AQUATIC/LAND CLINICAL PROTOCOL FOR MENISCUS REPAIR

FREQUENCY: 2-3 times per week.

DURATION: 4-8 weeks based on Physical Therapy evaluation findings. Continued formal treatment beyond meeting Self-Management Criteria will be allowed when patient out of work or to hasten return to work full duty.

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

PRE-OP (WEEK ONE):
- Pre-operative evaluation and education.

POST-OPERATIVE EVALUATION (WEEK ONE)

GOALS:
1. Evaluation to assess:
   - Gait pattern.
   - Active/Passive range of motion with passive range of motion not to be forced greater than 90° flexion.
   - Patellar mobility.
   - Quadriceps recruitment.
   - Pain/Inflammation.
   - Incisional integrity.

2. Orient patient to pool program and give information packet.

3. Review post-operative exercise program/edema reduction techniques.

Initiate formal rehabilitation 2-3 times per week until Self-Management Criteria has been met. Frequency of weekly appointments will depend on patient's availability, working status, and choice/interest. When patient meets the following SELF-MANAGEMENT CRITERIA (estimated at 4-8 weeks post-operatively):

- Symmetrical hip and ankle active range of motion.
- Knee active range of motion 0-130°.
- Minimal to no limitations in patellar mobility.
- Good voluntary contraction of quadriceps complex particularly that of the vastus medialis oblique.
- Strength of hip and ankle musculature 5/5; knee strength 4+/5.
- Trace to 1+ effusion.
- Incisions healing well; no signs of infection.
- Normal gait pattern.

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
- Knee active/passive range of motion symmetrical to uninvolved knee.
- Minimal to no limitations in patellar mobility.
- No effusion.
- No incisional hypersensitivity or adherence.
- Full squat/kneel pain-free.
- Knee musculature 5/5.
- Initiation of walk/jog program or sports specific functional program without any pain or edema.
- Good understanding and performance of home exercise program.
- Met, or consistently progressing toward, established functional/objective outcomes.
- Failure to progress.
- Failure to comply.

--TREATMENT GUIDELINES--

POST-OPERATIVE WEEKS 1 TO 3

GOALS:
1. Control/Eliminate pain.
2. Minimal to no effusion.
3. Good contraction of vastus medialis oblique.
4. Active range of motion at least 0-90° without pain with flexion.

LAND COMPONENT:
- Modalities as indicated to decrease pain and inflammation.
- Crutches → Weight bearing as tolerated gait with crutches. Wean off crutches when patient can ambulate without a limp.
- Active range of motion as tolerated by patient. Can achieve full active range of motion if tolerated by patient without any pain.
- EMG/NMS for muscle re-education of the quadriceps complex emphasizing the vastus medialis oblique if inhibition noted. Initiate in supine and when patient demonstrates adequate range of motion and progress to multi-angle isometrics at 90°, 60°, and 30°.
- Passive range of motion and manual stretching of hamstrings and calf musculature. Can gently stretch quadriceps with caution not to force past 90° of flexion. Can stretch greater than 90° of flexion if absolutely pain-free.

WATER COMPONENT:
Shallow Water Exercises:
- Warm-up → Walking forward, backward, sideways with emphasis on quadriceps control and symmetry.
- Gait training in water with emphasis on good quadriceps control. May use underwater functional electrical stimulation or underwater EMG on vastus medialis oblique for increased control during gait without flexed knee.
- Stretching of gastrocnemius complex and hamstring. Can gently stretch quadriceps (with/without ankle floatation) with caution not to force past 90° of knee flexion. Can stretch greater than 90° of flexion if absolutely pain-free.
POST-OPERATIVE WEEKS 1 TO 3 (continued)

Shallow Water Exercises (continued):
- PRE’s to include hip flexion/extension, abduction/adduction, heel raises, weight shifting, seated open chain leg extensions on bench from 90° → -30°.
- Balance/Proprioception activities: Weight shifting forward, backward, side to side, progressing to single limb stance. Also, perform clap unders, clap behinds, mini-squats, and straight leg raise walk. Can initiate step-ups and stairs lunges.

Open Chain Deep Water Exercises:
- Deep water walking forward, backward, sideways with barbells or ski belt/wet vest.
- Stretches: Hip flexor/hamstring with floatation cuffs if tolerated.
- Strengthening: Cross-country skiing, jumping jacks, gentle bicycling.

Closed Chain Deep Water Exercises:
- Standing on barbell/kickboard with/without handhold assist of rail.
- Standing on kickboard with upper extremity propulsion.

POST-OPERATIVE WEEKS 4 TO 6

GOAL: Meet Self-Management Criteria.

If meniscus repair done in conjunction with ACL reconstruction, treatment now should be according to Aquatic/Land Clinical Protocol for ACL Reconstruction Rehabilitation. If isolated meniscus repair, continue to follow this Protocol.

LAND COMPONENT:
- Modalities as indicated to reduce inflammation.
- Patellar mobilization as indicated.
- Manual stretching as indicated.
- Can initiate stretching of quadriceps beyond 90° of flexion if indicated.
- EMG/NMS for muscle re-education of the vastus medialis oblique if still indicated.
- Continue with isotonic strengthening program. Can initiate closed chain exercises (i.e. squats, Total Gym, leg press, step-ups, and lunges).
- Initiate stationary bicycle. Low resistance, high cadence.

WATER COMPONENT:

Shallow Water Exercises:
- Continue warm-up with walking and gait training with emphasis on quadriceps control and ambulation without flexed knee (EMG or NMS if indicated).
- Continue with stretching of lower extremity musculature. Can initiate stretching of quadriceps beyond 90° of flexion if indicated (i.e. floatation cuffs, stair lunges).
- Continue PRE’s as indicated. Can begin closed chain, i.e. squats, 4” forward/lateral step-ups, lunges. Can add floatation cuffs if appropriate.
- Continue with balance/propr.ioception → clap unders, clap behinds, straight leg walk, four-count walking kicks, kickboard one-legged balance. Can perform with eyes open and eyes closed.
POST-OPERATIVE WEEKS 4 TO 6 (continued)

Open Chain Deep Water Exercises:
- Stretches if indicated with/without cuffs.
- Strengthening: Splits/Spreads, bicycling, flutter kicking, and gentle running supine to and from prone.

Closed Chain Deep Water Exercises:
- Two-legged squats progressing to one-legged squats on barbell/kickboard.
- Squats on barbell/kickboard with 180/360° turns in both directions.
- Teeters on kickboard or barbell.

POST-OPERATIVE WEEKS 7 TO DISCHARGE

GOAL: Meet Discharge Criteria.

**LAND COMPONENT:**
- Continue with isotonic strengthening program. Initiate plyometric training and sports specific drills.

**WATER COMPONENT:**

Shallow Water Exercises:
- Continue with previously outlined shallow water exercises.
- Add plyometrics on/off step.
- Sports specific/functional exercises if indicated.

Open Chain Deep Water Exercises:
- Continue with stretches if indicated.
- Continue with strengthening, cardiovascular.

Closed Chain Deep Water Exercises:
- Continue with exercises still difficult on land.

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