

# Common OCD Subsets and Broad Rehabilitation Plans

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## **Purpose**

To guide rehabilitation post surgery for common OCD subsets.

## **Intended Audience**

Physiotherapists and orthopaedic surgeons.

## Common OCD Subsets and Broad Rehabilitation Plans

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**1. Introduction**

Guidelines to assist in the rehabilitation of patient post a broad range of potential surgery aimed at addressing OCD and similar lesions

**2. Guideline Content****Common OCD subsets and broad rehabilitation plans****Rehabilitation considerations following MICROFRACTURE**

Microfracture:

General:- ROM brace commonly extension locked or 0-30 only initially – usual progression is fortnightly – though this will be determined by patient compliance and surgical decision making

Weight bearing

- a. **Condylar lesions**: TWB/NWB with initial 6–8 weeks then progressed to FWB
- b. **Patellar/Trochlear lesions**: PWB progressed to WBAT after 2-8 weeks in knee brace depending on lesion location and patient compliance

ROM Unloaded PROM exercises in ranges tolerated, initially often completed by parent or therapist – not uncommon to simply restrict range if compliance is problematic

## Common OCD Subsets and Broad Rehabilitation Plans

**Rehabilitation for defects on the condyles of the femur or tibial plateau****Phase 1: 0–8 weeks****Goals:**

1. Protect repair
2. Reduce pain and swelling
3. Restore range of motion
4. Improve quads function

The medial and lateral femoral condyles are weight-bearing surfaces, therefore restrict weight bearing status.

Commonly Touch Weight Bearing (TWB) (Note this is **NOT** "**Toe** Touch weight bearing" which tends to encourage mobilisation on a flexed knee) with crutches for approx. 6–8 weeks though this could change depending upon the size and location of the lesion (some thought has been given to 12 weeks of TWB/PWB due to healing times in primates. Smaller lesions in less weight bearing locations and weight bearing may be accelerated, similarly a brace may be considered to limit movement in weight bearing through the affected range.)

**Phase 1 exercise strategies**

1. Static quad sets,
2. Straight leg raises (SLRs),
3. Wall slides (not weight bearing status, also foot knee position is paramount consideration for patella trochlea lesions),
4. Ankle pumps (PF, DF, Inv, Ev)
5. Core stability work.
6. Patellar mobilisations for the avoidance of arthrofibrosis.
7. Hydro?

## Common OCD Subsets and Broad Rehabilitation Plans

**Phase 2: 8–12 weeks****Goals:**

1. Protect repair
2. Manage and pain and swelling
3. Gait re-education (normalise gait)
4. Build muscle endurance (note strength will require higher loads and is not a priority in this phase)
5. Normalise any proprioception deficits
6. Assess and treat muscle length issues

**Phase 2: exercise strategies**

1. Gait training is an early priority. With weight bearing status progressing as the patient weans from crutches and is allowed to bear weight increasing towards FWB.
  - a. Standing weight transfer
  - b. Lateral supported walking
  - c. Heel toe gait reinforcement
  - d. Step overs
    - i. Forwards
    - ii. Backwards
    - iii. Laterally
  - e. Walking backwards
2. Progression on to incline treadmill walking,
3. Interval pool workouts,
4. Elliptical, and bike with resistance (start high cadence low load) are acceptable once gait is normalised, range of motion allows, and pain is controlled well.
5. Muscle endurance sets of the quadriceps, hamstrings, gastrocnemius-soleus complex, and glutes while also to focussing on core stability. Patients should aim for high reps with good eccentric control with each exercise aiming to protect the site. Also remember fatigue; the muscles are less likely to offer protection and exercise in this case may cause damage therefore monitor for quality of movement and also encourage post exercise rest. Once we have established a good endurance base, strength gains can be aimed for.

