Supplementary Online Content


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This supplementary material has been provided by the authors to give readers additional information about their work.
1. Protocol Version 1, July 23rd 2011 - The study was first approved as a pilot study.

**Summary of changes**

i) The study commenced as a definitive, 2-armed RCT in June 2012. The first participant was consented in June 2012.

ii) The following changes were made to convert the proposed pilot study to a definitive study (Versions 2 and 3)
   a. Focus of the study shifted away from feasibility to measurement of efficacy of the interventions under study
   b. Primary outcome defined as walking speed as determined by the 6MWT 26-weeks post-surgery. From this the percentage of people achieving an average gait speed of 1.2 m/sec would be determined
   c. Secondary outcomes defined – KOOS/Oxford score, EQ-5D/VAS, knee range of motion, resource utilisation, satisfaction with rehabilitation
   d. Monitored patient preference for rehabilitation mode, and complications
   e. Assessment schedule changed from Week 9,12 and 52 to Week 10, 26 and 52
   f. Sample size changed from 40 to 220
   g. Randomisation schedule defined and to occur when the patient is cleared for discharge
   h. Inclusion of a DSMB
   i. Aspects particular to the Pilot were dropped - the carer angle; use of SF-12 and WOMAC.
   j. Changed the duration of the study
   k. Addition and removal of investigators

iii) In February 2013, we commenced an observational arm necessitated by the fact that we had a recruitment bias i.e those that preferred inpatient rehabilitation were more likely to consent to the RCT (Protocol Version 4)

iv) Interim analysis (participant grouping remained concealed) was conducted to assess the plausibility of our primary outcome (% of participants achieving an average gait speed of 1.2 m/s gait speed). This was conducted when 15 patients reached the 10-week assessment point. Most patients in both groups achieved the speed. The primary outcome was converted to distance walked during the 6MWT and became a continuous outcome. (Protocol Version 4). As a results, the sample size reduced to a minimum of 70 per randomised arm and 60 for the observational arm

v) We included a sub-study in order to explore the minimal important difference for the 6MWT.

vi) Further funding for the study was obtained (HCF Research Foundation) and we added a 2nd site as per the funder’s request (Protocol Version 5, January 2014)
INPATIENT REHABILITATION PROGRAM

90 minute program: one-to-one therapy

5-10 minute warm up and cool down to be done before and after session: consisting of stretches, quads stretch, hamstring stretch, soleus and calf stretch, marching on the spot with/without arm movements.

Stations:
1. Cycling (either lower limb ergometer or stationary bike)
2. Sit-to-stand from chairs of various heights: 450mm, 500mm, 550mm
3. Walking up and down 4 x 15cm OR 20cm stairs
4. Side stepping up 4 x 15cm stairs (using both rails if needed)
5. Squats
6. Hip abduction and extension in standing
7. Standing balance on one leg between parallel bars (with or without foam pad)
8. Walking on treadmill
9. Calf raises at bars
10. Inner range quads in long sitting
11. Knee flexion in sitting with skateboard

Progressions to exercises made by therapist as appropriate.

90 minute program: group therapy

Supervised group session of stretches and therapy stations as above, with individual performance of stations/intensity as set in one-to-one sessions
MONITORED HOME PROGRAM

Please read the instructions carefully before starting your exercises, so that you will do them correctly and safely.

CONTACT YOUR PHYSIOTHERAPIST IF YOU HAVE ANY QUESTIONS ABOUT YOUR EXERCISES. IF YOU DEVELOP EXCESSIVE PAIN, SWELLING OR REDNESS IN YOUR OPERATED KNEE OR LEG, CONTACT YOUR DOCTOR OR PHYSIOTHERAPIST.

The goals of physiotherapy exercises are to:
1. Maximise movement of your knee (bending and straightening)
2. Improve your leg strength for performing your daily activities
3. Improve your walking pattern and endurance

After your surgery, your hospital physiotherapist will teach you some basic exercises for knee movement and muscle strength. These DAILY EXERCISES are on page 7 and 8. You MUST do these exercises 2 to 3 times a day, for 8 weeks.

The HOME REHAB PROGRAM has been put together by physiotherapists specifically for rehabilitation after knee replacement surgery. It is done IN ADDITION to your daily exercises. It includes a Warm Up, Exercises to improve your Function, a walking program, and Stretches.

We recommend that:
- You should do the program 4 times a week.
- You should take about 40 minutes to do the whole program.
- You should exercise at a moderately hard, steady exercising pace. At this level of exercise, you should be breathing a bit harder, but you should still be able to carry a conversation. If 0 is doing nothing or just sitting, and 10 is exhaustion, we would like you to exercise at 5-6.

