centre of star. Keep heel down.
- Instructed to reach as far as possible down the line without taking undue support from the reaching leg or stepping over onto that leg
- 4 practices then test 5 repetitions

General notes

- All landings for single leg step down and single leg hop for distance must be held for 3 seconds, emphasis during task instruction must be placed on this
- Evaluate all landings using the QASLS scoring system
- For single leg hop for distance also include the distance hopped and the leg length
- Position camera a minimum of 2m from the landing position, zoom in to maximise the size of the subject within the frame
- Allow the subject a minimum of two practice attempts (continuing until they are able to do tasks appropriately) then record a single attempt.

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Appendix A: Use of crutches

- When standing up and sitting down, make sure you take your arms out of the crutches and hold them in one hand. This will help to avoid any shoulder injuries.
- When walking with the crutches, keep the handles pointing forwards and your arms close to your sides.
- Place both crutches forwards together with enough space in between them to step into.
- If you are advised that you are not allowed to put any weight through your injured leg (non-weight bearing), place your crutches forwards together. Now lean through your arms as you hop your uninjured leg up to the same level as the crutches. The foot on your injured leg must stay off the floor at all times when walking.
- If you are advised that you are allowed to weight bear, place the crutches forwards together and then step your injured leg up to the crutches. Now lean through your arms as you step you uninjured leg forwards to the same level.
- When climbing stairs, try to use a banister or rail in one hand and a crutch in the other (you can also carry the extra crutch in this hand):
- GOING UP: Good leg, bad leg, crutch
- GOING DOWN: Crutch, bad leg, good leg.
- Check the rubber stoppers regularly. If they are worn down, bring them back and the physiotherapist will replace them.

Appendix B: Physiolab

Link for hire:

https://physiolab.com/products/to-rent/s1-portable.html

Website:

www.physiolab.com