

RJAH Femoral Condyle Microfracture Rehab Guide

Patient Details:

Co-morbidity:

Note to Therapist:

**This is a guide to progression, not an exhaustive list of rehabilitation and does not replace clinical reasoning.*

**Treat any soft tissue symptoms on their merit.*

**Objective Tests can be used as an indication for progression.*

**Special Instruction(s) includes specific post-operative advice for the individual patient based on their surgeon's recommendation (as applicable). This will be completed on discharge or follow-up clinic appointments.*

**Please note progression will be based in the individual's starting point and goals. For example, if they have not attempted to run for more 12 months prior to the surgery, they might not be able to progress to running by Week 8.*

PHASE OF REHABILITATION	IDEAL CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 1 From Day 1	<ul style="list-style-type: none"> ○ Successful operative outcome. ○ Adequate pain relief. ○ Understands post-op instructions. 	<ul style="list-style-type: none"> • Cryocuff/ Ice. • CPM if available. • Active-assisted and active F and E exercises. • EOR E mobilisations. • H and calf stretches. • Ankle Exercises (e.g. heel raises). • SQ progressing to SLR. • Heel slides (0°-90°). • Co-contraction Q and H. • Prone SLR. • PWB with elbow crutches for comfort. 	<ol style="list-style-type: none"> 1. Reduce inflammation. 2. Gain terminal E. 3. Promote distal circulation. 4. Gradually regain ROM. 5. Increase confidence. 6. Promote early mobility. 		Check if any specific post-op instructions have been given and amend the guide accordingly.

PHASE OF REHABILITATION	IDEAL CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 2 From Week 1	<ul style="list-style-type: none"> ○ Full active and passive E. ○ $\geq 45^\circ$ F. 	<ul style="list-style-type: none"> • Abductor/ Adductor/ Gluteal exercises. • Isometric Q in HE. • Static Bike or Turbotrainer no/low resistance as tolerated (part revolution \rightarrow full revolution as symptoms dictate). • Gradually increase weight-bearing. Progress to one EC by week 5. Earlier progression, if instructed by surgeon. • Contralateral limb strength training 3x per week (continue for 10 weeks) Leg Press, Leg Curl & Leg Ext 3 x 5RM. • Other muscle groups not to be neglected. • Upper body active exercise \rightarrow resis/reps/sets/speed. • Soft tissue mobilisations. • Hydrotherapy. • Early PWB (use parallel bars or deep water) landing drills and plyometrics. 	<ol style="list-style-type: none"> 1. Promote early function. 2. Protect micro# site. 3. Aid joint nutrition. 4. Prevent adhesions. 5. Increase ROM. 6. Improve muscular control. 	<p>AROM.</p> <p>PROM.</p> <p>SLR.</p> <p>Clam.</p> <p>Planks.</p>	

PHASE OF REHABILITATION	IDEAL CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 3 From Week 6 Cont'd overleaf...	<ul style="list-style-type: none"> ○ FWB. ○ SLR no lag. ○ AROM = Full E - $\geq 100^\circ$. ○ Clams 10 reps with 10 sec hold ideal control [L] & [R]. ○ Directional Planks 30 sec hold ideal control. 	<ul style="list-style-type: none"> • Prone auto-over press F \rightarrow develop into Q stretch. • Gait with predictable changes in direction. • Lunges $<45^\circ$ (aim for ideal neuromuscular control). • Bridges (aim for ideal alignment and control). • Core stability exercises as appropriate. • Flexibility exercises as appropriate. • Proprioception \rightarrow single leg stance/wobble boards/Trampette/crash mats/etc. • Step-ups (for/ back/ sideways/ over) \rightarrow height/ reps/ speed. • PWB (parallel bars or deep water) jumps, hops, leaps \rightarrow control technique/speed/reps. 	<ol style="list-style-type: none"> 1. Progress functional activities. 2. Prevent AKP. 3. Prevent scar adherence. 4. Prevent joint stiffness. 5. Restore normal gait pattern. 6. Promote appropriate muscle strength, power and endurance. 7. Improve neuromuscular/ proprioception/ sensorimotor performance. 8. Maintain cardiovascular fitness. 9. Encourage patient compliance. 	<p>AROM.</p> <p>PROM.</p> <p>Single Leg Stance.</p> <p>Single Leg Squat 60°.</p> <p>Effusion.</p>	
		<ul style="list-style-type: none"> • Add speed exercises, e.g. prone heel 			

PHASE 3

From Week 6

Cont'd.

flicks, Trampette high knees, Trampette heel flicks.

Sequence Training:

- Train strength and endurance 3 – 4 x per week.
- Train strength and endurance on separate days.
- Have a minimum of 24 hours between strength days.
- **Strength:**
See appendix; Pages 7 – 8
Adjust if necessary based on symptoms.
- **Hypertrophy:**
See appendix; Pages 7 – 8
Adjust if necessary based on symptoms.
- **Endurance:**
 - Gradually progress toward ≥ 45 min continuous CV exercise (exception of jogging/running).
See appendix; Pages 7 – 8
Adjust if necessary based on symptoms.

