

RJAH Meniscal Allograft Transplant 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 the Consultant's recommendation(s). This will be completed on discharge or follow-up clinic appointments.***

PHASE OF REHABILITATION	MINIMUM 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"> • Brace: 0° - 30° Removed for washing. • NWB with EC • Ice/ Cryocuff/ Game Ready or equivalent. • EOR E mobilisations. • H and calf stretches. • Ankle Exercises. • SQ progressing to SLR. • Heel slides (0°-30°). • Prone SLR. 	<ol style="list-style-type: none"> 1. Reduce inflammation. 2. Gain terminal E. 3. Promote distal circulation. 4. Promote early mobility. 		BEFORE DISCHARGE check the op note for any specific post-op instructions and amend the guide accordingly.

PHASE OF REHABILITATION	MINIMUM CRITERIA	REHABILITATION GUIDE	GOALS	OBJECTIVE TEST	SPECIAL INSTRUCTION
PHASE 2 From Week 1	<ul style="list-style-type: none"> ○ Full active and passive E. ○ 30° F 	<ul style="list-style-type: none"> • Abductor/ Adductor/ Gluteal exercises. • Isometric Q. • Other muscle groups not to be neglected • Upper body active exercise→ resis/reps/sets/speed. • Week 2 – 4 Brace 0° – 60° • Week 4 – 6 Brace 0° – 90° • Week 4 – 6 PWB with EC • Contralateral limb strength training 3x per week (continue for 10 weeks) Leg Press, Leg Curl & Leg Ext 3 x 5RM. 	<ol style="list-style-type: none"> 1. Promote early function. 2. Protect meniscal transplant. 3. Aid joint nutrition. 4. Prevent adhesions. 	<p>AROM.</p> <p>PROM.</p> <p>SLR.</p>	

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PHASE 3 From Week 6	<ul style="list-style-type: none"> ○ SLR no lag. ○ AROM = Full E - 90° F. ○ Minimal Pain ○ Minimal Swelling 	<ul style="list-style-type: none"> • Brace allowing Full ROM when mobilising. • Progress to PWB →FWB • Avoid FWB squat beyond 90° F • Gait with predictable changes in direction. • Sit → Stand. • Low step-touch → step-up → step over. • Lunges <45° (aim for ideal alignment and control). • Bridges (aim for ideal alignment and control). • Proprioception → single leg stance/wobble boards/Trampoline/crash mats/etc. • Lower body active exercise (exception of full body weight CKC>90° until Month 4) → resis/reps/sets/speed. • Core stability exercises as appropriate. • Flexibility exercises as appropriate. • Exercise Bike → dist./speed/resis • Rowing → dist./speed/resis. • X-Trainer → dist./speed/resis. • Hydrotherapy (AVOID breaststroke leg kick until Month 6). 	<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>Clams.</p> <p>Planks.</p>	<p>Brace 0°-120° when mobilising.</p> <p><i>Dependant on surgical opinion.</i></p>

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PHASE 3 From Week 12	<ul style="list-style-type: none"> ○ Normal symmetrical gait. ○ AROM = Full E - $\geq 100^\circ$. ○ Single leg stance $\geq 80\%$ parity. ○ Clams 10 reps with 10 sec hold ideal control [L] & [R]. ○ Directional Planks 30 sec hold ideal control. 	<ul style="list-style-type: none"> • Discard brace. • Prone auto-over press F \rightarrow develop into Q stretch. • Step-ups (for/back/sideways/over) \rightarrow height/reps/speed. • PWB (parallel bars, deep water or AntiG) landing drills - jumps, hops, leaps \rightarrow control technique/speed/reps. • From Month 4, through range Leg Press/Squats – if required to meet post-op goals. • Once sufficient control add speed exercises, e.g. prone heel flicks, Trampoline high knees, Trampoline heel flicks. <p><i>Sequence Training:</i></p> <ul style="list-style-type: none"> • 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 8 – 9 Adjust if necessary based on symptoms. • Hypertrophy: See appendix; Pages 8 – 9 Adjust if necessary based on symptoms. • Endurance: See appendix; Pages 8 – 9 • Gradually progress toward ≥ 45 min continuous CV exercise (exception of jogging/running). <p>Adjust if necessary based on symptoms.</p>	<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>Effusion.</p> <p>IKDC</p>	

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PHASE 4 From Month 6+	<ul style="list-style-type: none"> Single Leg Squat 60° 5 sec hold with good alignment. No/ minimal effusion. No/ minimal pain. IKDC ≥ 64 prior to introducing jog/ run 	<ul style="list-style-type: none"> Gradually progress from PWB to FWB and double footed to single footed landing drills and plyometrics as dictated by neuromuscular control, pain and swelling Introduce jogging → running when strength, neuromuscular control, pain and swelling is adequate. 	1. Sport specific function.	AROM. PROM. 5 RM. Hop for distance.	
Phase 5 From Month 7+	<ul style="list-style-type: none"> No/ minimal effusion. Full pain free AROM. 5 RM >80% parity. Hop for distance >80% parity. 	<p>Dependent of patient's goals following counselling on High vs Low risk activities:</p> <ul style="list-style-type: none"> Progress from jog → run → 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 trampette. Perturbation training e.g. therapist randomly nudges patient off balance during a single leg throw-catch drill. Sport specific training → terrain/volume/periodisation. 	1. Prepare neuromuscular and psychological ability to return to unrestricted function.	Vertical Jump. Hop Test Battery. Y Balance Vail Sports Test IKDC. As indicated for individuals goals.	

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PHASE 6 From Month 8+	<ul style="list-style-type: none"> ○ All Tests > 90% parity ○ IKDC ≥ 88 ○ Dependent on Consultant's approval 	<ul style="list-style-type: none"> • Earliest return to contact sport training • Progress to full restriction free sports and activities 	1. Unrestricted confident function 2. Injury prevention	Full sporting function	

Terminology Key:

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

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

Activity	Dictated by sufficient neuromuscular control and time from surgery.
Weight bearing	Day 1 – 4 Week NWB From 6 Weeks PWB → FWB
Range of Movement in brace	Day 1 – Week 2 0° - 30° Week 2 – Week 4 0° - 60° Week 4 – Week 6 0° - 90° Week 6 – Week 12 0° - Full – only required when mobilising
Full body weight squat beyond 90° F	From Month 4+.
Twisting & Turning (including breast-stroke leg kick)	From Month 6+.
High impact activities	From Month 7+.
Return to full contact sport/ no restrictions	From Month 8+, if meets all specific RTS criteria and MDT approval.

High Risk Factors and Sports	Low Risk Factors and Sports
Repetitive impact and cutting	Low impact sports
Contact Sports	Moderate sports participation
Competitive Situations	Non-contact Sports
Playing Position on field	Cycling

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.

Note: Strengthening the contralateral limb limits the deconditioning in the affected limb.

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.