**While the site is ready to accept greater loads in this phase, overstressing the joint can cause an inflammatory response and hinder the rehabilitation progression. Therefore, watch for the seemingly unaffected or keen to progress patients who will tend to progress themselves too rapidly**

## Common OCD Subsets and Broad Rehabilitation Plans

**Phase 3: 12–16 weeks****Goals**

1. Increase load on the repair site
2. Build strength gains
3. Improve cardiovascular fitness
4. Maintain limited high impact strategies until sufficient muscle control and landing mechanics are demonstrated

**Phase 3 exercise strategies**

1. Build into the program a portion of cardiovascular rehabilitation with increasing intensity with the bike, pool work and elliptical trainer
2. Focus on low impact joint loading teaching early landing mechanics.
3. Commence walking pace agility exercises focusing on controlling the forces going through the knee by using correct form and using the muscles for shock absorption. The aim should be to teach the patient to protect the joint surface by loading the muscles effectively rather than shock loading suddenly, during functional activities.
  - a. First instruct the patient how to control the knee in all planes of motion.
  - b. Second increase the velocity
  - c. Third increase the load
  - d. Forth increase the instability of the supporting surfaces
4. Significant glutes and calf complex exercises (primarily focus should be given to soleus functional strength), alongside eccentric quads should form the basis of any rehab program

## Common OCD Subsets and Broad Rehabilitation Plans

**Phase 4: 16 weeks to return to sport (MINIMUM 24 WEEKS)****Goals**

1. Complete return to run assessment
2. Complete LSI
3. Complete LESS
4. Address any proprioception difficulties
5. Increase the velocity and direction change of the exercises towards a sports specific plan
6. Increase the "chaos" elements

**Phase 4 exercise strategies**

At this point in rehabilitation the repair is likely to be strong, therefore higher-level agility exercises can safely be advanced, provided the patient has sufficient strength and control, and has been assessed as such (see outcome measures recommended above).

Exercises should be structured to allow increasing functional demands loads to be applied to the joint in **preparation** for return to sport.

Drills should aim to be sports specific and replicate the performance demands of the patient's sport (be that rugby, dance or whatever else the patient is working towards.... It is **NOT** a one size fits all strategy)

Rehabilitation in this phase **MUST** attempt to recreate an environment similar to what the athlete will encounter on the field of play. This is currently the best way to ensure the patient is physically and mentally ready to return to full function.

Higher level modified weight training may also be appropriate at this point.

1. Leg press to a maximum of 90°,
2. Hamstring curls,
3. Inner range quads (knee extensions,
4. Squats

Should now be performed with high repetitions and low weights gradually reversing the sets to increasing weight and decreasing reps provided the patient shows sufficient control. Agility drills are progressed towards full speed or 100% throughout this phase and should include deceleration/stop and acceleration drilling. Focussing on knee control and hip/ankle control encouraging dissipation of loads through eccentric loading patterns and improved landing mechanics

Return to full running and, for example, skiing, basketball, and football are considered no earlier than 6–9 months.

It is not uncommon for, sports that with high level requirements for jumping, cutting, pivoting or twisting to require a longer rehabilitation period prior to full return.

Determination of readiness for return to play, however, is a multidisciplinary decision and should be informed by the therapist, armed with information on outcome measures and qualitative assessment, discussion with the surgeon (who will have a better appreciation of the size and location of the lesion & the healing of the microfracture site), whilst the therapist will have a better grasp of the ability of the patient to efficiently use the muscles to absorb forces encountered during these activities.

**Rehabilitation for defects on the trochlear groove or patella**

The process does follow a broadly similar pattern, however there are some differences.

Post-surgery, those patients with defects on the trochlear groove or patella are placed in a brace with ROM restricted from 0° to 30° (or potentially locked in extension initially for up to 3 weeks). The brace is to be worn for the initial 8 weeks (the rationale being that it will limit the ridge of the patella from engaging the trochlear groove this may lead to compression and shearing forces across the site of repair as knee flexion angle increases).

From 8 weeks, the patient is weaned from the brace. Partial weight bearing on the affected extremity is allowed following surgery and this should be progressed to full weight bearing after 2-4 weeks depending on location of lesion and surgeon's decision.

The initial 8 weeks of the rehabilitation process then should follow the same guidelines as those given above. One caveat remains for the remainder of the rehabilitation process, a good knowledge of joint mechanics and forces will be required as careful attention must be given to the joint angles utilised through any strengthening exercises. The aim is to limit joint compression and/or shearing forces at the repair site, the angle at which the patella engages the trochlear groove is avoided for the first 4–6 months during strengthening exercises. Otherwise, progression of rehabilitation follows the same standards as described for microfracture in the femur and tibia.

