

OSTEOCHONDRAL AUTOGRAFT (CARTICEL) PROCEDURE REHABILITATION PROTOCOL

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This rehabilitation protocol has been developed for the patient with an osteochondral autograft (carticel) procedure. 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 from 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
Osteochondral Autograft Procedure**

| WEEK | EXERCISE | GOAL |
|-------------|---|---|
| 1-8 | ROM-Passive Femoral condyle defect: 0-45° Trochlear defect: 0-30° Range of motion to increase to reach goals based on area of defect as noted 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°) Multi-angle isometric (90-30°) SLR in all 4 planes as tolerated Hip flexion Selective ROM activity-dependending on defect site as noted by Dr. Lowe <i>Trochlear repair- only isometric training with quads, NO active motion through range</i> WEIGHT BEARING NWB with crutches BRACE Locked at 0° extension for protection MODALITIES E-stim/biofeedback as needed Ice 15-20 minutes | 0-90° (wk 4) 0-110° (wk 5) 0-120° (wk 8) wk 4 wk 6-8 NWB to PWB (wk 6-8) |

GOALS OF PHASE:

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

Phase 3: Week 36-52
Osteochondral Autograft Procedure

WEEK
36-52

EXERCISE

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