THE ORTHOPEDIC CENTER OF ST. LOUIS
Dr. Charles S. Grimshaw, M.D.
JOINT RECONSTRUCTION & SPORTS MEDICINE

Microfracture or Osteochondal Allograft Surgery Rehabilitation

This rehabilitation protocol has been developed for the patient with an arthroscopic microfracture or osteochondral autograft surgery. It is of the utmost importance to protect this patient against high weight bearing forces during the early postoperative period to avoid shearing or disruption of the graft tissues. Early passive range of motion within the allowed range is highly beneficial to enhance the cartilage and the remodeling process. The protocol is divided into phases. Each phase is adaptable based on the individual patient and special circumstances.

The **overall goals** of the surgical procedure and rehabilitation are to:

- Control pain, swelling, and hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern and neuromuscular stability fro ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Achieve the level of function based on the orthopedic and patient Goals

The physical therapy should be initiated within 3 to 5 days post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **Important post-op signs** to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Insufficient lower extremity flexibility

Return to activity requires both time and clinical evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return to activity. Return to intense activities following a carticel procedure may increase the risk of repeat injury or the potential of compounding the original injury. Symptoms such as pain, swelling, or instability should be closely monitored by the patient.

Phase 1: Week 1-8

WEEK	EXERCISE		GOAL
1-8	ROM-Passive		0-90° (wk 4)
	Locked in extension for 5 days)		0-120° (wk 8)
	Femoral condyle defect: 0-45°		
	Trochlear defect: 0-30°		
	Range of motion to increase to reach 0-110° (wk 5 goals based on area of defect as noted by Dr. Grimshaw		
	Gastroc/Soleus stretch		
	Hamstring/ITB stretch		
	Heel/Wall slides to reach goal		
	Patella mobs		
	Ankle pumps		
	STRENGTH		
	Quad/Hamstring/Gluteal sets		
	Multi-angle isometric (0-60°)	wk 4	
	Multi-angle isometric (90-30°)	wk 6-8	
	SLR in all 4 planes as tolerated		
	Hip flexion		
	Selective ROM activity-depending on defect site as noted by Dr. Grimshaw		
	Trochlear repair- only isometric training with quads, NO active motion through range		
	WEIGHT BEARING		
	NWB with crutches		
	WBAT with brace in extension for patella/trochlea		(wk 6-8)
	BRACE		
	Locked at 0° extension for protection		
	MODALITIES		
	E-stim/biofeedback as needed		
	Ice 15-20 minutes		

GOALS OF PHASE:

- ROM 0-120°
- NWB to PWB with one crutch
- Control pain, inflammation, and effusion
- Adequate quad/VMO contraction

Phase 2: Week 8-16

WEEK	EXERCISE	GOAL
8-16	ROM	0-135°
	Passive, 0-135°	
	Patella mobs	
	Gastoc/Soleus stretch	
	Hamstring/ITB stretch	
	Heel/Wall slides to reach goal	
	STRENGTH	
	SLR in 4 planes with ankle wt/tubing	
	Mini-squats (0-30°)	
	Wall squats	
	Initiate 3-6" lateral/forward step-up/downs	
	Leg press (0-60°)/Total Gym	
	Knee extension (90-30°)	
	Hamstring curls (0-90°)	
	Multi-hip machine in 4 planes	
	Heel raise/Toe raise	
	BALANCE TRAINING	
	Weight shift (side-to-side, fwd/bkwd)	
	Initiate single leg balance work	
	Progress to wobble board, ½ foam roller	
	Single leg balance with plyotoss	
	Sportscord balance work	
	WEIGHT BEARING	
	PWB to FWB with quad control	FWB (wk 8)
	BRACE	D/C (wk 6-8)
	Discharge by week 8 or as noted by	
	Dr. Grimshaw	
	AEROBIC CONDITIONING	
	Bicycle when 110° flexion is reached	
	EFX for endurance	
	Treadmill walking with 2-3% incline to reduce joint loads	
	Swimming (as noted by Dr.Grimshaw)	
	MODALITIES	
	Ice 15-20 minutes	

GOALS OF PHASE:

- PWB to FWB with quad control
- ROM 0-135°
- Increase lower extremity strength and endurance
- Control pain and inflammation
- Enhance proprioception, balance, and coordination

Phase 3: Week 16-52

WEEK	EXERCISE
16-52	ROM
	Continue all stretching activities from previous phases
	STRENGTH
	Continue all strengthening activities from previous phases increasing weight and repetition
	Reverse/Lateral lunges
	Straight leg dead lift
	Stool crawl
	BALANCE TRAINING
	Advance to dynamic balance work with different surfaces
	RUNNING/CONDITIONING PROGRAM
	Initiate running on minitramp, progress to treadmill as tolerated in a straight plane
	Initiate jump rope for endurance and impact
	Initiate walking program for endurance
	Swimming (kicking)
	Bicycle for endurance
	Continue to increase time and resistance on the above
	FUNCTIONAL TRAINING
	Initiate light plyometric work
	Initiate lateral movement (shuffle, slide board)
	Initiate sport specific/functional drills at month 6
	Progress into sport training at month 9
	MODALITIES
	Ice 15-20 minutes as needed

GOALS OF PHASE:

- Maintain full range of motion
- Maximize lower extremity strength and endurance
- Initiate sport specific activity
- Initiate functional activity