



KNEE TIBIAL TUBERCLE OSTEOTOMY ANTERIOR MEDIALIZATION (AMZ) REHABILITATION PROTOCOL

General notes:

"As tolerated" should be understood to include with safety for the reconstruction/repair; pain, limp, swelling, or other undesirable factors are indicators that you are doing too much too soon. If any of these should occur, decrease activity level, ice and elevate the leg.

Ice should be applied to the knee six to eight times per day, and when swelling or pain is present.

Return to sport based on provider team (physician, physician assistant, athletic trainer, therapist) input and appropriate testing.

All times and exercises are to serve as guidelines. Progression through the protocol should be based upon criteria as opposed to dates listed and will vary depending on each individual patient. Progress should be agreed upon by the patient and his/her team of providers.

Post-Operative Phase I: (Weeks 0 - 6)

Brace:

- Week 0 – 4: Use as directed before surgery. Locked in full extension. Worn at all times
- Week 4 – 6: May open 0° - 30° flexion

Crutches/Function:

- Week 0 – 2: Ambulation non weight-bearing, must use two crutches at all times
- Week 2 – 4: Initiate partial weight bearing (15%), continue to use crutches
- Week 4 – 6: May progress to full weight bearing with brace locked at 0°. Or progress partial weight bearing (25%) with brace unlocked using crutches, per MD order

ROM:

- Week 0 – 2: 0° - 90°
- Week 2 – 6: 0° – 110°

Therapeutic Exercises:

- Quad sets, straight leg raises (flexion performed in brace if quad lag is present), ankle and foot stretching and strengthening in non-weight bearing
- Week 4 – 6: Initiate weight shifting

Manual:

- Scar and soft tissue massage, patella mobilizations

Proprioception:

- Week 4 – 6: BAPS in sitting if ROM allows and is pain-free

Cardio:

- UBE (arm bike)

Modalities:

- NMES (neuromuscular electrical stimulation) for quadriceps atrophy, strengthening as needed
- HVPC (high volt pulsed current) for effusion (swelling) reduction as needed
- Cryotherapy six to eight times per day for 15 to 20 minutes each

Progression to Phase II:

- No pain
- ROM: 0° - 110°
- Minimal joint effusion
- Ability to perform straight leg raise in flexion without quadriceps lag
- Full weight bearing with brace locked at 0° or partial weight bearing with brace unlocked using crutches.
- Adequate bone healing determined by MD with x-rays

Post-Operative Phase II: (Week 6 - 10)

Brace:

- Locked 0° – 60° flexion

Crutches/Function:

- Progress from full weight bearing with brace locked to full weight bearing with brace unlocked

ROM:

- Full

Therapeutic Exercises:

- Initiate closed chain exercises: mini squats, step ups, step downs, etc.
- Core strengthening
- Initiate OKC knee strengthening isometrics and isotonic in pain-free ROM

Proprioception:

- SLS, BAPS

Cardio:

- UBE, stationary bike, elliptical

Modalities:

- Cryotherapy after activity for 15 to 20 minutes

Progression to Phase III:

- No pain
- Minimal joint effusion

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- Full weight bearing
- Full ROM
- Isokinetic quad strength 75% of non-involved side
- Isokinetic hamstring strength 75% of non-involved side
- Isokinetic hamstring eccentric strength to quad eccentric strength ratio at least 50%

Post-Operative Phase III: (Week 10 - 12)

Brace:

- Discontinue

Therapeutic Exercises:

- Continue closed chain exercises
- Core strengthening
- OKC strengthening isotonics in pain-free ROM

Proprioception:

- SLS, BAPS, unstable surfaces, progress by adding perturbations

Cardio:

- UBE, stationary bike, elliptical, treadmill walking
- Initiate treadmill running

Plyometrics:

- Double-leg plyometrics progressing to single leg as tolerated

Modalities:

- Cryotherapy after activity for 15 to 20 minutes

Progression to Phase IV:

- Isokinetic quad strength 80% of non-involved side
- Isokinetic hamstring strength 80% of non-involved side
- Isokinetic hamstring eccentric strength to quad eccentric strength ratio at least 66%

Post-Operative Phase IV: (Month 3 – return to sport and function)

Recommend pursuing Transitional Therapy for return to sport activities during this phase

- *Transitional Therapy – a strength and conditioning program that is lead by medical professionals with a sports medicine background with the goal of transitioning from therapy back to sport*
- *Contact Elite Sports Medicine for details*

In addition to ongoing strength, balance, and cardio conditioning, initiate agility drills and sport-specific plyometric activities as tolerated such as:

Soccer/Football: Two foot ankle hop, double-leg hop, front barrier hop, lateral barrier hop, single-leg hop, power skip, backward skip, double-arm alternate-leg bound, and cycled split squat jump

Basketball/Volleyball: Two foot ankle hop, double-leg hop, squat jump, double-leg vertical jump, single-leg hop, single-leg vertical jump, power skip, backward skip, double-arm alternate-leg bound, alternate-leg push off box drill, and side-to-side push-off box drill

Baseball/Softball/Overhead throwing sports: Two foot ankle hop, double-leg hop, front barrier hop, lateral barrier hop, single-leg hop, power skip, backward skip, double-arm alternate-leg bound, cycled split squat jump, and return to throwing program

Return to Sport:

4 - 6 month follow up testing:

- Isokinetic testing to assess strength of hamstring/ quadriceps, jump and hop testing