**Antegrade/ Retrograde Drilling Of OCD And Chondroplasty/ Microfracture**

Weight bearing

- c. **Condylar lesions:** TWB/NWB with initial 6–8 weeks then progressed to FWB
- d. **Patellar/Trochlear lesions:** PWB progressed to WBAT after 2-8 weeks in knee brace depending on lesion location and patient – follow range of motion progressions religiously due to risk to repair site

Phase 1 (minimum 6-8 weeks)	Goals:	Outcome measures	Basic Exercise Strategies	Progression to phase 2
	Protect repair		Static quad sets, (+/- EMS)	
	Reduce pain and swelling	VAS Circumference measurements Sweep & tap	Straight leg raises (SLRs), (+/- EMS)	
	Restore range of motion	Goniometry	Wall slides (note weight bearing status, also foot knee position (Shank angle) is paramount consideration for patella trochlea lesions),	Normally minimum 90 degrees flexion
	Improve quads function	Activation, SQC, SLR	Ankle pumps (PF, DF, Inv, Ev)	SLR preferable but not essential (this may take many weeks to achieve in isolation – quads inhibition is commonplace) Ability to demonstrate some quads control in terminal extension whilst weight bearing is also desirable
	Core stability	Sahrmann's Grading Lunge stability	Core stability work.	
	Patella Mobility		Patellar mobilisations for the avoidance of arthrofibrosis.	
			Hydro?	



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**Weight bearing – commonly FWB from 8 weeks post surgery (note this may mean progressing steadily to FWB once beyond 8 weeks)**

<b>Phase 2 (minimum to 12 weeks)</b>	<b><u>Goals:</u></b>	<b>Outcome measures</b>	<b>Basic Exercise Strategies</b>	<b>Progression to phase 3</b>
	Protect repair			
	Manage and pain and swelling	VAS Circumference measurements Sweep & tap		No swelling through day Pain well controlled (note 0/10 VAS may be desirable but some patient will have residual aching ∴ <2/10 is considered acceptable)
	Gait re-education (normalise gait)	Symmetrical reciprocal gait, even cadence and step length.	Standing weight transfer Lateral supported walking Heel toe gait reinforcement Step overs 1. Forwards 2. Backwards 3. Laterally Walking backwards	Normal gait pattern
	Build muscle endurance (note strength will require higher loads and is not a priority in this phase)	Reps to fatigue Walking distance to fatigue (also note impact of increased function on swelling)	treadmill walking 1. Flat 2. Incline Hydro interval training Elliptical trainer Static bike (low load rapid cadence work) General lower limb muscle endurance work	
	Normalise any proprioception deficits	Joint angle awareness and symmetry		
	Assess and treat muscle length issues	Popliteal angle, calf complex tightness		
<b>The repair site is ready to accept greater loads, but overstressing the joint will cause an inflammatory response hindering rehab progression. Monitor the seemingly unaffected or keen to progress patients who will tend to progress themselves too rapidly and risk damage.</b>				

## Common OCD Subsets and Broad Rehabilitation Plans

<b>Phase 3 (Minimum to 16 weeks)</b>	<b><u>Goals:</u></b>	<b>Outcome measures</b>	<b>Basic Exercise Strategies</b>	<b>Progression to phase 4</b>
	Increase load on the repair site			
	Build strength gains	Dynamometry Oxford scale Reps to fatigue 5 rep max Isokinetics	1. glutes 2. calf complex exercises (primarily focus should be given to soleus functional strength), 3. eccentric quads	
	Improve cardiovascular fitness		CV rehab relevant to sporting goals	
	Maintain limited high impact strategies until sufficient muscle control and landing mechanics are demonstrated	LESS score MyJump2 Optojump	1. low impact joint loading teaching early landing mechanics. 2. walking pace agility exercises focusing on controlling the forces going through the knee by using correct form and using the muscles for shock absorption	
				Complete return to run assessment

**Return to running criteria**

Commonly used timeframes for return to running require respect of biological healing of the graft, there may be variations due to allograft/autograft re-integration, therefore monitor for any adverse effects and do not hesitate to return to earlier rehab phases should any adverse reaction be noted