Researchers have found that exercising 4 times a week, at a moderately hard pace for 30 to 40 minutes is needed to help you improve strength and fitness.
Remember:

• Watch the Instructional DVD for correct techniques for each exercise.
• Wear good supportive footwear when exercising (indoor and outdoors).
• Avoid exercising when the weather is too hot (in hot weather, exercising in early morning, or late afternoon is best).
• Drink plenty of water (during and after exercise).
• If you are Diabetic, do not exercise before breakfast. You should consult your doctor regarding the best time to exercises if you take diabetic medication/insulin.

HOW SHOULD YOU PROGRESS YOUR EXERCISES?

There are a number of different ways to progress your exercises, such as increasing the number of repetitions, reducing the amount of hand support, and power training. **Your exercises will be progressed every 2 weeks.** Please read instructions carefully for changes in your exercises.

Power training involves increasing the speed of movement. It may help you get up from a chair quicker, walk faster, or stepping out quickly to regain your balance after a stumble. It involves doing the upward movement of an exercise as quickly as possible, and the downward movement slowly and smoothly. You should breathe in first, then breathe out as you start the movement. You must avoid holding your breath at all times. You will be instructed in this technique by the physiotherapist.

EXERCISE DIARY

In order for the physiotherapist to monitor your progress, it is vital that you use the exercise diary to record the **days that you exercise.** This will assist your physiotherapist to help you with your exercises if you are having difficulty.

VISITS TO HEALTH PROFESSIONALS

It is also vital that your record in the diary whenever you see a health professional. You need to **record the date, who you saw (GP/Specialist/Physio/hospital/other) and the reason for the visit.** This information is important for your physiotherapist when giving you advice about your exercises.
DAILY EXERCISES

(do these exercises 2 to 3 times a day, everyday)

Knee flexion in bed
1. Lying on your bed, bend your operated knee as far as you can.
2. You may help your knee bend with your hands or with a towel around your foot.
3. Hold 5 seconds, then release.

Sitting Knee Flexion
1. Sit upright and deep in a chair, or side of the bed, so your thighs are fully supported.
2. Bend your knee as far as you can.
3. You may use your other leg to push it further.
4. Hold 5 seconds, then release.

Sit to Stand
1. Stand with feet shoulder width apart and in line with each other, with a chair behind you.
2. Hold onto a table with BOTH HANDS for support.
3. Sit down onto the chair keeping even weight on your feet.
4. Keeping even weight, stand up from sitting.

Knee Stretch
1. Sit on the edge of a sturdy chair with your heel on floor.
2. Straighten your knee as far as you can.
3. Keeping your knee straight, pull your toes towards your face until you feel a stretch behind your thigh.
4. To increase the stretch you may gently bend forwards from your hips.

Hold 10 seconds

Repeat 10 times, do 2 sets
**Calf Stretch**
1. Stand with your hands on a wall or table.
2. Place one leg forwards, one leg back.
3. Lunge forwards, keeping your back knee straight and heel firmly on the ground.

Hold 15 seconds, Repeat 3 times each leg

**Quadriceps Exercise**
1. Lie down with a small rolled towel under your knee.
2. Press your knee down on the roll.
3. Lift your heel off the bed, whilst keeping pressure on the towel.
4. Hold 3 seconds, then release.

Repeat 10 times, do 2 sets

**Straight Leg Raise**
(Do not do this exercise if you have back pain)
1. Lie on the bed with your knee straight.
2. While keeping your knee straight, lift your leg 10 cm off the bed.
3. Hold 3 seconds, then release.

Repeat 10 times, do 2 sets
HOME REHAB PROGRAM: WEEK 1 and 2
(3RD and 4th WEEK AFTER SURGERY)

Warm Up (5 minutes)
Walk continuously for 5 minutes to warm up your muscles and joints, and increase your breathing. Walk at a brisk pace (as able). Use flat driveway, or walk around the backyard, or back and forth along a long hallway or balcony. If you cannot walk outdoors, or the weather is too hot or wet, you can warm up indoors in a cool room by marching on the spot, walking up and down steps, do some small squats, and some arm movements. Once you have warmed up your body, without having a break, start your exercise program.

Sit to Stand
1. Stand with feet shoulder width apart and in line with each other, with a chair behind you.
2. Hold onto a table with BOTH HANDS for support.
3. Sit down onto the chair keeping even weight on your feet.
4. Return to standing position.

Repeat 10 times, do 2 sets

Forward Step Ups
1. Stand at a step, holding onto the railing (or use 2 phonebooks taped tightly together, holding onto table).
2. Step up forwards with your operated leg onto step, followed by your other leg.
3. Step down backwards with your non-operated leg, followed by your other leg.