PHASE OF REHABILITATION	IDEAL CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 4 From Week 8	<ul style="list-style-type: none"> ○ Normal symmetrical gait ○ AROM = Full E - $\geq 100^\circ$. ○ Single leg stance $\geq 80\%$ parity. ○ Single Leg Squat 60° 5 sec hold with good alignment. ○ No/ minimal effusion. ○ No/ minimal pain. 	<ul style="list-style-type: none"> • Gradually progress from PWB to FWB landing drills and double footed to single footed plyometrics as dictated by neuromuscular control, pain and swelling. • Introduce jogging/ running when strength, neuromuscular control, pain and swelling is adequate. 	<ol style="list-style-type: none"> 1. Promote appropriate strength, power and endurance based on individual's needs. 2. Improve neuromuscular performance. 3. Increase confidence. 	<p>AROM.</p> <p>PROM.</p> <p>5 RM.</p> <p>Vertical Jump.</p> <p>Hop for distance.</p>	
Phase 5 From Week 12	<ul style="list-style-type: none"> ○ No/ minimal effusion ○ Full pain free AROM ○ 5 RM $>80\%$ parity ○ Hop for distance $>80\%$ parity 	<ul style="list-style-type: none"> • Progress from jog \rightarrow run \rightarrow sprint • Add agility drills when sufficient control and confidence is achieved e.g. twist/ turn/ pivot/ cut/ accelerate/ decelerate/ direction. Progress from predictable agility to unpredictable • Advance dynamic proprioceptive exercises e.g. volleying football, throwing, catching, racket and ball while balancing on Trampoline. • Perturbation training e.g. therapist randomly nudges patient off balance during a single leg throw-catch drill. • Sport specific training \rightarrow terrain/ volume/ periodisation. 	<ol style="list-style-type: none"> 1. Prepare neuromuscular and psychological ability to return to unrestricted function. 	<p>As indicated for individuals goals.</p>	

PHASE OF REHABILITATION	IDEAL CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 6 From Month 4+	<ul style="list-style-type: none"> ○ All Tests > 90% parity. ○ <i>Consider parity with normative population data.</i> 	<ul style="list-style-type: none"> • Check and discuss with patient's Consultant prior to RTS. • Earliest return to contact sport training • Progress to full restriction free sports and activities. 	<ol style="list-style-type: none"> 1. Unrestricted confident function. 2. Injury prevention. 	Full sporting function.	

Terminology Key:

Abd	Abduction	[L]	Left
Add	Adduction	OKC	Open Kinetic Chain
AKP	Anterior Knee Pain	PWB	Partial Weight Bear
AROM	Active Range of Movement	PROM	Passive Range of Movement
CV	Cardiovascular	Q	Quadriceps
E	Extension	[R]	Right
Ecc	Eccentric	reps	Repetitions
EOR	End of Range	resis	Resistance
F	Flexion	RM	Repetition Maximum
FWB	Full Weight Bear	ROM	Range of Movement
H	Hamstrings	SLR	Straight Leg Raise
IRQ	Inner Range Quadriceps	SQ	Static Quadriceps
RTS	Return to Sport	MDT	Multidisciplinary Team

Summary of Post-Operative Restrictions (unless stated otherwise):

Activity	Dictated by sufficient neuromuscular control and time from surgery.
Weight bearing	Progress as symptoms allow.
High Impact Activities, e.g. jumps, hops, running.	From Month 2.
Return to full contact sport/ no restrictions	From Month 4, if meets all specific RTS criteria and MDT approval.

Appendix:

Patient Education.

A **repetition maximum** (RM) is the most weight you **can** lift, push, press or curl for a defined number of exercise movements. For example, a 5RM would be the heaviest weight you could lift for 5 consecutive repetitions. What will dictate your RM is muscle fatigue/ weakness, or you are experiencing pain more than 2-3/10 above your normal baseline (10 = worst pain imaginable, 0 = no pain at all), or you are losing technique/ form.

1 – 5 RM will improve Muscle Strength

6 – 10 RM will improve Muscle Hypertrophy

11 – 15+ will improve Muscle Endurance

Sets are a series of reps of an exercise done in sequence (usually with a rest between). For example, 3 x 5 RM would be an exercise you can perform a maximum of 5 consecutive times (see **repetition maximum**), rest and then repeat twice more. Perform **a minimum of two sets** for each exercise.

Progress:

As you progress and the loads you are lifting are getting easier, but not easy enough to increase the weight, increase the volume. For example if you are lifting 5RM for 3 Sets, increase the number of sets. When this starts to feel easier reduce the number of sets and try increasing the weight to ensure you remain in the specific training zone for you.

Recommended Rest times between sets:

1 – 5 RM, 2 min. rest between sets.

6 – 10 RM, 1 min. rest between sets.

11 – 15 RM, 40 sec. rest between sets.

Particularly when you have 2 mins between sets, you might choose to save time and increase your workout intensity by performing a **Superset**. This can be a combination of two or three different exercises that work opposing muscle groups, or upper and lower body, or left and right limbs, and the exercises are done back to back with no rest in between. For example you may choose to switch between the leg press and the chest press. Working on the chest press during the 2 min. rest on the leg press and vice versa.

Single Leg and or Arm exercises will give you an indication of the strength differences between your limbs. It also means the weaker limb cannot be assisted by the stronger limb. If you are performing single limb exercises, make sure the RM is specific for each limb. Remember strengthening your non-injured side will limit the deconditioning of your injured side.

Circuits are a collection of exercise sets you repeat without a rest. A rest will be recommended between circuits rounds.

CV Endurance and Strength training don't mix. If you want to progress your CV work to more than a 20 min moderate session, don't do this in the same session that you strength train. The benefits of the two exercises counteract with each other, meaning you will not strengthen as quickly. If you want to progress you CV do so on a separate day.