Knee Care

Keeping your knees healthy is crucial as they are susceptible to injury. Your knee functions as a pivotal hinge facilitating leg movement, composed of three bones: the thigh bone, shin bone, and kneecap. Ligaments bind these bones together, surrounded by muscles and tendons, while cartilage inside absorbs shock and maintains stability. When your knee operates smoothly, you can flex, extend, and rotate your leg effortlessly. However, injuries to ligaments or cartilage can hinder movement, underscoring the importance of knee care.

Your knee resembles a team with distinct roles. Here are its key players:

Bones: These are foundational, comprising the thigh bone (femur), shin bone (tibia), kneecap (patella), and fibula.

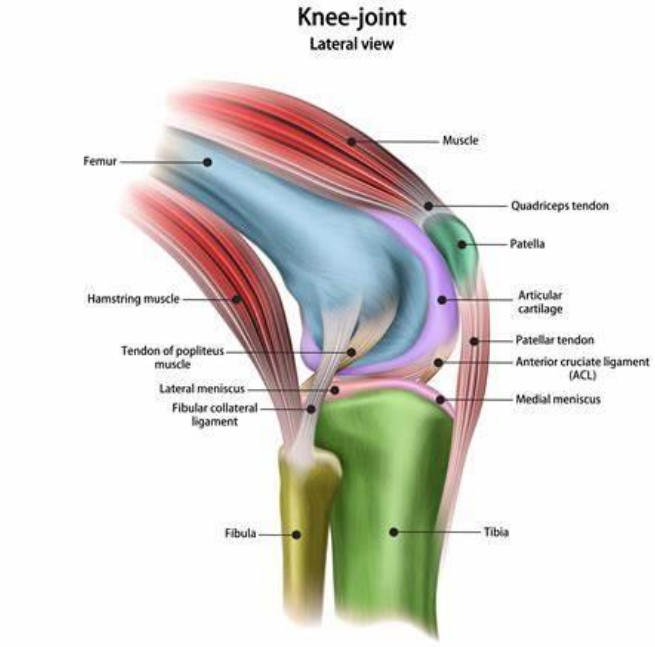
Joints: The tibiofemoral and patellofemoral joints enable fluid movement, cushioned by synovial fluid and articular cartilage, akin to a well-oiled machine.

Ligaments: These robust bands, including the MCL, LCL, ACL, and PCL, stabilise your knee and control its range of motion.

Meniscus: Acting as shock absorbers, these cushions, specifically the medial and lateral menisci, support weight distribution and stabilise the knee joint.

The coordinated efforts of bones, joints, ligaments, and meniscus ensure seamless knee function.

Here is a side view of the knee joint:



Understanding the muscle dynamics surrounding your knee is equally vital:

Muscles: Acting as engines, muscles like the Quadriceps Femoris (front thigh) and hamstrings (back of the thigh) power knee movement by contracting and pulling on tendons.

Maintaining knee health involves awareness of potential issues:

Ligament injuries: Such as strains or tears, commonly occur during sudden movements or impacts.

Meniscus tears: Resulting from twisting or compression, these tears cause pain and swelling.

Patellar dislocation: Occurs due to sudden directional changes or impact, resulting in instability and discomfort.

Tendon injuries: Inflammation or tearing of tendons can cause pain and hinder knee movement.

Osteoarthritis: Cartilage wear and tear over time leads to pain, stiffness, and reduced mobility.

Fractures: Bones may break due to falls or excessive strain, causing pain, swelling, and instability.

Adopting healthy practices ensures knee longevity:

Exercise regularly: Strengthening surrounding muscles supports knee stability.

Maintain a healthy weight: Reducing stress on knees by managing body weight is crucial.

Warm up and cool down: Stretching before and after exercise prevents injuries and maintains flexibility.

Use proper technique: Employing correct form in activities minimises knee strain.

Wear supportive shoes: Opting for footwear with adequate cushioning and support is essential for knee health.

Glute (your bottom) strength contributes significantly to knee health:

Hip and knee alignment: Strong glutes maintain proper alignment, alleviating knee pressure.

Knee stability: Glutes stabilise knees during movement, reducing injury risk.

Compensation patterns: Weak glutes can lead to overuse injuries in other muscles, affecting knee health.

Shock absorption: Strong glutes act as buffers, lessening the impact on knee joints during physical activities.

Incorporating exercises to strengthen glutes, like squats and lunges, can promote knee health and overall joint integrity.

Warm-Up and Knee Strengthening Exercises

Before diving into your lower body workout to strengthen your knees, it's crucial to properly warm up your muscles and joints. This brief routine incorporates spine mobility and ankle mobility exercises to enhance overall lower body function and reduce the risk of injury.

1) **Spine Mobility: Standing Cat-Cow (5 repetitions):** Stand with your feet hip-width apart and fold forward, placing your hands on your thighs. Inhale deeply as you arch your back, lifting your chest and tilting your pelvis forward (Cow Pose). Exhale fully as you round your spine, tucking your chin to your chest and drawing your belly button towards your spine (Cat Pose). Flow smoothly between these two positions, moving with your breath. This exercise helps improve flexibility and mobility in your spine, preparing it for the movements ahead.

2) **Lateral spine mobility:** Starting Position: Stand tall with feet hip-width apart and arms relaxed by your sides. Engage your core by drawing your navel towards your spine for stability. Gently lean your torso to the right, keeping both feet grounded. Feel a gentle stretch along the left side of your torso. Slowly return to the starting position. Repeat on the opposite side, leaning your torso to the left and feeling a stretch along the right side. Perform 5-10 controlled bends on each side. Inhale as you bend, exhale as you return to the centre. Modify as needed by performing seated on a chair or the floor. This exercise enhances spine flexibility, reduces stiffness, and improves posture.

