AQUATIC/LAND BASED CLINICAL PROTOCOL FOR ACHILLES TENDON REPAIR

FREQUENCY: 2-3 times per week.

DURATION: 12-16 post-operative weeks based on Physical Therapy evaluation findings. Continued formal treatment beyond meeting Self-Management Criteria will be allowed when:
   1. Patient out of work or to hasten return to work full duty.
   2. Athlete needs to return to organized athletic program.

DOCUMENTATION: Progress Note to physician at each follow-up appointment. Follow treatment calendar for daily requirements. Discharge Summary within two weeks of discharge.

POST-OPERATIVE EVALUATION (WEEK ONE POST-OP)

GOALS:
1. Evaluation to assess: Gait pattern, active assisted/active range of motion, pain/ inflammation, incisional integrity.
2. Active assisted/Active range of motion of dorsiflexion –20° to 0°.
3. Minimal effusion.
4. Patient oriented to pool program and given information packet.

When patient meets the following SELF-MANAGEMENT CRITERIA estimated at six to twelve weeks post-operatively:
- Normal gait pattern.
- Involved hip/knee active range of motion symmetrical to uninvolved lower extremity.
- Minimal to no effusion.
- No incisional hypersensitivity/adherence.
- Active range of motion as follows: Dorsiflexion 15°, plantar flexion 45°, inversion 30°, eversion 20°.
- 4+/5 to 5/5 hip/knee strength.
- 4+/5 strength of dorsiflexors/invertors/evertors with 4/5 plantar flexors.
- Minimal to no pain with moderate activity.
- Asymptomatic ambulation at a moderate pace X 15-20 minutes.

then patient can be instructed in either home exercise program or program to be performed at a local health club with follow-up appointments every month until discharge criteria has been met. Please refer to handout for home exercise program instructions/exercises.
DISCHARGE CRITERIA (estimated at 4-6 months post-op)

- No effusion.
- Active range of motion as follows: Dorsiflexion 15-20°, plantar flexion 45-50°, inversion 40°, eversion 20°.
- 5/5 foot/ankle strength.
- Able to complete 15 single leg heel raises off a step pain-free.
- Asymptomatic ambulation for 30-45 minutes.
- Failure to progress.
- Failure to comply.

Often times, return to sports activity is a goal after achilles tendon repair. The patient can return to sport when the following criteria has been met:

- Minimum of four months after surgery.
- Full range of motion.
- No swelling.
- Complete walk/jog program.
- One-legged hop test for distance is 85% as compared to uninvolved leg.
- One-legged timed hop test is 85% as compared to uninvolved leg.

--TREATMENT GUIDELINES--

POST-OPERATIVE WEEK 1

GOALS:
1. Active/Active assisted range of motion of dorsiflexion –20° to 0°.
2. Minimal effusion.
3. Independent with home exercise program.

PRECAUTIONS/CONTRAINDICATIONS:
1. Active/Active assisted range of motion to neutral dorsiflexion only.
2. Foot/Ankle to be held in gravity equinus position in a boot at all times except when exercising.
3. Partial weight bearing in boot.

- Active range of motion – Plantar flexion/Dorsiflexion two sets of five repetitions three times daily.
- Initiate self-home flexibility program emphasizing piriformis, iliotibial band, quadriceps, groin, and hamstring.

POST-OPERATIVE WEEK 2

GOALS:
1. Active/Active assisted range of motion of dorsiflexion to 0°.
2. Minimal to no effusion.
3. Independent with home exercise program including incisional mobilization/desensitization techniques.

PRECAUTIONS/CONTRAINDICATIONS:
1. Active/Active assisted range of motion to neutral dorsiflexion only.
POST-OPERATIVE WEEK 2 (continued)

- Active range of motion – Plantar flexion/Dorsiflexion/Inversion/Eversion 2 X 20 repetitions, circumduction both directions 2 X 20 repetitions.
- Edema reduction techniques as indicated with caution for any open wounds.
- Gentle manual mobilization of scar tissue.
- Continue with self-home flexibility program.
- Initiate strengthening program for hip and knee musculature with brace on. Exercises to include multi-hip, seated/standing/prone hamstring curls, and seated leg extension.

POST-OPERATIVE WEEK 3

GOALS:
1. Active/Active assisted range of motion of dorsiflexion to 0-5°.
2. Minimal to no effusion.
4. Minimal restriction of incisional mobility.

