KNEE EXERCISE PROGRAM

INTRODUCTION
Welcome to your knee exercise program.
The exercises in the program are designed to improve your knee stability and strength of the muscles around your knee and hip. The strength based exercises have been included specifically to strengthen the knee and improve the ease of daily tasks such as walking.
The exercises are in order of progression, commencing with isolation exercises and finishing with whole body movement. It is important that you start at the beginning and work your way through to the end.
As a routine you should aim to complete 6-8 repetitions of each exercise, unless otherwise stated. Once per day is sufficient but more often is better.

EXERCISES
Every exercise has a name and a purpose, so that you can understand what you are trying to achieve. The starting position describes the position you need to adopt before commencing – there is usually an image to help you understand. The exercise describes the action required and again, the images will help. Progressions and variations are made available for when you are performing the exercise well and are ready for new challenges. The self check identifies the commonly made mistakes and what you need to notice to ensure they don’t occur to you.

SAFETY
Should you experience pain with any of the prescribed exercises, stop, re-read the instructions and carefully try again. If pain persists consult your physiotherapist.
KNEE CAP GLIDES

PURPOSE
To improve movement of the knee cap.

STARTING POSITION
Sit comfortably on a chair or ball.

EXERCISE
Sit comfortably with both legs out straight, heels resting on the floor. Bent your knees to approximately 90°. Relax the quadriceps muscles (front of thigh). Place hands on the knee as shown. Using a side to side gliding motion, move the knee cap towards the other knee.

SELF CHECK
Keep your body position relaxed. Ensure that your shoulders are open and wide and that your back is not hunched.
VMO IN SITTING

PURPOSE
Learn to isolate and strengthen the Vastus Medialis Obliquus (VMO) muscle.

STARTING POSITION
Sit on a chair or ball in your neutral spine position with your knees bent and feet resting on the floor.

EXERCISE
Tighten your VMO by thinking about driving your heel into the ground, and sliding the foot away from you. As you press your heel into the floor feel for a muscle contraction on the inside thigh near your knee.

PROGRESSIONS

1  **ISOLATED VMO**: Sit on a chair or ball as per above. Try and gain the same contraction of the VMO muscle without pressing through the heel. Concentrate on working the inner thigh without squeezing the bottom muscles.

2  **STANDING**: Stand with one foot in front of the other, affected leg in front. Have more weight on the back foot to begin, lean forward in a lunging motion, sliding the knee forward. Watch that the knee does not move past the toes. Think about the thigh bone spiralling outwards to maintain a ‘neutral’ knee position.

SELF CHECK
Keep your body position relaxed. Ensure that your shoulders are open and wide and that your back is not hunched.
SINGLE LEG RAISE

PURPOSE
To strengthen the VMO muscle group.

STARTING POSITION
Lay on back with both legs out straight.

EXERCISE
Find your neutral spine position and maintain.
Contract your VMO thinking about lifting your knee cap of the affected leg. Then lift this leg up from the floor with your toes turned outwards by 10 degrees. Slowly lower the leg down to the ground and relax. Repeat.

SELF CHECK
Keep your pelvis in neutral and hips level as your foot slides away. Your leg should glide down the floor, without being too heavy or jerky.
ITB STRETCH

PURPOSE
To release the Iliotibial Band (ITB) and associate muscles on the outside of the hip and thigh.

STARTING POSITION
In a sidelying position lift up onto your hands and foot of your top leg (as pictured). Ensure your lower leg remains straight and in line with your body. Place a foam roller under the left outside thigh.

EXERCISE
Slowly roll yourself up and down the bolster/roller so the outside of the thigh is being massage. Move between the lower hip and upper knee, not going over the joints. You will notice some parts are more uncomfortable (painful) than others. Concentrate on these areas! With practice the pain will diminish.
Repeat on the other side.

SELF CHECK
Keep your pelvis neutral and hips level as your knee rolls out.
Keep the outside border of your foot in contact with the floor.
BALL BRIDGE

PURPOSE
To improve flexibility of the spine and increase trunk and hip stability.

STARTING POSITION
Lay face up on an exercise mat with legs straight and ankles resting on the ball. Rest arms beside you on the floor.

EXERCISE
Exhale rocking the pelvic back into a ‘north tilt’, and begin to peel up off the floor. Roll segmentally into a straight, plank-like position. Pause at the top and inhale, before sinking through the ribcage, imprinting the spine back along the floor.

