

Mr Patrick Lusty FRCS.
Post-Op Rehabilitation Protocol for ACL Reconstruction

STAGE	AIMS	GOALS	TREATMENT GUIDELINES
Prehabilitation	<ul style="list-style-type: none"> • Prepare the patient for surgery 	<ul style="list-style-type: none"> • Full ROM • Pain free mobile joint • Teach simple post op exercises 	<ul style="list-style-type: none"> • Pre-programming post-operative rehabilitation is beneficial at every level • Patients are better able to manage postoperative exercises if they have learnt them before surgery
Stage I Acute Recovery Day 1 to Day 10-14	<ul style="list-style-type: none"> • Postoperative pain relief and management of soft tissue trauma. • Progress off crutches and normal gait 	<p>Wound healing.</p> <ul style="list-style-type: none"> • Manage the graft donor site morbidity, i.e. pain and swelling. • Decrease joint swelling. • Restore full extension (including hyperextension) • Establish muscle control. 	<ul style="list-style-type: none"> • Decrease swelling & pain with ice, elevation, co-contraction • Partial weight bearing to full weight bearing as pain allows. • Aim for a full range of motion using active and passive techniques. • Patella mobilisations to maintain patella mobility. • Gait retraining with full extension at heel strike <p>Active quadriceps strengthening is begun as a static co-contraction with hamstrings emphasising VMO control at various angles of knee flexion and progressed into weight bearing positions.</p> <ul style="list-style-type: none"> • Gentle hamstring stretching to minimise adhesions. • Active hamstring strengthening begins with static weight bearing co-contractions and progresses to active free hamstring contractions by day 14. • Resisted hamstring strengthening should be avoided for 6 weeks
Stage II Hamstring And Quadriceps Control 2-6 Weeks	<ul style="list-style-type: none"> • To return the patient to normal function. • Prepare the patient for Stage III. 	<ul style="list-style-type: none"> • Develop good muscle control and early proprioceptive skills. • If not done sooner, restore a normal gait. • Reduce any persistent or recurrent effusion 	<ul style="list-style-type: none"> • Progress co-contractions for muscle control by increasing the repetitions, length of contraction and more dynamic positions, e.g. two leg quarter squats, lunges, stepping, elastic cords. • Gym equipment can be introduced gradually such as stepper, leg press, mini trampoline, cross trainer. • If swelling is persistent, continue with ice. • Hamstring strengthening progresses with the increased complexity and repetitions of co-contractions. Open chain hamstring exercises are commenced although often they are painful. • Care must be taken as hamstring straining may occur • Low resistance, high repetition weights aim to increase hamstring endurance. • Continue with intensive stretching exercises. <p>Week 6:</p> <ul style="list-style-type: none"> • Eccentric hamstring strengthening is progressed as pain allows. Hamstring curl equipment can be introduced. • Consider beyond the knee joint for any deficits, e.g. gluteal control, tight hamstrings, ITB, gastrocs and soleus, etc.

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Stage III Proprioception 6-12 weeks	<ul style="list-style-type: none"> • Improve neuromuscular control and proprioception 	<ul style="list-style-type: none"> • Continue to improve total leg strength. • Improve endurance capacity of muscles. • Improve confidence 	<ul style="list-style-type: none"> • Progress co-contractions to more dynamic movements, e.g. step lunges, half squats. • Proprioceptive work more dynamic, e.g. lateral stepping, slide board etc. • Can begin jogging in straight lines on the flat. • Progress resistance on gym equipment such as leg press and hamstring curls. • Hamstring strengthening programme aims for a progression in both power and speed of contraction.. • Consider pelvic and ankle control plus cardiovascular fitness. • Solo sports such as jogging and swimming are usually permitted with little or no restrictions during this stage. • Open chain exercises commence (if no patellofemoral symptoms) 40-90° progressing to 10-90" by 12 weeks • No Cyclical loading until 2 months
Stage IV Sport Specific 12 Weeks To 5 Mont	<ul style="list-style-type: none"> • Prepare to return to sport. 	<ul style="list-style-type: none"> • Incorporate more Sport specific activities. • Introduce agility and reaction time into proprioceptive work. • Increase total leg strength. • Develop patient confidence. 	<ul style="list-style-type: none"> • Progressing of strength work, e.g. half squats with resistance, leg press & curls, wall squats, step work on progressively higher steps, stepper & rowing machine. • Proprioceptive work should include hopping and jumping activities and emphasise a good landing technique. Incorporate lateral movements. • Agility work may include shuttle runs, ball skills, sideways running, skipping, etc. • Low impact and step aerobics classes help with proprioception and confidence. • Pool work can include using flippers. • Sport specific activities will vary for the individual, e.g. Tennis - lateral step lunges, forward and backwards running drills: Skiing - slide board, lateral box stepping and jumping, zigzag hopping; Volleyball or Basketball - vertical jumps.
Stage V Return To Sport 5-6 Months		<ul style="list-style-type: none"> • Return to sport safely and with confidence. 	<ul style="list-style-type: none"> • Continue progression of plyometric and sport specific drills • Return to training and participating in skill exercises. • Continue to improve power and endurance. • Advice may be needed as to the need for modifications to be able to return to sport, E.g. Football - start back training in running shoes or short sprigs. Will usually return to lower grades initially; Skiing - stay on groomed slopes and avoid moguls and off piste initially. Racers may initially lower their DIN setting on the bindings.

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			<p style="text-align: center;"><u>Train in PEP program for warm up to reduce further ACL injury</u></p> <ol style="list-style-type: none">1. Warm-up (50 yards each):<ul style="list-style-type: none">• Jog line to line of soccer field (cone to cone)• Shuttle run (side to side)• Backward running2. Stretching (30 s x 2 reps each):<ul style="list-style-type: none">• Calf stretch• Quadriceps stretch• Figure 4 hamstring stretch• Inner thigh stretch• Hip flexor stretch3. Strengthening:<ul style="list-style-type: none">• Walking lunges (20 yards x 2 sets)• Russian hamstring (3 sets x 10 reps)• Single toe-raises (30 reps on each side)4. Plyometrics (20 reps each):<ul style="list-style-type: none">• Lateral hops over 2 to 6 inch cone• Forward/backward hops over 2 to 6 inch cone• Single leg hops over 2 to 6 inch cone• Vertical jumps with headers• Scissors jump5. Agilities:<ul style="list-style-type: none">• Shuttle run with forward/backward running (40 yards)• Diagonal runs (40 yards)• Bounding run (45-50 yards)
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