PRECAUTIONS/CONTRAINDICATIONS:
1. Progressive partial weight bearing in walker splint, progressing to full weight bearing.

LAND COMPONENT:
- Previous ankle range of motion exercises continued. Gentle passive stretching into dorsiflexion with strap or towel begins.
- Begin stationary bicycle X 7-12 minutes with minimal resistance.
- Continued edema reduction techniques.
- Continue with incision mobilization/desensitization techniques as indicated.
- Continue with self-home flexibility program.
- Continue with self-home strengthening. Can add isometric/Theraband for ankle as outlined above.

WATER COMPONENT:
- Begin non-weight bearing exercises in deep end with support of barbells or ski belt (splits/spreads with inversion/eversion/dorsiflexion/plantar flexion), single/double knee to chest, hula’s, pendulums, bicycling with emphasis on ankle motion.
- Water walking/running for cardiovascular fitness.

POST-OPERATIVE WEEKS 4-6

GOALS:
1. Active range of motion of dorsiflexion to 0-15°, plantar flexion 40-45°, inversion 30°, eversion 15°.
2. Strength of foot/ankle musculature 3+/5 to 4/5.
4. No effusion.
5. Full weight bearing gait without boot and assistive device.

PRECAUTIONS/CONTRAINDICATIONS:
1. Initially as patient comes out of boot, weight bearing as tolerated gait with assistive device and may require large heel wedge.
2. No jumping.
3. No running.
POST-OPERATIVE WEEKS 4-6 (continued)

LAND COMPONENT:
- Gentle cross-fiber massage to achilles tendon to release adhesions between the tendon and paratenon. May add ultrasound, phonophoresis, electrical stimulation for chronic swelling or excessive scar formation.
- Continue with range of motion exercises with greater efforts for increased dorsiflexion with knee at full extension and flexed at 35-40°. May begin standing calf stretch with knee fully extended and flexed at Week 5.
- BAPS board in sitting for range of motion.
- Decrease isometrics to one set of 20 repetitions for inversion/eversion/plantar flexion. Progress to green Theraband inversion/eversion/dorsiflexion/plantar flexion for three sets X 20 repetitions.
- Continue stationary bicycle progressing to 20 minutes with minimal resistance.
- Progress home exercise program for strengthening/stretching.

WATER COMPONENT:
Shallow Water: (May add fin at this phase)
- Begin closed chain activities in chest deep progressing to waist deep water walking forward/backward/sideways.
- Clap unders, clap behinds, four-count walking kicks, straight leg walk, two-legged squats, and gentle heel cord stretching.
- Kickboard exercises – Two-legged push/pull, two-legged push downs with added diagonal if tolerated, BAPS exercises with small kickboard.

Deep Water: (May add fin at this phase)
- Splits/Spreads, corkscrews, single knee to chest, double knee to chest, bicycling, running, gentle running supine to and from prone, sidelying running forward and backward, pendulums, hula's emphasizing all ankle motions with all exercises.

POST-OPERATIVE WEEKS 6-12

GOALS: Meet Self-Management Criteria.

PRECAUTIONS/CONTRAINDICATIONS:
1. No hopping or jumping.

LAND COMPONENT:
- Range of motion exercises further progressed with standing calf stretch.
- Continue flexibility program.
- Continue with balance/proptioception exercises with balance board.
- Initiate treadmill walking/Stairmaster.

WATER COMPONENT:
Shallow Water:
- Continue shallow water exercises in chest deep progressing to waist deep water as outlined.
- Progress to one-legged balance/proptioception exercises.

Deep Water:
POST-OPERATIVE WEEKS 12 TO DISCHARGE

GOALS:
1. Meet Discharge Criteria.

LAND COMPONENT:
- Continue flexibility program as previously outlined.
- Continue strengthening exercises – Toe raises with additional weight; if athlete, up to 1.5 X body weight. Begin single leg toe raises.
- Progress to jogging on a treadmill via run/walk program. Perform steady 20 minute outdoor run before adding figure-eights and agility drills.

WATER COMPONENT:

Shallow Water:
- Increase aggressiveness of aquatic treatment. Begin hopping, bounding, and jumping drills. Sports specific, if appropriate.

Deep Water:
- Increase aggressiveness of deep water exercises – bobbing, adding 180’s and 360’s both directions.
- Squats on kickboard or barbell with 180’s, 360’s, teeters.
- Tethered running.

For advanced exercises, please refer to Advanced Lower Extremity Aquatic Exercise Protocols.