Repeat 10 times, do 2 sets

Arm Raises
1. Breathe in as you lift your arms up as high as you can without pain. Breathe out as you lower your arms.
2. Keep your elbows straight at all times. Do not arch your back.

Repeat 15 times, do 2 sets
Calf Raises
1. Stand in front of a table, with a chair behind you for safety.
2. Hold onto table with BOTH HANDS
3. Keep even weight on both legs.
4. Rise up onto your toes. Hold for 3 seconds.
5. Lower your heels down onto the ground.

Standing Knee Flexion
1. Hold onto a table for support.
2. Tighten you lower tummy muscles by GENTLY pulling your belly button in towards you spine.
3. Bend your operated leg towards your buttock Hold for 3 secs. Slowly lower your leg.
4. Do not bring your knee forward or arch your back.

Standing hip extension
1. Hold onto a table and lean forward at the waist.
2. Tighten you lower tummy muscles by GENTLY pulling your belly button in towards you spine.
3. Keeping your leg straight, bring your leg backwards, hold 3 seconds. Then lower your leg.
4. Do not arch your back.

Arms Together
1. Start with your arms at your sides.
2. Breathe in as you lift your arms up to shoulder height.
3. Breathe out as you bring your arms forwards, keeping elbows straight.
4. Then lower your arms.

Repeat 10 times on each leg
Repeat 15 times, do 2 sets
Home Rehab Program: Week 1 and 2 (cont.)

Walking or Cycling (if you have a home exercise bike)

(A) walking
Use a walking aid if needed. Wear good supportive footwear. Concentrate on walking without a limp. Try to walk for **10 minutes**, on level ground.

(B) home exercise bike (if you have one)
Adjust the seat so that you can complete a full circle of the pedals. When your leg is in the ‘down’ position on the pedal, your knee should only be slightly bent. Try to cycle for **10 minutes** at an easy pace.

ALWAYS FINISH YOUR EXERCISE ROUTINE WITH THE FOLLOWING STRETCHES

**QUADS STRETCH**
1. Holding onto a table, stand on your un-operated leg and place your operated leg on a low stool/box behind you.
2. Keeping your back straight, gently squat down on your un-operated leg until you feel a stretch on the front your thigh.
3. Hold **15** seconds.

**HAMSTRING STRETCH**
1. Sit on the edge of a sturdy chair with your heel on floor.
2. **Straighten your knee as far as you can.**
3. Keeping your knee straight, pull your toes towards your face until you feel a stretch behind your thigh.
4. To increase the stretch you may gently bend forwards from your hips.
5. Hold **15** seconds.

**CALF STRETCH**
1. Stand with your hands on a wall or table.
2. Place one leg forwards, one leg back.
3. Lunge forwards, keeping your back knee straight and heel firmly on the ground.
4. Hold **15** seconds.
HOME REHAB PROGRAM: WEEK 3 and 4
(5th and 6th WEEK AFTER SURGERY)

Warm Up (5 minutes)
Walk continuously for 5 minutes to warm up your muscles and joints, and increase your breathing. Walk at a brisk pace (as able). Use flat driveway, or walk around the backyard, or back and forth along a long hallway or balcony. If you cannot walk outdoors, or the weather is too hot or wet, you can warm up indoors in a cool room by marching on the spot, walking up and down steps, do some small squats, and some arm movements. Once you have warmed up your body, without having a break, start your exercise program.

Semi-squat (or Sit to Stand)
1. Stand with feet shoulder width apart and in line with each other, with a chair behind you.
2. Hold onto a table with BOTH HANDS for support.
3. Squat down by bending your knees (or sit down onto the chair if you cannot squat down safely).
4. Return to standing position.

Repeat 15 times, do 2 sets

Forward Step Ups
1. Stand at a step, holding onto the railing (or use 2 phonebooks taped tightly together, holding onto table).
2. Step up forwards with your operated leg onto step, followed by your other leg.
3. Step down backwards with your non-operated leg, followed by your other leg.

Repeat 15 times, do 2 sets

Arm Raises
1. Breathe in as you lift your arms up as high as you can without pain.
2. Breathe out as you lower your arms.
3. Keep your elbows straight at all times.
   Do not arch your back.

Repeat 20 times, do 2 sets
Calf Raises
1. Stand in front of a table, with a chair behind you for safety.
2. Hold onto table with FINGERTIPS
3. Keep even weight on both legs.
4. Rise up onto your toes. Hold for 3 seconds.
5. Lower your heels down onto the ground.

Standing Knee Flexion
1. Hold onto a table for support.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
4. Do not bring your knee forward or arch your back.

Standing Hip Extension
1. Hold onto a table and lean forward at the waist.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
3. Keeping your leg straight, bring your leg backwards, hold 3 seconds. Then lower your leg.
4. Do not arch your back.