- VAS <2 (and no significant increase in pain in session)
- no effusion,
- no quads lag
- full active knee extension and RoM of at least 0°
- sufficient flexion range to run effectively (consider >90%)
- normalised gait pattern to progress from early impairment-based rehabilitation
- 2 footed jump land with controlled DVI (LESS <5/15)
- Knee dips with minimal DVI (5 controlled reps from a 20cm box)
- 10 x STS from reasonable height seat
- Step up and hold good balance control (no significant DVI on upwards phase)
- Calf raises (Oxford score = 20 unilateral heel raises for 5/5)
- Ability to hop and control DVI – good landing strategy
- Y balance or SEBT
- If equipment available – quads/hams 85% of non-injured leg
  - Further functional criteria involving the hip may be considered
  - Single leg bridge
  - Side bridge

***These will need re-examining immediately post increase in exercise levels and again the following day***

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Phase 4 (minimum 24 weeks BEFORE return to play)	Goals:	Outcome measures	Basic Exercise Strategies	Progression Return to Play
	Pre injury CV fitness	Complete return to run assessment		
	Good landing mechanics	Complete LSI Complete LESS Optojump/ MyJump2		1. LESS 3/15 2. LSI (if only O.M. available aim op leg >100% vs non op leg) 3. My jump 2 symmetrical
	Symmetrical Strength	1. Dynamometry 2. Isokinetics 3. Oxford scale 4. 1 rep max or 5 rep max	Higher level modified weight training may also be appropriate at this point. 1. Leg press to a maximum of 90°, with graded progression beyond 2. Hamstring curls, 3. Inner range quads (knee extensions) 4. Squats Initially performed with high reps & low weights gradually reversing to increasing weight and decreasing reps <b>provided the patient shows sufficient control.</b>	Symmetrical
	Address any proprioception difficulties	1. OKC joint angle symmetry Ax 2. SEBT		Symmetrical
	Increase the velocity and direction change of the exercises towards a sports specific plan		Agility Drills 1. include deceleration/stop and acceleration drilling 2. Rapid COD work	
	Increase the "chaos" elements		1. Introduce therapist defined direction changes rather than athlete defined 2. Include external focus work 3. Light team training sessions 4. Controlled contact drills	
	Return to full running & for example, skiing, basketball, & football no earlier than 6–9 months post surgery – providing outcome measures indicate patient readiness			

## Common OCD Subsets and Broad Rehabilitation Plans

**Osteochondral autograft transplantation (OATS)/ fresh allograft and cartilage regeneration procedures**

OATS, sometimes referred to by the term “**mosaicplasty**”, is a transplantation of bone plugs utilising their overlying articular cartilage. These plugs are normally harvested from essentially non-weight-bearing areas and then transferring them to the area of the knee where the damaged articular cartilage needs attention. OATS may involve multiple bone plugs of similar or possibly varying sizes. The limitation however will be simply the amount of donor tissue available. Commonly lesions treated with this technique are between 1 and 4 cm<sup>2</sup> and/or in the setting of bone loss

**OATS—post-op rehab guidelines**

Microfracture and chondroplasty both rely on the formation of fibrocartilage, however, OATS attempts restore more native hyaline cartilage to the damaged site. In effectively recreating native articular cartilage, it is hoped that the resiliency of the transplanted tissue (once re-sited and healed) should restore a more normal cartilage base, improving function, reducing or eliminating pain and preventing early degenerative changes.

It is ESSENTIAL that the knee joint is gradually exposed to a controlled force avoiding over stressing the healing tissue, this must be the overarching principle of postoperative rehabilitation. The lesion location, size, depth, the patient, and the surgery will all affect the speed of rehabilitation. A more cautious progression is encouraged when numerous bone plugs have been harvested due to the possibility of joint incongruence.

