Benefits of Aquatic Therapy After Hip or Knee Replacement

Physiotherapy in Abbotsford and Surrey for Hip

This is the first study reported to look at the benefit of aquatic therapy in the early days after joint replacement. Physiotherapists in Australia randomly placed patients getting a hip or knee replacement into one of three different treatment groups. The goal was to find out what kind of treatment is best in the early days after orthopedic surgery.

With the recent effort to reduce the length of hospital stays, physiotherapists are exploring the most effective ways to treat orthopedic patients. The standard rehab program after hip or knee joint replacement includes a mix of exercises to improve circulation and to prevent blood clots and other complications. Other goals include improving motion, strength, and function (especially walking).

In today’s evidence-based medicine, the question has been raised: what is best practice during the acute postoperative phase for hip and knee replacements? What is the role (if any) of aquatic therapy? Can the hydrostatic forces and warm and gravity-free environment make a difference? Are the additional benefits of aquatic therapy that cannot be obtained through the standard rehab protocol? The authors of this study asked and answered all of those questions.

Aquatic (pool) therapy is defined as physiotherapy that is performed in the water. There are good reasons to consider using aquatic therapy after joint replacement. Aquatic therapy uses the resistance of water instead of weights. With the reduced load provided by the buoyancy of the water, certain exercises (e.g., squats, step ups, walking without a cane or walker) can be started sooner in water than on land. Circulation is also improved leading to faster tissue healing and reduced swelling.

Everyone in the study either had a hip or knee replacement. They each received the standard postoperative hospital care by a physiotherapist for the first three days after the operation. After that, the patients were randomly assigned to one of three groups.

Group one continued with the standard care. This included circulation and deep breathing exercises, transfer practice, gait (walking) training, and practice going up and down stairs. Stretching and strengthening exercises were also done daily. Group two received a nonspecific water therapy session each day they were in the hospital. Group three had one standard physiotherapy treatment each day and attended aquatic therapy everyday while in the hospital.

The aquatic physiotherapy was performed at a slow (50 to 58 beats per minute) and fast pace (80 to 88 beats per minute) using a metronome to tick out the speed. The idea of using speed as a tool to enhance movement in water is part of the aquatic therapy. The program included exercises to improve range-of-motion, muscle strengthen, trunk stability, and reciprocal motion (arms and legs swinging rhythmically and repetitively while walking).

Measures used to compare the results of different treatment approaches included strength of the hip abductor muscles, walking speed, and patient self-reported function (disability). Patients in all three groups were tested at the end of 14 days for short-term effects and again at the end of six months. Retesting at the six month time period allowed them to see if the short-term improvements held up over time.
Three tests commonly used by physiotherapists to measure results included a handheld dynamometer for muscle testing, the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the timed 10-meter walking test. The WOMAC is a survey patients fill out answering questions about pain, function, and stiffness. Muscles tested using the dynamometer included the hamstrings, quadriceps, and gluteus medius.

In order to be considered clinically significant, patients in one group had to have more than a 15 per cent change from before to after treatment. The only reported difference among groups in this study was hip abductor muscle strength. Patients in the specific aquatic therapy program had the greatest improvement in strength. Hip abductor strength is important for trunk and hip stability and normal a gait (walking) pattern.

When all other variables were compared among the groups, the aquatic group had the best short-term improvements, but they didn't reach the 15 per cent difference. This means they were important measures but not always considered statistically significant.

At the end of six months, there was no difference in outcomes from one group to the next. There were overall trends that seemed to support the idea that aquatic therapy was slightly more beneficial than either land-based or nonspecific water-based exercises.

The authors conclude that for physiotherapists who have access to an appropriate pool at their hospital, an aquatic program for total hip and knee is safe and effective. Improved postoperative hip strength has been shown in other studies to be a key factor in functional recovery after hip or knee replacement.

Improved early functional recovery is more likely with a specific aquatic program (even over just water exercises). There's more to this success than just warm, buoyant water. Further studies are needed to find out why this is so and which exercises (type and amount) are best during the early recovery phase.


Apex Physiotherapy and Health Clinics provides services for physiotherapy in Abbotsford and Surrey.