Arms Together
1. Start with your arms at your sides.
2. Breathe in as you lift your arms up to shoulder height.
3. Breathe out as you bring your arms forwards, keeping elbows straight.
4. Then lower your arms.

Repeat 15 times, 2 sets
Repeat 12 times on each leg
Repeat 12 times on each leg
Repeat 20 times, do 2 sets
Home Rehab Program: Week 3 and 4 (cont.)

Walking and/or Cycling (if you have a home exercise bike)

(A) walking
Use a walking aid if needed. Wear good supportive footwear. Concentrate on walking without a limp. Try to walk for 15 minutes, on level ground.

(B) home exercise bike (if you have one)
Adjust the seat so that you can complete a full circle of the pedals. When your leg is in the ‘down’ position on the pedal, your knee should only be slightly bent. Try to cycle for 15 minutes at an easy pace.

ALWAYS FINISH YOUR EXERCISE ROUTINE WITH THE FOLLOWING STRETCHES

QUADS STRETCH
1. Holding onto a table, stand on your un-operated leg and place your operated leg on a low stool/box behind you.
2. Keeping your back straight, gently squat down on your un-operated leg until you feel a stretch on the front your thigh.
3. Hold 15 seconds. Repeat 3 times each leg

HAMSTRING STRETCH
1. Sit on the edge of a sturdy chair with your heel on floor.
2. Straighten your knee as far as you can.
3. Keeping your knee straight, pull your toes towards your face until you feel a stretch behind your thigh.
4. To increase the stretch you may gently bend forwards from your hips.
5. Hold 15 seconds. Repeat 3 times each leg

CALF STRETCH
1. Stand with your hands on a wall or table.
2. Place one leg forwards, one leg back.
3. Lunge forwards, keeping your back knee straight and heel firmly on the ground
4. Hold 15 seconds. Repeat 3 times each leg
HOME REHAB PROGRAM: WEEK 5 and 6
(7th and 8th WEEK AFTER SURGERY)

Warm Up (5 minutes)
Walk continuously for 5 minutes to warm up your muscles and joints, and increase your breathing. Walk at a brisk pace (as able). Use flat driveway, or walk around the backyard, or back and forth along a long hallway or balcony. If you cannot walk outdoors, or the weather is too hot or wet, you can warm up indoors in a cool room by marching on the spot, walking up and down steps, do some small squats, and some arm movements. Once you have warmed up your body, without having a break, start your exercise program.

Semi-squat
1. Stand with feet shoulder width apart and in line with each other, with a chair behind you.
2. Hold onto a table with BOTH HANDS for support.
3. Squat down as far as you can by bending your knees.
4. Return to standing position.

Repeat 15 times, do 2 sets

Forward Step Ups
1. Stand at a step, LIGHTLY holding onto the railing if needed (or use 2 phonebooks taped tightly together, holding onto table).
2. Step up forwards with your operated leg onto step, followed by your other leg.
3. Step down backwards with your non-operated leg, followed by your other leg.

Repeat 15 times, do 2 sets

Arm Raises
1. Breathe in as you lift your arms up as high as you can without pain. Carry a light weight in each hand. (such as a light dumbbell or a can of food)
2. Breathe out as you lower your arms.
3. Keep your elbows straight at all times. Do not arch your back.

Repeat 20 times, do 2 sets
Calf Raises
1. Stand in front of a table, with a chair behind you for safety.
2. Hold onto table with BOTH HANDS
3. Stand on one leg.
4. Rise up onto your toes. Hold for 3 seconds.
5. Lower your heels down onto the ground.

Repeat 10 times on EACH leg

Standing Knee Flexion
1. Hold onto a table for support.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
3. Bend your operated leg towards your buttock
   Hold for 3 secs. Slowly lower your leg.
4. Do not bring your knee forward or arch your back.

Repeat 15 times on each leg

Standing hip extension
1. Hold onto a table and lean forward at the waist.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
3. Keeping your leg straight, bring your leg backwards,
   hold 3 seconds. Then lower your leg.
4. Do not arch your back.

Repeat 15 times on each leg

Arms Together
1. Start with your arms at your sides. Carry a light weight in each hand (such as a can of food)
2. Breathe in as you lift your arms up to shoulder height.
3. Breathe out as you bring your arms forwards, keeping elbows straight.
4. Then lower your arms.

Repeat 20 times, do 2 sets
Home Rehab Program: Week 5 and 6 (cont.)

Walking and /or Cycling (if you have a home exercise bike)

(A) walking
Use a walking aid if needed. Wear good supportive footwear. Concentrate on walking without a limp. Try to walk for 20 minutes, on level ground.