It is for this reason that any progression through rehab MUST be dictated by **MINIMUM** timeframes and also goal related milestones (i.e., related to functional strength & control gains)

The therapist must have an appreciation of force dynamics and the impacts of anatomy (*for example, in the tibiofemoral joint, knee in full extension will mean, the distal aspects of the femoral condyles will be articulating with the tibia. As the knee moves into knee flexion, those condyles roll posterior and glide anterior, thus shifting the axis of rotation posteriorly, concurrently an anterior shearing force comes into play. In general articulation between the femoral condyles and tibial plateau will be constant and broadly speaking the majority of articular lesions across the femoral condyle will come into play between 30°–70° of knee flexion.*)

Close attention should also be given to rehabilitation in the presence of meniscal damage; the specifics of the meniscal lesion will affect rehab and potentially should mean slowing it since tibiofemoral contact area decreases and contact stress increases. (This remains a controversial aspect of rehab as hoop stresses may well reinforce certain repair types – again the therapist MUST understand the implications of weight bearing status and its effect on tissues involved)

Equally patellofemoral mechanics will play a significant role, the inferior patella articulates with the trochlea at about 10°–20° as the knee flexes. Increasing knee flexion results in the contact area moving proximally across the patella, engagement of the odd facets occur at roughly 30° of flexion. The middle facet of the patellar increases its engagement with the trochlea at 60° whilst the superior facets begin to articulate with the femoral condyles.

The contact area of the patellofemoral joint will continue to increase as the knee is flexed, for example: when the knee is flexed from 30°–90°, the contact area increases (in an adult knee) from 2 cm<sup>2</sup> up to 6 cm<sup>2</sup>.

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Following an OATS procedure **strict non-weight-bearing** is indicated for the first 2 weeks after surgery (protecting the repair is paramount and loosening forces for the plug are extremely low in the early stages of healing)

Providing the patient has sufficient quads control and movement control, progression on to partial weight bearing is permitted **from** the end of the 2<sup>nd</sup> week post operatively, note – larger lesions and more bone plugs may necessitate a delay in increasing weight bearing – be clear in any discussions with the surgeon/read the op note. Animal models have shown that bone plugs are united and strongly integrated by 6 weeks. However, whilst integration may have occurred, there is commonly a gross reduction in graft stiffness even at 6 weeks post op. Progressive increase in weight bearing is commonly encouraged **from** week six to FWB by week eight

In patients with patellofemoral lesions weight bearing as tolerated is commonplace, though with a ranger brace locked in full extension and incrementally increased in range over the next 6 – 8 weeks

Crutches and hinged knee orthosis locked in full extension for all lesions.

### Weight bearing

1. Partial weight bearing is started depending on the location, size, and condition of the recipient site. Two-crutch ambulation with partial weight bearing is allowed at 2 weeks when the site is located posteriorly, or at the patellofemoral joint.
2. When the recipient site is located antero-central partial weight bearing is allowed at
  - a. 2 weeks for a small defect, at
  - b. 3 weeks for a medium-sized defect, and at
  - c. 4 weeks for a large defect.
3. Full weight bearing is allowed by 6 to 10 weeks depending on condition

### ROM

Condylar Lesions (depending on fixation and location)	PFJ Lesions
<b>Week 2 – 90°</b> <b>Week 3 – 100°</b> <b>Week 4 – 110°</b> <b>Week 6 – 120°</b> <b>Surgeon may simply indicate 30 degree increments from terminal extension every fortnight as common progression</b>	Week 2-3– 0-30° Week 4-5– 0-60° Week 6-7– 0-90° Wean brace 2 weeks after achieving 90° flexion

### Strengthening

1. Weeks 0–6: SQC, SLRs-4way, active knee extensions 90–40° for condylar lesions but **NOT** permitted for patellar/trochlear lesions.
2. Weeks 6–12: Condylar lesions: active knee extensions 0–90°
  - a. mini-squats (0–60°) at 8 weeks,
  - b. leg press at 10 weeks (0–90°).
3. Patellar/Trochlear lesions: mini squats (0–45°) at 8 weeks,
  - a. leg press at 10 weeks (0–60°),
  - b. active knee extensions (0–30°) at 12 weeks.

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Weeks 12–26: Leg press, unilateral step-ups, hip exs, progress active knee extensions, static bike, stepper, elliptical/Nordic track machine. It is important not to overload the patellofemoral joint (donor site) **by avoiding squatting and eccentric exercise against heavy resistance for 2–3 months**

**Late stage return to sports no earlier than Weeks 26–52+:**

1. Progress resistance as tolerated,
2. Graded increase in high Impact work customised to patient's needs, control and strength ,<Do not neglect calf control and power>,
3. Straight line running may be permitted **from** 3 months providing they met the criteria for return to running,
4. More heavy sports activity may begin **after** 6 months depending on strength and control.
5. Highly demanding sports such as football, rugby and tennis may be considered from 8 to 12 months after operation.

