Ohio Orthopaedics & Sports Therapy, Inc.

PHYSICAL THERAPY PROTOCOL – ACL RECONSTRUCTION

Jeffery A. McMath, MD

PHASE I – MAXIMUM PROTECTION (0-4 weeks post-op)

GAIT

Weight bearing as tolerated with crutches (unless other condition precludes, such as meniscus repair). Knee brace only as needed for comfort. Wean off crutches by 2-3 weeks post-op or when gait is normalized.

RANGE OF MOTION

Extension: Work towards 0^{o} of extension. It is ideal to obtain this by 2-3 weeks post-op. (hyperextension equal to the opposite side not as important)

Flexion: Work to patient's tolerance. Patient should obtain 90^{o} 3 weeks post-op.

Patella Mobility: Therapist and patient mobilize patella in superior/inferior and medial/lateral directions

EXERCISES

No resistance for the following exercises (gravity only):

Quad sets	Knee flexion (standing and prone)
Straight leg raises	Leg extension
Hip abduction	Short arc quads
Hip adduction	Toe raises
Hip extension	Semi-squats
Hip extension w/ flexed knee	

FUNCTIONAL TRAINING

Stationary Bike

Begin approximately 3 weeks post-op for increasing range of motion. Gradually progress time and tension. Try to use a bike with toe clips and emphasize "pull-up". Adjust seat height up or down as necessary for full revolution.

Therapeutic Pool (if available) *Begin approximately 2 weeks post-op*

Walking Forward and backward	Knee flexion
Hip flexion/extension	Toe raises
Hip abduction/adduction	Semi-squats

General Conditioning

Encourage exercise of upper extremities on Nautilus, Universal, Airdyne, or Upper Body Ergometer

MODALITIES

Ice for 10-15 minutes after exercise and periodically throughout the day as needed for control of pain and effusion (iceman/polar care often utilized). Ace Wrap or knee sleeve may also be used as needed for control of effusion. Compression stocking as needed for lower extremity edema.

PHASE II – MODERATE PROTECTION (4-8 weeks post-op)

GAIT

Gait should be normalized (equal stance time, full extension at heel strike and normal flexion during swing phase).

RANGE OF MOTION

Extension: Full motion should have been obtained in Phase I. If not, continue stretching aggressively.
Flexion: Continue stretching until full motion (equal to opposite side) is achieved. This should be done by 12-16 weeks post-op
Patella Mobility: Continue patella mobilization until patella glides freely in all directions (north, south, east, and west).

EXERCISES

Progressive resistance on the following exercises:

Hip abduction	Hip extension w/ flexed knee
Hip adduction	Knee flexion (standing and prone)
Hip extension	Toe raises

No resistance on open chain quadriceps work (eliminate quadriceps lag):

- Straight leg raises
- Leg extension
- Short arc quads

Progressive resistance on closed chain quadriceps work:

Wall sits	Knee extension with Theraband resistance
Step ups	Semi-squats
Leg press	

Isokinetic exercise:

- Isokinetic strengthening for hamstrings only.

FUNCTIONAL TRAINING

Stationary Bike

Continue with progression of time and tension. If bike has toe clips, patient may perform one legged biking. Patient may also ride regular bikes at this time avoiding uneven terrain.

Therapeutic Pool (if available)

Begin advanced pool activities:

Running forward/backward	Lunges
Side-steps	Cariocas
Jumping jacks	Semi-squats (one leg)
Hopping	Swimming *(patient may begin swimming but should avoid extensor thrust/hyperextension and "frog kick" as with breast stroke)*

Stairclimber

Proprioceptive Training

BAPS board or KAT
Balance activites
Drills on mini-trampoline

MODALITIES

Continue to use ice as needed following exercise for control of effusion.

PHASE III – FUNCTIONAL TRAINING (8-16 weeks post-op)

(sometimes varies according to type of graft and individual patient

CRITERIA

Patients should demonstrate normal gait pattern, good quadriceps control and ability to lift at least 10 pounds with hamstrings.

RANGE OF MOTION

Extension: ***RED FLAG*** if not obtained prior to this time
Flexion: Continue stretching for full motion which should be achieved in Phase II or III
Patella Mobility: ***RED FLAG*** if patella mobility not normalized during this phase

EXERCISES

Progressive resistive exercises as listed in Phase II with the addition of the following:
Open chain quadriceps exercises:

Leg Extension
Short arc quads
(Avoid end-range extension with large loads)

Isokinetic Exercises:

Isokinetic quadriceps and hamstring strengthening with anti-shear device. Begin with high velocities (120/sec). Extension effort initially should be sub-maximal

FUNCTIONAL TRAINING

Running

Begin running in pool or on mini-trampoline. Progress to short distance (1/4 mile) on the track on the balls of feet. Add approximately 1/4 - 1/2 mile per week. Add retro-backward running approximately 100 yards for every 1/4 mile forward running.

Sprint Work – Sprint 50 yard distance with gradual warm up and cool down. Gradually build up speed avoiding sudden starts and stops.

Jump Rope

Start with 3-5 minutes and progress to 10-15 minutes with varying footwork.

Shuttle 2000

Bilateral jumps, jump off both and land on involved leg, and unilateral jumps

Skill and Agility Drills
Side-steps
Cariocas/crossover runs
Figure 8's – large (20 yds) and small (10 yds)
Towel jumps – lateral and crossover
Shuttle runs/suicides – alternate forward leg on touch down
One leg hops
Burs start and stop sprints
Cutting
Jumping off trampoline or step on operated leg (lateral, forward, backward)

MODALITIES
Continue to use ice as long as effusion persists

PHASE IV – RETURN TO ACTIVITY – FUNCTIONAL TRAINING (4 ½ - 6 months)
FUNCTIONAL TRAINING
Sports-specific skill and agility drills
Return to sports
Patients should initially return to sports in non-competitive situations and should caution against playing fatigued. Gradual return to competitive sports is indicated at 6 months post-op with the use of a functional brace if desired by patient and physician.

**** Protocol altered to fit the needs of individuals as appropriate****