(B) home exercise bike (if you have one)
Adjust the seat so that you can complete a full circle of the pedals. When your leg is in the ‘down’ position on the pedal, your knee should only be slightly bent. Try to cycle for 15 minutes at an easy pace.

ALWAYS FINISH YOUR EXERCISE ROUTINE WITH THE FOLLOWING STRETCHES

**QUADS STRETCH**

1. Holding onto a table, stand on your un-operated leg and place your operated leg on a low stool/box behind you.
2. Keeping your back straight, gently squat down on your un-operated leg until you feel a stretch on the front your thigh.
3. Hold 15 seconds.

**HAMSTRING STRETCH**

1. Sit on the edge of a sturdy chair with your heel on floor.
2. Straighten your knee as far as you can.
3. Keeping your knee straight, pull your toes towards your face until you feel a stretch behind your thigh.
4. To increase the stretch you may gently bend forwards from your hips.
5. Hold 15 seconds.

**CALF STRETCH**

1. Stand with your hands on a wall or table.
2. Place one leg forwards, one leg back.
3. Lunge forwards, keeping your back knee straight and heel firmly on the ground.
4. Hold 15 seconds.
HOME REHAB PROGRAM: WEEK 7 and 8  
(9th WEEK AFTER SURGERY)

Warm Up (5 minutes)
Walk continuously for 5 minutes to warm up your muscles and joints, and increase your breathing. Walk at a brisk pace (as able). Use flat driveway, or walk around the backyard, or back and forth along a long hallway or balcony. If you cannot walk outdoors, or the weather is too hot or wet, you can warm up indoors in a cool room by marching on the spot, walking up and down steps, do some small squats, and some arm movements. Once you have warmed up your body, without having a break, start your exercise program.

Semi-squat
1. Stand with feet shoulder width apart and in line with each other, with a chair behind you.
2. Hold onto a table with FINGERTIPS OR NO HANDS for support.
3. Carry a 5kg backpack for resistance (do not do this if you have back pain)
4. Squat down as far as you can by bending your knees.
5. Return to standing position.

Repeat 15 times, do 2 sets.

Forward Step Ups
1. Stand at a step, LIGHTLY holding onto the railing if needed (or use 2 phonebooks taped tightly together, holding onto table).
2. Carry a 5 kg backpack for resistance.
3. Step up forwards with your operated leg onto step, followed by your other leg.
4. Step down backwards with your non-operated leg, followed by your other leg.

Repeat 15 times, do 2 sets.

Arm Raises
1. Breathe in as you lift your arms up as high as you can without pain. Carry a light weight in each hand (such as a light dumbbell or a can of food)
2. Breathe out as you lower your arms.
3. Keep your elbows straight at all times. Do not arch your back.

Repeat 20 times, do 2 sets.
Calf Raises
1. Stand in front of a table, with a chair behind you for safety.
2. Hold onto table with ONE HAND
3. Stand on one leg.
4. Rise up onto your toes. Hold for 3 seconds.
5. Lower your heels down onto the ground.

Standing Knee Flexion
1. Hold onto a table for support.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
3. Bend your operated leg towards your buttock
   Hold for 3 secs. Slowly lower your leg.
4. Do not bring your knee forward or arch your back.

Standing hip extension
1. Hold onto a table and lean forward at the waist.
2. Tighten your lower tummy muscles by GENTLY pulling your belly button in towards your spine.
3. Keeping your leg straight, bring your leg backwards,
   hold 3 seconds. Then lower your leg.
4. Do not arch your back.

Arms Together
1. Start with your arms at your sides. Carry a light weight in each hand (such as a can of food)
2. Breathe in as you lift your arms up to shoulder height.
3. Breathe out as you bring your arms forwards, keeping elbows straight.
4. Then lower your arms.

Repeat 15 times on each leg
Repeat 15 times on each leg
Repeat 20 times, do 2 sets.
Home Rehab Program: Week 7 and 8 (cont.)
Walking and/or Cycling (if you have a home exercise bike)

(A) walking
Use a walking aid if needed. Wear good supportive footwear. Concentrate on walking without a limp. Try to walk for 20 minutes, on hilly ground.

(B) home exercise bike (if you have one)
Adjust the seat so that you can complete a full circle of the pedals. When your leg is in the ‘down’ position on the pedal, your knee should only be slightly bent. Try to cycle for 15 minutes at an easy pace.

ALWAYS FINISH YOUR EXERCISE ROUTINE WITH THE FOLLOWING STRETCHES

**QUADS STRETCH**
4. Holding onto a table, stand on your un-operated leg and place your operated leg on a low stool/box behind you.
5. Keeping your back straight, gently squat down on your un-operated leg until you feel a stretch on the front your thigh.
6. Hold 15 seconds.

