



# Knee Replacements

Knee replacements are a common orthopaedic surgery for advanced osteo and rheumatoid arthritis. They can either be a partial or total replacement which is defined as either one or all three articular surfaces being replaced with a new material.

Preoperative rehabilitation is often recommended by surgeons and doctors to improve post-operative function and pain. Yet, research into the efficacy of preoperative rehabilitation shows only small, short term improvements in pain, function, and activities of daily living (ADLs) (4). Despite this, exercise before surgery is still recommended on the general consensus that better physical conditioning before surgical intervention can improve outcomes after, such as knee flexion. Complimentary to this, obesity has been shown to have strong correlations with adverse complications with knee replacement, with 10-30% of obese individuals reporting negative effects following surgery (5). Exercise therefore can increase physical functioning and independence prior to operation, and reduce weight to ensure you have the best rate of recovery possible. Before commencing a preoperative program, consult your surgeon for exercises they recommend.

Following surgery, exercise rehabilitation is commenced within 24 hours. Exercise post-operatively has been scientifically shown to improve function, ADL capacity, and walking capacity (1,3). These results are evident in long term studies, with higher levels than the control group up to 12 months following surgery (3). Complimentary to this, through balance and proprioception exercises individuals self-report higher levels of functionality and balance (2).

Individuals progress at varying rates, and it is best to take your time and work within your physical capacity. Exercises focus on the muscle groups that cross the knee joint itself, namely the calf, quadriceps, and hamstrings.

The following are exercises that can be done at home from one month post operation.

## **Calf Raise (2 x 12)**

Early stage of the calf raise will require you to be seated in a chair that allows a 90 degree bend in the knees, feet flat on the floor. Keeping the balls of your feet firmly in the floor, press down to raise both your heels as high as possible. Then, slowly lower the heels back to the ground. Each way should take 3 seconds (raising and lowering the heels).

As you progress through your recovery, you can move on to a standing calf raise, then a single leg standing calf raise.

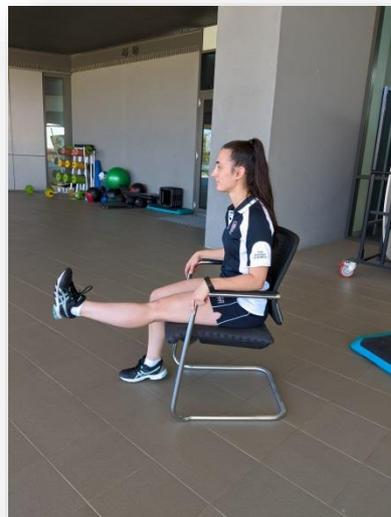
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## Seated Leg Extension (2 x 12)

Sitting on a chair that allows your feet to be flat on the floor, slowly straighten one leg until the leg is as straight as comfortable. Hold for two seconds at the top, then slowly lower back down to the floor. Repeat the same leg 12 times, then change to the other.

Early stage knee replacement rehabilitation avoids weighted leg extension to avoid placing too much strain on the new joint. However as your knee gains strength and range of motion, adding an ankle weight to the movement can help improve the strength benefits from the exercise. The leg extension machine should be avoided until the knee is strong enough to be loaded.



## Standing Hamstring Curl

This final exercise is to round off the trio; the hamstrings. Standing close to a wall or other stable surface, have both feet and knees together. Then, slowly bend one leg while keeping the knees in line until the heel is at the highest point. Hold at the top for two seconds, before slowly lowering the leg. Repeat on the same side 12 times, then switch to the other leg.

Similar to the leg extension, adding an ankle weight can increase the difficulty of the movement. The hamstring curl machine should also be avoided until later stages of rehabilitation, however are more beneficial and should not be avoided like the leg extension machine.



## Exercises to Avoid

- High impact loading of the knee through jumping exercises
- Excessive force generation of the knee, such as heavy weighted leg extension and curls
- Being physically inactive! Research has shown exercise to improve the outcomes of a total knee replacement (1,2,3).



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## Exercises to Choose

- Exercises that strengthen the structures of the knee (hamstrings, quadriceps, calves)
- Exercises that strengthen the glute. The glutes are involved in the stability of the knee, so they should be strengthened too!
- Cardio exercises for weight management/loss. The arm ergometer is a great place to start as they do not involve the knees. When you are cleared for a bicycle, start with an upright bike with a wide seat. Upright bikes have less flexion of the knee when compared to a recumbent bike. Choose a higher seat selection to further lessen the bend.
- Hydrotherapy. Warm water can help loosen the tight muscles following surgery, and is often recommended as soon as the stitches heal. Gentle lap walking can help the bend in the knee and often alleviates pressure.

Bayswater Waves is a multi-purpose facility, with everything to take you from prehab to maintenance. As mentioned previously, hydrotherapy is a great way to help warm and loosen the joint as well as provide a low impact environment for cardiovascular exercises. Our hydrotherapy pool has recently been fully upgraded, and at a constant toasty temperature of 38 degree. Talk to our exercise specialists in the health club about exercises that are best for your stage of recovery.

If you prefer group training, our Silver Sneakers class is perfect for individuals over the age of 55 with various injuries and ailments. Simply mention what stage of rehabilitation you are to the instructor, and they can modify any tricky exercises for you. This class shows you that at any age, exercise is possible and fun!

For further information, call us on 9208 2415 or email me at [taylah.silvestro@bayswater.wa.gov.au](mailto:taylah.silvestro@bayswater.wa.gov.au)

## References

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