

Total Knee Replacement (TKR) Rehabilitation

What is a normal healthy knee joint?

The knee is made up of the femur (thigh bone), which articulates with the tibia (shin bone). Your kneecap sits on top of the femur. The knee also consists of muscles, tendons and ligaments that provide knee stability. In a normal healthy knee, a small gap lies between the ends of each bone, which is covered with smooth cartilage. This allows the bones to move smoothly over each other and facilitates normal and pain-free movement.

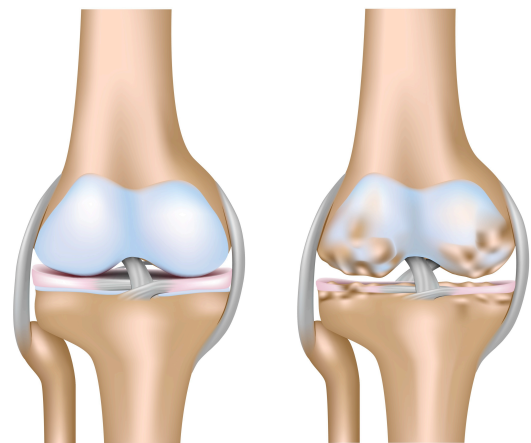
What happens when I have osteoarthritis?

Certain factors may place you at a higher risk of developing osteoarthritis such as:

- Age (older population)
- Gender (females > males)
- Previous history of joint injury/ surgery
- Sports
- Bone alignment

Osteoarthritis is characterised by a progressive loss of cartilage that covers the ends of each bone and allows for smooth movement. As a result, the bones lie closer together, may cause:

- Pain particularly with prolonged inactivity
- Grinding upon movement
- Stiffness
- Swelling



Healthy knee joint

Osteoarthritis

What should I expect after having a TKR?

The main function of a TKR is to reduce pain and increase daily function. Full range of movement at the knee is not expected following TKR. You may require use of walking aids to regain normal walking pattern for 1-3 weeks. However, you will work closely with your physiotherapist who will guide and progress you through your rehabilitation as necessary. For full details of a general rehabilitation program for a TKR see below.

GUIDELINES ON REHABILITATION TIMEFRAMES

- Phase 1** Pre-operative management:
Minimise swelling, optimise muscle activation and range of motion. Education on post-operative rehab, expectations and anatomy of the knee
- Phase 2** 0-7 days:
Typical inpatient rehabilitation/stay. Discharge dependent on ambulation, safety and wound integrity. Commence exercises the day after surgery.
- Phase 3** 1-3 Weeks:
Commence outpatient physiotherapy. Improve quads strength, knee range of motion- target 0-90° as soon as able, Progress walking- onto sticks if able and improve walking pattern and balance
- Phase 4** 3-6 Weeks:
Improve strength, balance, range of motion of the knee
- Phase 5** 6-16 Weeks:
Utilise hydrotherapy (ensure wound has fully healed) and gym/walking classes to increase conditioning as appropriate, continue exercises for knee, return to walking unaided if able/safe
- Phase 6** 4 Months +:
Emphasis on self-performance of exercises with physiotherapy monitoring and ongoing classes for maintenance and conditioning as appropriate



GOALS – Targets throughout rehabilitation:

Your Physiotherapist will explain each Phase as you progress & goals you need to achieve

PHASES	GOALS	TARGETS/REHAB EXAMPLES
Phase 1. Pre-Operative Management	Optimise knee range of motion Maintain muscle bulk and activation Minimise swelling Maintain balance skills and mobility	Next step – Surgery (decided by your surgeon) Education regarding post-operative rehabilitation, expectations and anatomy of the knee
Phase 2 0-7 Days Post-Op	Limit swelling Safe walking on appropriate aid Appropriate wound care and monitoring Appropriate medication Immediate range of motion and quadriceps activation exercises Prevent DVT and other complications	Discharge home when safe Arrange outpatient physiotherapy
Phase 3 1-3 Weeks	Restore quadriceps strength and function Restore knee extension (straightening) Improve knee flexion (bending) Progression of walking- still using most appropriate aid, at this point may be able to use a stick if safe	Able to fully straighten the knee Able to bend the knee to 90° Able to lift leg while keeping the knee straight
Phase 4 3-6 Weeks	Restore full knee extension (straightening if haven't already) Continue to work on knee flexion (bend) past 90° if already achieved- work hard to achieve 90° if not already Progress balance Return to / increase regular walking	Physiotherapy outcome measures taken e.g. timed up and go Continue exercises ++ Increased squats and gentle lunges if appropriate Progress function to optimise performance in day to day tasks at home
Phase 5 6-16 Weeks	Maintain full knee extension Eventual target of knee flexion can be variable 90-110° Good, confident walking pattern (may still require some assistance- this often depends level of mobility prior to surgery)	Can commence hydrotherapy once wound has fully healed (~6 weeks) Any pre-existing comorbidities or reduced exercise tolerance may warrant referral to an exercise physiologist
Phase 6 4Months+	Increase independence with home excises and walking, improvements at this stage like to be less pronounced than initial stages	Education regarding ongoing exercise and appropriate activities (see table below)

We pride ourselves on providing high quality evidence based practice and are guided by the latest peer-reviewed scientific research.
References are available upon request.

RETURNING TO ACTIVITIES FOLLOWING TOTAL KNEE REPLACEMENT

It is very important that you have developed enough movement and strength in the knee before returning to even light activities. Please discuss with your physiotherapist or surgeon prior to re-commencing or starting any physical activity following your operation.

Examples of a census by knee surgeons on suitable activities following total knee replacement surgery:

Recommended Activities Following Total Knee Replacement	
Aerobics (low impact)	Square Dancing
Bicycling (stationary)	Walking
Bowling	Golf
Croquet	Horseshoes
Ballroom Dancing	Shooting
Jazz Dancing	Shuffleboard
Swimming	Horseback Riding
Activities Recommended with Previous Experience	
Bicycling (road)	Skiing (cross country)
Canoeing	Skiing (stationary)
Hiking	Tennis (doubles)
Rowing	Weight Machines
Speed Walking	
Activities Not Recommended	
Racquetball	Football
Squash	Gymnastics
Rock Climbing	Lacrosse
Soccer	Hockey
Singles Tennis	Basketball
Volleyball	Jogging
Handball	

(Healy, Iorio & Lemos, 2000)