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**Osteochondral autograft transplantation (OATS)/ fresh allograft and cartilage regeneration procedures**

Any progression through rehab MUST be dictated by goal related milestones/criteria and also **MINIMUM** timeframes

**strict non-weight-bearing** is indicated for at least the first 2 weeks after surgery (**minimum** – any variations will be dictated by fixation stability) Brace locked in extension for all lesions for 1<sup>st</sup> two weeks minimum

Progressive increase in weight bearing is commonly encouraged **from** week six to FWB by week eight (at the earliest)

Repair location	Weight bearing status
Posteriorly or PFJ	<b>PWB</b> - From 2/52 post surgery
Anterio-central	<ol style="list-style-type: none"> <li>1. <b>2 weeks</b> for a small defect, at</li> <li>2. <b>3 weeks</b> for a medium-sized defect, and at</li> <li>3. <b>4 weeks</b> for a large defect.</li> </ol> Discuss with surgeon – if any doubts err on the side of caution and maintain NWB – until advised otherwise

Lesion location	ROM progression
Condylar Lesions	Week 2 – 90° Week 3 – 100° Week 4 – 110° Week 6 – 120 ° Surgeon may indicate 30 degree increments every fortnight as common progressions
PFJ Lesions	Week 2-3– 0-30° Week 4-5– 0-60° Week 6-7– 0-90° Wean brace 2 weeks after achieving 90° flexion



## Common OCD Subsets and Broad Rehabilitation Plans

Phase 1 Up until Minimum 6 weeks post surgery	Goal	Outcome measure	Exercise ideas Condylar lesions:	Exercise ideas PFJ Lesions	Progression to phase 2
	Slow re-introduction of ROM (ROM progressions to be followed as detailed above) Improve quads function	Goniometry	1. SQC, 2. SLRs-4way, 3. active knee extensions 90–40° for condylar lesions but <u>NOT</u> permitted for patellar/trochlear lesions.	ROM dictated by progressions in brace (see above)	
	Protect repair		Caution re-weight bearing, levels of activity and ROM Maintain brace		
	Reduce pain and swelling		PRICE Pain meds	PRICE Pain meds	Normally minimum 90 degrees flexion
				Calf complex strengthening	SLR preferable but not essential (this may take many weeks to achieve in isolation – quads inhibition is commonplace) Ability to demonstrate some quads control in terminal extension whilst weight bearing is also

## Common OCD Subsets and Broad Rehabilitation Plans

					desirable
Phase 2 Up until Minimum 12 weeks post surgery	Goal	Outcome measure	Exercise ideas Condylar lesions:	Exercise ideas PFJ Lesions	Progression to phase 3
	Manage and pain and swelling	VAS Circumference measurements Sweep & tap	P.R.I.C.E.	P.R.I.C.E.	
	Quads Activation Early Muscle strengthening	Patella engagement SLR IRQ to terminal extension	Active knee extensions 0–90° 1. mini-squats (0–60°) at 8 weeks, 2. leg press at earliest 10 weeks (0–90°).	1. mini squats (0–45°) at earliest 8 weeks, 2. leg press at earliest 10 weeks (0–60°), active loaded knee extensions (0–30°) at earliest 12 weeks	No swelling through day Pain well controlled (note 0/10 VAS may be desirable but some patient will have residual aching ∴ <2/10 is acceptable
	Gait re-education (normalise gait)	Symmetrical reciprocal gait, even cadence and step length.	Standing weight transfer Lateral supported walking Heel toe gait reinforcement Step overs 1. Forwards 2. Backwards 3. Laterally Walking backwards	Standing weight transfer Lateral supported walking Heel toe gait reinforcement Step overs 1. Forwards 2. Backwards 3. Laterally Walking backwards	Normal gait pattern
	Build muscle endurance (note strength will require higher loads and is not a priority in this phase)	Reps to fatigue Walking distance to fatigue (also note impact of increased function on swelling)	treadmill walking 1. Flat 2. Incline Hydro interval training Elliptical trainer, Static bike (low load/rapid cadence work) General lower limb work	treadmill walking 1. Flat 2. Incline Hydro interval training Elliptical trainer	
	Normalise any proprioception deficits	Joint angle awareness and symmetry	OKC work Early balance drills	OKC work (unloaded) Early balance drills	
	Assess and treat	Popliteal angle, calf			

