

Total Knee Replacement

This rehabilitation protocol is designed for patients who have undergone total knee replacement. The protocol is divided into phases. Each phase is adaptable based on the individual patient and special circumstances.

The **overall goals** of the surgical procedure and rehabilitation are to:

- Control pain, swelling, and stiffness
- Regain normal knee range of motion
 - Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
 - Regain normal proprioception, balance, and coordination for daily activities
 - Achieve the level of function based on the orthopedic and patient goals

Physical therapy should be initiated within 2-3 days post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **Important post-op signs** to monitor:

- Excessive swelling of the knee, lower leg, or surrounding soft tissue, wound redness or drainage
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Insufficient lower extremity flexibility

Return to activity requires both time and clinical evaluation. To safely and most efficiently return to normal functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's progress. Early return to intense activities following a knee replacement may increase the risk of an overuse injury and prolong overall recovery.

Phase 1: Week 1-2

WEEK	EXERCISE	GOAL
1-2	ROM	0-90°
	Passive, 0-90°	
	Patellar mobs	
	Ankle pumps	
	Gastroc/soleus stretch	
	Prone hang if needed to reach goal	
	Heel/Wall slides if needed to reach goal	
	STRENGTH	
	Quad sets with E-stim/biofeedback	
	Isometric hip adduction	
	SLR in 4 planes	
	Hip flexion	
	WEIGHT BEARING	
	WBAT according to Dr. Grimshaw	
	Walker for 2-3 weeks post op, then transition to a cane	
	BALANCE TRAINING	
	Weight shift (side/side, fwd/bkwd)	
	MODALITIES	
	E-stim/biofeedback as needed	
	Ice 15-20 minutes	
	Edema control	
	GOALS OF PHASE:	
	· ROM 0-90°	
	· Adequate quad/VMO contraction	

- Independent in HEP
- Control pain, inflammation, and joint swelling
- WBAT unless otherwise instructed by Dr. Grimshaw

Phase 2: Week 2-6

EXERCISE

Patellar mobs

Ankle pumps

Gastroc/soleus/hamstring stretch

Prone hang if needed to reach goal

Heel/Wall slides if needed to reach goal

STRENGTH

Multi-angle isometrics (0-60°)

Quad sets with biofeedback

SLR in 4 planes

Knee extension (90-10°)

Heel raises/Toe raises

Mini-squats (0-30°)

Leg Press-single leg eccentric

Lateral/Forward step-up/down

BICYCLE

May initiate bike when 110° flexion is reached

DO NOT use bike to increase flexion

WEIGHT BEARING

FWB with quad control, assistive devices as needed

MODALITIES

Ice 15-20 minutes

As per therapist discretion

GOALS OF PHASE:

- ROM 0-120°
- Adequate quad/VMO control
- Control pain, inflammation, and effusion
- Full weight bearing
- Increase lower extremity strength and endurance
- Enhance proprioception, balance, and coordination

PHASE 3-WEEK 6-12

ROM 0-120+

HS/Gastroc/Soleus stretch

Patella mobs

STRENGTH

SLR in 4 planes with ankle wt/tubing

Heel raise/Toe raise

Knee extension (90-10°) with resistance

Lateral/Forward step-up/downs

Hamstring curls with resistance (0-90°)

Multi-hip machine in 4 planes

Mini-squats with resistance (0-45°)

AEROBIC CONDITIONING

Bicycle with resistance

Walking program

Swimming (kicking)

Increase walking program

MODALITIES

Ice 15-20 minutes as needed

GOALS OF PHASE:

- ROM 0-120+°
- Full weight bearing with quad control
- Increase strength and endurance

- Control pain and swelling

PHASE 4-WEEKS 12-24

STRENGTH

Continue all strengthening activities from previous phases increasing weight and repetitions

BALANCE TRAINING

Continue all single-leg activities increasing difficulty

Bicycle with resistance for endurance

Increase walking program

Swimming for endurance

FUNCTIONAL TRAINING

MODALITIES

Ice 15-20 minutes as needed

GOALS OF PHASE:

- Increase and maximize function
- Maximize strength and endurance
- Return to previous activity level, achievement of patient stated goals

If any questions or concerns arise during the treatment period, please contact the office (314-336-2555)

Charles Grimshaw MD

Sherri Shoe PA-C