

**CARTICEL IMPLANTATION
TROCHLEA REHABILITATION PROTOCOL
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PHASE I - PROTECTION PHASE (WEEK 0-6)

Brace:

Locked at 0 degrees during ambulation and weight bearing activities
Sleep in locked brace for 4 weeks

Weight Bearing:

Immediate partial weight bearing in full extension, as tolerated
Toe Touch Weight Bearing (approx 20-30lbs) at 3 weeks
25% weight bearing with brace locked
50% body weight by week 2 in brace
75% body weight by weeks 3 - 4 in brace

Range of Motion:

Immediate motion exercise day 2
Full passive knee extension immediately
Initiate CPM on day 2, for total of 8-12 hours/day.
CPM set at 0-40 degrees flexion for 2-3 weeks
Progress CPM as tolerated 5 - 10 degrees per day
May continue CPM 6-8 hours/day for up to 6 weeks
Patellar mobilizations (4-6 times per day)
Passive Knee flexion ROM 2-3x/day
Knee flexion ROM goals

Week 2-3	90 degrees
Week 3-4	105 degrees
Week 5-6	120 degrees

Stretch Hamstring and calf

Strengthening Program:

Ankle pump with theraband
Quad Set
Toe - calf raises by week 2
Straight leg raise x4
Stationary bike when ROM allows
Biofeedback and e-stim as needed
Isometric leg press by week 4 (multi angle)
Initiate weight shifts by week 4
May begin pool program for gait training and exercise after week 4

Precautions:

Reduce activities if pain or inflammation occurs

Gradual return to daily activities
Extended standing should be avoided
Use caution with stair climbing
Utilize ice, compression and elevation at home to decrease swelling

Criteria to Progress to Phase II:

Full passive and active knee extension
Minimal pain and swelling
Knee flexion to 115-120 degrees
Voluntary quadriceps activity

PHASE II - TRANSITION PHASE (WEEKS 6-12)

Brace:

Discontinue post-operative brace at week 6 unless specified otherwise by the surgeon

Weight-Bearing:

Progress weight bearing as tolerated

Progress to FWB and discontinue crutches by 6-8 weeks

Range of Motion:

Maintain full passive knee extension

Gradual increase ROM

Progress knee flexion to 120-125 degrees by week 8

Continue patellar mobs and stretching as needed

Strengthening Exercises:

Initiate mini-squats 0 - 45 degrees by week 8

Closed kinetic chain leg press, 0-60 degrees by week 8

Heel Raises

Open kinetic chain knee extension without resistance

Begin knee extension 0-30 degrees then progress to deeper angle (max 0-60 degrees)

Stationary bike with low resistance (gradually increase time)

Stair machine at week 12

Balance and proprioception drills

Forward and lateral step ups

Precautions:

Gradually increase standing and walking time as pain and swelling diminish

Criteria to Progress to Phase III:

Full ROM

Strength Hamstring within 10% - 20% of contralateral leg

Quadriceps within 20% - 30% of contralateral leg

Balance testing within 30% of contralateral leg for single leg stance

Able to walk 1-2 miles or bike for 30 minutes

PHASE III: REMODELING PHASE (WEEK 13 - 32)

Range of Motion:

Should have 125 - 135 degrees flexion

Exercise Program:

Leg press (0 - 60 degrees; progress to 0-90 degrees if no pain)

Squats (0 - 60 degrees)

Step-ups progressing from 2" - 6"

Forward lunge

Walking program on treadmill

Open kinetic chain knee extension (90-40 degrees) - progress 1 lb. every 10 - 14 days if no pain
crepitus - must monitor symptoms

Bicycle

Stair machine, Elliptical machine, ski machine

Swimming

PHASE III CONTINUED

Functional Activities:

As patients improves, you may increase walking (distance, cadence, incline, etc)
Light running can be initiated toward end of phase based on physician evaluation

Maintenance Program:

Initiate by weeks 16 - 20
Bicycle with low resistance, increase time
Progressive walking
Pool exercise for entire lower extremity
Straight leg raises
Leg Press
Heel Raises
Wall Squats (0-45 degrees)
Hip abd/add
Step-ups
Stretching quadriceps and hamstrings

Criteria to Progress to Phase IV:

Full non-painful ROM
Strength within 80% - 90 % of contra lateral extremity
Balance and/or stability within 75% of contra lateral extremity in single leg stance.
Minimal to no pain, inflammation or swelling from exercises or functional activities

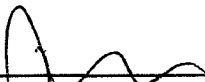
PHASE IV - MATURATION PHASE (8 - 15 MONTHS)

Exercises:

Continue Maintenance program 3-4x/wk
Progress resistance as tolerated
Emphasis on lower extremity strength and flexibility
Progress agility and balance drills
Impact loading program should be specialized to the patient's demands
No jumping or plyometric exercises until 12 months
Progress sport programs depending on patient variables

Functional Activities:

Patient may return to various sport activities as progression in rehabilitation and cartilage he allows.
Generally, low-impact sports such as swimming, skating, in-line skating, and cycling are permitted at about 6 months
Higher impact sports such as jogging, running, and aerobics may be performed at 8 - 9 months for small lesions or 9 - 12 months for larger lesions.
High impact sports such as tennis, basketball, football, and baseball may be allowed at 12 -
**** If, at any time, patient develops extensive crepitus, pain or swelling, must stop the high level activities and inform surgeon**


Physician Signature