

KNEE OSTEOCHONDRAL AUTOGRAFT/ALLOGRAFT TRANSPLANT

Physical Therapy, Strength and Conditioning

PHASE I: MAXIMUM PROTECTION (WEEKS 0 TO 6)

- Brace—none
- Encourage stationary biking with no resistance for 30 minutes 2x/day
- Toe touch weight bearing x 6 weeks

Weeks 0 to 2:

Goals

- Reduce inflammation
- Normalize patella mobility with manual mobilizations
- Full extension both passive and active
- No extension lag with straight leg raise
- 90°–100° of knee flexion, progressing to full as tolerated

Exercise Progression

- Gait training
- Extension—heel props for full extension
- Flexion—off table or wall slides
- Quadriceps setting using NMES as needed
- Multi-plane straight leg raises

Weeks 2 to 6:

Goals

- Reduce inflammation
- Full knee extension/hyperextension
- Good quadriceps control with no extension lag
- 100°–120° of knee flexion, progress as tolerated

Exercise Progression

- Continue with 0-1 week program
- Extension—continue with heel props or add prone hangs (as needed)
- Flexion—wall or heel slides
- Ball bridge and/or isometric hamstring activation

Cardiovascular Exercise

- Stationary biking no resistance

PHASE II: PROGRESSIVE STRETCHING AND EARLY STRENGTHENING (WEEKS 6 TO 12)

Weeks 6 to 8:

Goals

- Progress to 50% partial weight bearing with crutches
- Full knee extension/hyperextension
- Knee flexion to 120°, progress as tolerated
- Normalize patellofemoral joint and scar mobility

Exercise Progression

- Extension—continue with heel props and prone hangs as needed
- Flexion—continue with end range heel slides
- Hamstring activation with bridge on floor, ball or box

Cardiovascular Exercise

- Stationary biking

Weeks 8 to 12:

Goals

- 50% partial weight bearing weeks 8-10, full weight bearing as tolerated weeks 10-12
- Normalize gait mechanics
- Reduce inflammation
- Full ROM

Exercise Progression

- Bilateral squat progression—focus on proper alignment
- Multi-plane open and closed kinetic chain hip strengthening
- Step-up progression—focus on proper alignment
- Hamstring activation with bridge on floor, ball or box
- Progress to unilateral heel raise off the floor then off a step
- Proprioception drills
- Controlled movement series—warm-up
- Leg press, hamstrings curls
- Single leg RDL's

Cardiovascular Exercise

- Increase intensity/duration
- Stationary biking
- Treadmill/outdoor walking with focus on proper gait mechanics
- Arc trainer or elliptical

PHASE III: ADVANCED STRENGTHENING AND ENDURANCE TRAINING (12 TO 24 WEEKS)

Weeks 12 to 24:

Goals

- Control inflammation with increasing loads
- Full knee flexion and extension with terminal stretch
- Progressive strengthening
- Increase muscular endurance

Movement Prep

- Foam roller
- Controlled movement series

Exercise Progression

- Weighted squat progression
- Single leg squat/lunge progression (dips, retro, walk and split), focus on eccentric control and alignment.
- Monster walks

Core Program

- Front plank—full, may advance to alternating leg lift
- Bridge—marching or single leg
- Side plank—full
- Dead bug progression
- Quadruped alternating arm-leg

Cardiovascular Exercise

- Stationary biking
- Treadmill/outdoor walking with focus on proper gait mechanics
- Arc trainer or elliptical

PHASE IV: ADVANCE STRENGTHENING AND RUNNING PROGRESSION (6 TO 12 MONTHS)**Goals**

- Control inflammation with increasing loads
- Progressive strengthening
- Increase muscular strength, power and endurance

Movement Prep

- Foam roller
- Controlled movement series

Exercise progression

- Increasing loads from phase III

Core Program

- Increasing loads from phase III

Non-impact cardiovascular exercise

- Stationary biking
- Arc trainer or elliptical
- Swimming

Running progression

- Basic ladder series—6 months
- Skipping—6 months
- Walk/jog interval—6-9 months
- Linear acceleration/deceleration—6-9 months
- Sprinting—6-9 months
- Change of direction and lateral agility—6-9 months

Jumping Progression (*gradual progression—all 6-12 month)

- Low amplitude bilateral single response jumps
- Bilateral multiple response jumps
- Unilateral single response jumps

Sports Specific Activity Progression

- Non-contact and non-reactive field/court progression—6-12 months

Sports Test and Follow-up with Physician

- Follow-up examination with the physician
- Sports test for return to competition at 9-12 months