**HAMSTRING STRETCH**
1. Sit on the edge of a sturdy chair with your heel on floor.
2. Straighten your knee as far as you can.
3. Keeping your knee straight, pull your toes towards your face until you feel a stretch behind your thigh.
4. To increase the stretch you may gently bend forwards from your hips.
5. Hold 15 seconds.

**CALF STRETCH**
1. Stand with your hands on a wall or table.
2. Place one leg forwards, one leg back.
3. Lunge forwards, keeping your back knee straight and heel firmly on the ground
4. Hold 15 seconds.
eTable1. Summary of significant co-morbidities at Baseline$^a$ - %

<table>
<thead>
<tr>
<th>Co-morbidity</th>
<th>Inpatient Rehabilitation (N=81)</th>
<th>Home Program (N=84)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>73%</td>
<td>68%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>20%</td>
<td>26%</td>
</tr>
<tr>
<td>Respiratory</td>
<td>16%</td>
<td>10%</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Peripheral nervous system</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Renal</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Other lower limb or back</td>
<td>25%</td>
<td>27%</td>
</tr>
<tr>
<td>Other</td>
<td>26%</td>
<td>29%</td>
</tr>
</tbody>
</table>

$^a$ Co-morbidity was considered significant if participant was required to take regular medication for condition.
**eTable2. Summary of EQ5D domains at Baseline, 10, 26 and 52 weeks**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Inpatient rehabilitation (N=81)</th>
<th>Home program (N=84)</th>
<th>Observational (N=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>EQ-5D domains at baseline, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.2</td>
<td>9.9</td>
<td>50.6</td>
</tr>
<tr>
<td>Personal care&lt;sup&gt;b&lt;/sup&gt;</td>
<td>27.2</td>
<td>32.1</td>
<td>30.9</td>
</tr>
<tr>
<td>Usual activities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.9</td>
<td>18.5</td>
<td>29.6</td>
</tr>
<tr>
<td>Pain/discomfort&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0</td>
<td>7.4</td>
<td>49.4</td>
</tr>
<tr>
<td>Anxiety/depression&lt;sup&gt;e&lt;/sup&gt;</td>
<td>35.8</td>
<td>27.2</td>
<td>22.2</td>
</tr>
<tr>
<td>EQ-5D domains at 10 weeks, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility&lt;sup&gt;a&lt;/sup&gt;</td>
<td>46.8</td>
<td>29.4</td>
<td>22.8</td>
</tr>
<tr>
<td>Personal care&lt;sup&gt;b&lt;/sup&gt;</td>
<td>79.7</td>
<td>15.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Usual activities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>41.8</td>
<td>40.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Pain/discomfort&lt;sup&gt;d&lt;/sup&gt;</td>
<td>17.7</td>
<td>54.4</td>
<td>24.1</td>
</tr>
<tr>
<td>Anxiety/depression&lt;sup&gt;e&lt;/sup&gt;</td>
<td>62.0</td>
<td>30.4</td>
<td>7.6</td>
</tr>
<tr>
<td>EQ-5D domains at 26 weeks, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility&lt;sup&gt;a&lt;/sup&gt;</td>
<td>53.8</td>
<td>23.8</td>
<td>17.5</td>
</tr>
<tr>
<td>Personal care&lt;sup&gt;b&lt;/sup&gt;</td>
<td>83.8</td>
<td>13.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Usual activities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>50.0</td>
<td>35.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Pain/discomfort&lt;sup&gt;d&lt;/sup&gt;</td>
<td>31.3</td>
<td>40.0</td>
<td>21.3</td>
</tr>
<tr>
<td>Anxiety/depression&lt;sup&gt;e&lt;/sup&gt;</td>
<td>53.8</td>
<td>33.8</td>
<td>11.3</td>
</tr>
<tr>
<td>EQ-5D domains at 52 weeks, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility&lt;sup&gt;a&lt;/sup&gt;</td>
<td>51.3</td>
<td>22.5</td>
<td>13.8</td>
</tr>
<tr>
<td>Personal care&lt;sup&gt;b&lt;/sup&gt;</td>
<td>75.0</td>
<td>17.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Usual activities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>52.5</td>
<td>23.8</td>
<td>12.5</td>
</tr>
<tr>
<td>Pain/discomfort&lt;sup&gt;d&lt;/sup&gt;</td>
<td>27.5</td>
<td>37.5</td>
<td>22.5</td>
</tr>
<tr>
<td>Anxiety/depression&lt;sup&gt;e&lt;/sup&gt;</td>
<td>63.8</td>
<td>22.5</td>
<td>6.3</td>
</tr>
</tbody>
</table>
Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) mobility subset range from 1 (I have no problem with walking around) through to 5 (I am unable to walk around).

Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) personal care subset range from 1 (I have no problem with washing or dressing myself) through to 5 (I am unable to wash or dress myself).

Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) usual activities subset range from 1 (I have no problem doing my usual activities) through to 5 (I am unable to do my usual activities).

Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) pain/discomfort subset range from 1 (I have no pain or discomfort) through to 5 (I have extreme pain or discomfort).

Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) anxiety/depression subset range from 1 (I am not anxious or depressed) through to 5 (I am extremely anxious or depressed).
### eTable3: Characteristics of eligible people who were not randomized

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Eligible people</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consented but not randomised, n = 93</td>
</tr>
<tr>
<td>Female sex, %</td>
<td>62</td>
</tr>
<tr>
<td>Age - years</td>
<td>68.5 (10.0)</td>
</tr>
<tr>
<td>Body-mass index  b</td>
<td>33.4 (7.5) (^h)</td>
</tr>
<tr>
<td>Baseline Six-minute walk test - m</td>
<td>307 (109) (^h)</td>
</tr>
<tr>
<td>Baseline Oxford Knee Score  c</td>
<td>17.7 (7.6) (^l)</td>
</tr>
<tr>
<td>Baseline EQ-5D descriptive index  d</td>
<td>0.39 (0.31) (^j)</td>
</tr>
<tr>
<td>Baseline EQ-5D visual analogue scale  e</td>
<td>66.8 (19.7) (^l)</td>
</tr>
<tr>
<td>Baseline KOOS4, median (Q1, Q3) f</td>
<td>29.4 (18.6, 38.9) (^k)</td>
</tr>
<tr>
<td>Baseline knee ROM &gt; 100 e, % g</td>
<td>62</td>
</tr>
</tbody>
</table>

\(^a\) Values are mean (SD) unless otherwise indicated. Percentages are rounded.

\(^b\) Body-mass index is the weight in kilograms divided by the square of the height in meters.

\(^c\) Scores on the Oxford Knee Score range from 0 (worst) to 48 (best).

\(^d\) Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) descriptive index range from 1 (best possible health), through 0 (death) to -0.59 (worse than death)

\(^e\) Scores on the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D) visual-analogue scale range from 0 to 100; higher scores indicate better quality of life.

\(^f\) Scores on the Knee Injury and Osteoarthritis Outcome Score (KOOS) subscales range from 0 (worst) to 100. KOOS4 is the mean score on the pain, symptoms, activities of daily living, and quality of life subscales.

\(^g\) ROM = Range of motion

\(^h\) Sample n = 52

\(^i\) Sample n = 59

\(^j\) Sample n = 55

\(^k\) Sample n = 20

\(^l\) Sample n = 65

\(^m\) Sample n = 94

\(^n\) Sample n = 80

\(^o\) Sample n = 74

\(^p\) Sample n = 41
### eTable4. Outcomes at 10, 26 and 52 weeks - unadjusted values and without imputation

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total No. of Assessments</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HI</td>
<td>HO</td>
</tr>
<tr>
<td><strong>Primary outcome</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six-minute walk test at 26 weeks: m</td>
<td>79</td>
<td>80</td>
</tr>
<tr>
<td>Six-minute walk test at 26 weeks: m (PP)</td>
<td>72</td>
<td>74</td>
</tr>
<tr>
<td><strong>Secondary outcomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six-minute walk test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six-minute walk test at 10 weeks - m</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>Six-minute walk test at 26 weeks - m</td>
<td>77</td>
<td>73</td>
</tr>
<tr>
<td>Six-minute walk test at 52 weeks - m</td>
<td>79</td>
<td>77</td>
</tr>
<tr>
<td>15-meter walk test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-meter walk test at 10 weeks - s</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>15-meter walk test at 26 weeks - s</td>
<td>79</td>
<td>80</td>
</tr>
<tr>
<td>15-meter walk test at 52 weeks - s</td>
<td>79</td>
<td>77</td>
</tr>
<tr>
<td>Oxford Knee Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxford Knee Score at 10 weeks</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>Oxford Knee Score at 26 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Oxford Knee Score at 52 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>EQ-5D descriptive index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQ-5D descriptive index at 10 weeks</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>EQ-5D descriptive index at 26 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>EQ-5D descriptive index at 52 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>EQ-5D visual-analogue scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQ-5D visual-analogue scale at 10 weeks</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>EQ-5D visual-analogue scale at 26 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>EQ-5D visual-analogue scale at 52 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>KOOS4 scores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOOS4 scores at 10 weeks</td>
<td>78</td>
<td>75</td>
</tr>
<tr>
<td>KOOS4 scores at 26 weeks</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>KOOS4 scores at 52 weeks</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Knee flexion (end) range of motion ≥100 - n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knee ROM ≥ 100° at 10 weeks - n (%)</td>
<td>78</td>
<td>80</td>
</tr>
<tr>
<td>Knee ROM ≥ 100° at 26 weeks - n (%)</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Knee ROM ≥ 100° at 52 weeks - n (%)</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>Satisfaction with rehabilitation³ - %</td>
<td>80</td>
<td>79</td>
</tr>
</tbody>
</table>

---

**a** Values are mean (SD) utilising ITT data unless otherwise indicated. PP=per protocol. Other abbreviations as per Table 1. Values are unadjusted non-imputed

**b** There were 81 and 84 possible assessments for the HI and HO study groups respectively at each time point. All outcomes were collected for all 87 observational participants, 11 in this group were excluded from per protocol analysis.