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	muscle length issues	complex tightness			
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Phase 3 Up until minimum 24 weeks post surgery			Exercise ideas Condylar lesions:	Exercise ideas PFJ Lesions
	Increase load on the repair site		progress active knee extensions, It is important not to overload the patellofemoral joint (donor site) <b><u>by avoiding squatting and eccentric exercise against heavy resistance for 2–3 months depending on size of graft and patient symptoms</u></b>	progress active knee extensions, It is important not to overload the patellofemoral joint (donor site) <b><u>by avoiding squatting and eccentric exercise against heavy resistance for 2–3 months depending on size of graft and patient symptoms</u></b>
	Build strength gains	Oxford Scale Dynamometry	Leg press, unilateral step-ups, hip exs,	Leg press, unilateral step-ups, hip exs,
	Improve cardiovascular fitness	Exercise tolerance	static bike, stepper, elliptical/Nordic track machine.	static bike, stepper, elliptical/Nordic track machine.

## Common OCD Subsets and Broad Rehabilitation Plans

Phase 4 (minimum 26 weeks BEFORE return to play)	<u>Goals:</u>	Outcome measures	Basic Exercise Strategies	Progression Return to Play
	Pre injury CV fitness	Complete return to run assessment		
	Good landing mechanics	Complete LSI Complete LESS Optojump/ MyJump2		1. LESS 3/15 2. LSI (if only O.M. available aim op leg >100% vs non op leg) My jump 2 symmetrical
	Symmetrical Strength	1. Dynamometry 2. Isokinetics 3. Oxford scale 4. 1 rep max or 5 rep max	Higher level modified weight training may also be appropriate at this point. 1. Leg press to a maximum of 90°, with graded progression beyond 2. Hamstring curls, 3. Inner range quads (knee extensions) 4. Squats Initially performed with high reps and low weights gradually reversing the sets to increasing weight and decreasing reps <b><u>provided the patient shows sufficient control.</u></b>	Symmetrical
	Address any proprioception difficulties	1. OKC joint angle symmetry Ax 2. SEBT		Symmetrical
	Increase the velocity and direction change of the exercises towards a sports specific plan		Agility Drills 1. include deceleration/stop and acceleration drilling 2. Rapid COD work	
	Increase the "chaos" elements		1. Introduce therapist defined direction changes rather than athlete defined 2. Include external focus work	

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			3. Light team training sessions 4. Controlled contact drills	
	<u>Goals:</u>	Outcome measures	Basic Exercise Strategies	Progression Return to Play
	Pre injury CV fitness	Complete return to run assessment		
	Return to full running (sprinting) & for example, skiing, basketball, & football no earlier than 6–9 months post surgery – providing outcome measures indicate patient readiness			

## Common OCD Subsets and Broad Rehabilitation Plans

**Glossary – of common orthopaedic abbreviations**

TWB – touch weight bearing (note this is NOT toe-touch weight bearing!)

AAROM – active assisted range of motion

ACL – anterior cruciate ligament

ALL – anterolateral ligament

AROM – active range of motion

CKC – closed chain knee

COD – change of direction

D/C – discharge

DVI – Dynamic valgus index/dynamic valgus

EMS – Electro muscular stimulation

FWB – full weight bearing

GAPS – gravity assisted positional stretch

IRQ - inner range quads

LCL – lateral collateral ligament

LESS – Landing Error Scoring System

LSI – limb symmetry index

MCL – medial collateral ligament

MWMs – mobilisation with movement

NMT – neuromuscular training

NWB – none weight bearing

OCK – open chain knee

PCL – posterior cruciate ligament

PFJ – patella femoral joint

PROM – passive range of motion

PWB – partial weight bearing

ROM – range of motion

SEBT – Star excursion balance test

SGC – static glutes contraction

SLR – straight leg raise

SQC – static quads contraction

STS – sit to stand

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