PROGRESSIONS

1  **PULL IN & OUT**: Roll up as for Bridge and hold at the highest point. Maintaining the height of the pelvis, draw the feet in towards the bottom. Roll the ball away from the body before lowering back down, imprinting the spine back into the start position.

2  **SINGLE LEG LIFT**: When the pelvis is lifted, alternate legs raise one at a time off the ball.

SELF CHECK
Ensure the hips stay level and the gluteal muscles are engaged.
LUNGE

PURPOSE
To increase strength and control of the muscles around the knee.

STARTING POSITION
Stand tall with one foot in front of the other with equal weight over both feet.

EXERCISE
Contract your VMO then lunge forward, bending your front knee so that your knee cap moves out and over your third toe, and your weight moves onto the front leg. Hold for 5 seconds.
Return to the starting position and relax your VMO.

SELF CHECK
Movement should be slow and controlled.
Do not bounce.
Ensure the hip, knee and ankle are aligned.
Maintain your neutral pelvic position.
SQUAT

PURPOSE
To improve strength and power in the quadriceps muscle group with attention to spinal posture. To improve knee tracking and lower limb alignment.

STARTING POSITION
Stand, leaning against a ball just below the shoulder blades up against a wall or secure door. Stand with feet shoulder width apart and weight divided equally between both feet.

EXERCISE
Find your neutral spine position and maintain. Exhale, pressing into the heel initiating your VMO. Bend the knees and maintaining correct alignment as you lower your bottom as if sitting down onto a low chair whilst maintaining your upright posture. Inhale as you press into the heels and return to the start position.

PROGRESSIONS

1 BALL SQUAT HOLD: As for Squats, stay at lowest maintainable position and breathe for the count of 10. Return to the start position and repeat.

2 TURNOUT SQUATS: As for ball squats, change foot starting position (45° turnout).

3 WIDE SQUATS: As for Ball Squats, change the foot position placing the feet outside the width of the hips and turn the toes outward. Keep more weight through the heels.

SELF CHECK
Keep your shoulders relaxed and head and neck in alignment. Maintain equal pressure through left and right foot. Think about 60% heel and 40% on your toe.
SINGLE LEG STAND

PURPOSE
To increase strength and control through the hip and knee stabilisers.

STARTING POSITION
Stand comfortably with the weight resting through the big toes, small toe and the centre of the heel.

EXERCISE
Find your neutral spine position and maintain. Maintaining the height of the hipbones, lift one foot up to balance on one leg. Repeat with opposite leg.

PROGRESSIONS
1. **BALANCE - HEEL RAISE:** With control, lift up onto the big toe. With control, lift the toe up off the floor

SELF CHECK
Maintain a neutral alignment through the lower limb and hip height. Movement should be slow and controlled without bouncing. Don’t push into pain.
STEP UPS

PURPOSE
To strengthen the muscles in the leg, buttock and low back.

STARTING POSITION
Stand with your affected foot resting on a step and the other on the floor.

EXERCISE
Contract your VMO. Transfer your weight onto the affected leg and push up to step onto the step, straightening your knee as you go. As you step up, keep your hips level and your kneecap moving out and over your third toe.

PROGRESSIONS
1. **STEP DOWNS**: Stand with both feet on top of a step; contract your VMO. Keeping your affected foot on the step, step down slowly with your unaffected leg first, bending your other knee. Ensure that your hips remain level and that your affected knee is angled out and over your third toe. Step back up onto the step then repeat.

SELF CHECK
Maintain a neutral alignment through the lower limb.
Movement should be slow and controlled without bouncing.
Don’t push into pain.
SIT TO STAND

PURPOSE
Improves lumbar position from sitting to standing. To challenge alignment and control of the lower limbs.

STARTING POSITION
Sitting on the top of your sitting bones, drag your heels back underneath you until they almost lift off the floor to position the feet.

EXERCISE
Draw your hips into the back of your hip joint until you feel your lower abdominals engage. Ensure you are breathing diaphragmatically. Rock forward until you feel your weight through your three points of contact in your feet. Maintaining the hip suck, push down through the feet, to come up into standing.

PROGRESSIONS
1. **STAND TO SIT:** Hold the sensation of the hip suck, and lower the body back down into sitting by folding at the hip and knee. Ensure the hip, knee and ankle stay in neutral alignment.

SELF CHECK
Keep the heels pressing firmly into the floor to assist stability through pelvis and trunk.
Ensure knee, hip and ankle stay in alignment.
Watch that the body does not ‘jerk’ forward, glide up off the chair gracefully.