**c** The observational group (Obs) was followed up at 26 weeks only.
The ‘satisfaction with rehabilitation’ score was a visual-analogue scale range from 0 to 100; higher scores indicate higher satisfaction.

The crude and adjusted group effect was non-significant for all secondary outcomes at 10, 26 and 52 weeks, with the exception of a significant between-group difference for participant-rated satisfaction with rehabilitation at 10 weeks post-surgery (p=0.004).
eTable5. Primary outcome (6-minute walk test) mean change from baseline (meters)

<table>
<thead>
<tr>
<th>Time periods</th>
<th>Inpatient (n=81)</th>
<th>Home (n=84)</th>
<th>Observational (n=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline - 10 weeks</td>
<td>60.3</td>
<td>60.6</td>
<td></td>
</tr>
<tr>
<td>Baseline - 26 weeks</td>
<td>78.0</td>
<td>77.1</td>
<td>63.1</td>
</tr>
<tr>
<td>Baseline - 52 weeks</td>
<td>65.4</td>
<td>86.3</td>
<td></td>
</tr>
</tbody>
</table>
eTable6. Summary of KOOS subscales at 10, 26 and 52 weeks

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Inpatient (N=81)</th>
<th>Home (N=84)</th>
<th>Observational (N=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOOS subscales at 10 weeks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>71 (58, 86)</td>
<td>75 (56, 83)</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>71 (51, 82)</td>
<td>71 (56, 82)</td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>77 (65, 88)</td>
<td>76 (60, 88)</td>
<td></td>
</tr>
<tr>
<td>Quality of life</td>
<td>60 (40, 74)</td>
<td>63 (38, 75)</td>
<td></td>
</tr>
<tr>
<td>Sports and recreation</td>
<td>30 (15, 55)</td>
<td>35 (15, 45)</td>
<td></td>
</tr>
<tr>
<td>KOOS subscales at 26 weeks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>86 (72, 94)</td>
<td>83 (68, 96)</td>
<td>86 (72, 97)</td>
</tr>
<tr>
<td>Symptoms</td>
<td>81 (68, 93)</td>
<td>79 (61, 89)</td>
<td>79 (68, 93)</td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>87 (74, 94)</td>
<td>82 (64, 93)</td>
<td>87 (64, 96)</td>
</tr>
<tr>
<td>Quality of life</td>
<td>69 (44, 88)</td>
<td>63 (47, 88)</td>
<td>63 (44, 88)</td>
</tr>
<tr>
<td>Sports and recreation</td>
<td>43 (30, 61)</td>
<td>35 (13, 58)</td>
<td>35 (20, 65)</td>
</tr>
<tr>
<td>KOOS subscales at 52 weeks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>86 (74, 97)</td>
<td>91 (78, 98)</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>86 (71, 93)</td>
<td>82 (71, 93)</td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>88 (74, 94)</td>
<td>88 (72, 96)</td>
<td></td>
</tr>
<tr>
<td>Quality of life</td>
<td>69 (25, 61)</td>
<td>66 (44, 90)</td>
<td></td>
</tr>
<tr>
<td>Sports and recreation</td>
<td>45 (25, 61)</td>
<td>38 (20, 56)</td>
<td></td>
</tr>
</tbody>
</table>

Values are median (Q1, Q3). Scores on the Knee Injury and Osteoarthritis Outcome Score (KOOS) subscales range from 0 (worst) to 100 (best).
eFigures1 (A-F). Rate of change across time for primary and secondary outcomes

eFigure1-A. Rate of change across time for 6-minute walk test (mean)

For this and eFiguresB-F, the recovery curves are based on unadjusted values. Baseline refers to a pre-operative measure. HI indicates inpatient; HO, home program.
eFigure1-B. Rate of change across time for 15 meter walk test (mean)
eFigure1-C. Rate of change across time for Oxford Knee Score
eFigure1-D. Rate of change across time for EQ-5D descriptive index
eFigure1-E. Rate of change across time for EQ-5D visual analogue scale
eFigure1-F. Rate of change across time for KOOS$_4$