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TOTAL KNEE ARTHROPLASTY TREATMENT PROTOCOL

Goals:

1. Decrease edema and pain
2. Increase range of motion
3. Gait training
4. Independence with activities of daily living

Rehabilitation Program (2-3 weeks)

- Pain and swelling
  - Ice, elevation, compression as needed

- Range of Motion
  - Active-assisted ROM for knee flexion, sitting or supine using other lower extremity to assist
  - Knee extension stretch with manual pressure (in clinic) or weights (at home)
  - Exercise bike (10-15 minutes), to be started with forward and backward pedaling with no resistance until enough ROM for full revolution
  - Progression: lower seat height to produce a stretch with each revolution
  - Alternated ankle dorsiflexion and plantar flexion

- Strength
  - Quad sets, straight leg raises (without knee extension lag), hip abduction (side lying), hamstring curls (standing), sitting knee extension, terminal knee extensions from 45° to 0°, step ups (5-15 cm block), wall slides to 45° knee flexion, 1-3 sets of 10 repetitions for all strengthening exercises
  - Criteria for progression: exercises are to be progressed (i.e. weights, step height) only once the patient can complete and maintain control through 3 sets of 10 repetitions
  - Progression: weights added to exercises, step downs (5-15 cm block), front lunges wall slides towards 90° knee flexion

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• Incision mobility ➢ Soft tissue mobilization until incision moves freely over subcutaneous tissue
• Functional activities ➢ Gait training with assistive device, as appropriate, with emphasis on heel strike, push off at toe off, and normal knee joint excursions ➢ Emphasis on heel strike, push off at toe off, and normal knee joint excursions when able to walk without assistive device ➢ Stair ascending and descending, step over step when patient has sufficient concentric/eccentric strength
• Cardiovascular exercise ➢ 5 minute of upper ergometer until able to pedal full revolutions ➢ Progression: duration of exercise progressed up to 10-15 mins as patient improves endurance; increase resistance as tolerated
• Monitoring vital signs ➢ Blood pressure and heart rate monitored at initial evaluation and as appropriate

Generally Accepted Functional Activities

0-4 weeks	Walker to crutches to cane WBAT
2-3 weeks	Stationary bike for ROM
6 weeks	Stationary bike for exercise
7 weeks	Water jogging
8 weeks	Swim with fins
8 weeks	Elliptical
12 weeks	Golf and outdoor biking

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"Allowed Activities" Following TKA

- Low impact aerobics
- Stationary bicycling
- Bowling
- Golf
- Dancing
- Horseback riding
- Croquet
- Walking
- Swimming
- Shuffleboard
- Horseshoes

"Allowed with Experience" Following TKA

- Road bicycling
- Canoeing
- Hiking
- Rowing
- Cross-country skiing
- Speed walking
- Tennis
- Weight machines
- Ice skating

"Not Allowed" Following TKA

- Racquetball
- Squash
- Rock climbing
- Soccer
- Single tennis
- Volleyball
- Football
- Gymnastics
- Lacrosse
- Hockey
- Basketball
- Jogging
- Handball

Time frame for return to athletics

- 10% of American Association of Hip and Knee Surgeons allowed return to sports in the first 3 months
- TKA should avoid athletic activities until the quadriceps and hamstring muscles are rehabilitated

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OTHER TIPS FOR ACTIVE SENIORS

1. Find a routine, stay consistent with it.
2. Find a workout partner.
3. Set goals.
4. Allow time to recover if aches and pains do not go away like they did when you were 30.
5. Interval training can stimulate growth hormone and testosterone production maintaining low back muscles.
6. Do not give up the strength training as it will keep your low back muscles and keep a strong core and leg strength which is vital to ADL and sport success and reduce falls.
7. Keep performing balancing exercise (i.e. Pilates, yoga).

Suggested therapy treatment interventions/activities

1. Modalities for pain control, edema reduction
    - Moist heat
    - FES
    - TENS
    - Ice
    - Interferential
    - Kinesiotaping
    - Lymphedema technique
    - Galvanic stimulation
2. Therapeutic exercise
    - Passive, active-assisted, active lower extremity range of motion
    - Contract/relax exercises
    - Isokinetics for passive knee range of motion
    - Joint mobilization to the knee (unless hinged knee prosthesis)
    - Soft tissue mobilization of the hamstrings and quadriceps
    - Closed kinetic chain activities
    - Tibial rotational exercises
    - Stationary biking- no resistance to motion
    - PNF (lower extremity patterns) with/without resistance

- Lower extremity strengthening exercises using theraband
- Stair step machine
- Aquatic therapy/ activities
- Scar massage/ mobilization- may be initiated after suture removal and when the incision is clean and dr

3. Gait training
   - Level surfaces- forward walking, sidestepping, backward or retro-walking
   - Unlevel surfaces
4. Functional training
   - Standing activities
   - Transfer activities
   - Lifting
   - Carrying
   - Pulling/ pushing
   - Squatting/ crouching
   - Return to work tasks
   - Sport task
5. Endurance training
   - UB exercises
   - Upper and/ or lower extremity restorator
   - Ambulation activities
   - One- leg cycling using non-operative leg with no resistance to motion
   - Aquatic therapy
6. Balance/ proprioception training
   - Tandem walking
   - Lateral stepping, over/ around objects
   - Obstacle course
   - Lower extremity PNF patterns
   - Weight shifting activities
   - Closed kinetic chain activities

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This Total Knee Arthroplasty Protocol was peer reviewed and approved by the 2012 HTS orthopedic committee.

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