3) **Ankle Mobility:** Ankle Circles (10 repetitions each direction): Sit or stand. Lift one foot off the ground and rotate your ankle in a circular motion, first clockwise and then counterclockwise. Perform 10 circles in each direction before switching to the other ankle. This exercise helps increase flexibility and mobility in your ankles, which is essential for proper lower body mechanics and knee stability.

4) **March in Place (1 minute):** Stand tall with your feet hip-width apart. Lift your knees towards your chest alternately, as if you're marching in place. Keep your movements controlled and your core engaged. This exercise helps increase blood flow to your leg muscles and activates your knee stabilisers.

5) **Leg Swings (10 repetitions each leg):** Find a sturdy support, like a wall or railing, and hold onto it for balance. Swing one leg forward and backward in a controlled motion, allowing your hip joint to move freely. Repeat on the other leg. This dynamic stretch helps loosen up your hip flexors and improves flexibility in your lower body.

6) **Side Leg Raises (10 repetitions each leg):** Stand tall with your feet hip-width apart. Lift one leg out to the side, keeping it straight and your toes pointing forward. Lower it back down with control. This exercise targets the muscles on the sides of your hips and thighs, promoting stability around the knee joint.

7) **Bodyweight Squats (10 repetitions):** Stand with your feet slightly wider than hip-width apart, toes pointing forward or slightly turned out. Bend your knees and lower your hips back and down as if sitting into an imaginary chair. Keep your chest up and your weight in your heels. Rise back up to standing, squeezing your glutes at the top. This movement activates the quadriceps, hamstrings, and glutes, preparing them for more intense exercises.

8) **Calf Raises (10 repetitions):** Stand with your feet hip-width apart and your hands on your hips or holding onto a support for balance. Lift your heels off the ground, rising onto the balls of your feet. Hold for a moment at the top, then lower back down with control. This exercise engages your calf muscles, which play a crucial role in supporting the ankles and knees during various movements.

By incorporating these spine mobility and ankle mobility exercises into your warm-up routine, you'll enhance overall lower body function and reduce the risk of injury during knee-strengthening exercises. Remember to perform each movement with control and focus, listening to your body's feedback to ensure a safe and effective warm-up session.

Chair exercises – Take care not to lock the joints (See video)

Seated Leg Extension Exercise

1. Starting Position: Sit upright on a chair with your feet flat on the floor, knees bent at a 90-degree angle.

2. Engage Core: Keep your back straight and engage your core muscles by pulling your navel towards your spine.

3. Leg Extension: Lift one foot off the floor, straightening your leg until it is parallel to the ground. Keep your toes pointing upwards throughout the movement.

4. Hold and Lower: Hold the extended position briefly, then lower your foot back down to the starting position with control.

5. Repeat: Perform 8-12 repetitions on one leg before switching to the other leg.

Progression with Resistance Band:

1. Secure one end of a resistance band around the leg of the chair closest to you.

2. Place the other end of the resistance band around the ankle of the leg you're exercising.

3. Follow the same steps as the seated leg extension, ensuring the resistance band provides tension throughout the movement.

Form Points:

- Maintain a neutral spine throughout the exercise, avoiding slouching or arching your back.
- Keep your shoulders relaxed and away from your ears.
- Focus on using your quadriceps (front thigh muscles) to lift and extend your leg.
- Avoid locking out your knee at the top of the movement to prevent strain.
- Control the movement both on the way up and on the way down to maximise muscle engagement and prevent jerky movements.
- This exercise strengthens the quadriceps and improves knee stability. Start with a comfortable resistance level and gradually increase as you get stronger. Always listen to your body and stop if you feel any pain or discomfort.

Seated Glute Exercise

1.Starting Position: Sit tall on a chair with your feet flat on the floor and knees bent at a 90-degree angle.

2. Engage Core: Maintain a straight back and engage your core muscles by drawing your navel towards your spine.

3. Hand Resistance: Place your hands on the outside of your thighs, just above your knees. Press your hands against your thighs while simultaneously pushing your thighs outward against your hands.

4. Push Outward: Push your thighs outward against the resistance of your hands, engaging the muscles on the outer thighs (abductors).

5. Hold and Release: Hold the outward push for a few seconds, then release the pressure while maintaining control.

6. Repeat: Perform 8-12 repetitions, focusing on the contraction of the outer thigh muscles with each push.

Progression with Resistance Band:

1. Place a looped resistance band around your thighs, just above your knees.

2. Follow the same steps as the seated abductor exercise, pressing your thighs outward against the resistance band.

3. Ensure the resistance band provides enough tension to challenge your muscles but allows for controlled movement.

Form Points:

- Keep your back straight and avoid leaning forward or backward during the exercise.
- Focus on pushing outward with controlled force, engaging the outer thigh muscles.
- Maintain tension in the core muscles throughout the movement to stabilise your body.
- Breathe steadily and avoid holding your breath.
- Gradually increase the intensity of the resistance band as you become stronger.
- This exercise targets the abductor muscles on the outer thighs, which help with hip stability and leg alignment. Start with a comfortable level of resistance and progress gradually. Stop the exercise if you experience any pain or discomfort.

Sit-to-Stand Exercise

1. Starting Position: Begin seated on a sturdy chair with your feet flat on the floor, hip-width apart, and knees bent at a 90-degree angle.

2. Engage Core: Keep your back straight and engage your core by drawing your navel towards your spine.

3. Stand Up: Inhale and as you exhale press through your heels and shift your weight forward as you push into the ground with your feet. Use your leg muscles to lift your body off the chair and stand up straight. Wide foot position to increase you stability when standing

4. Maintain Control: Once standing, ensure your knees are in line with your toes and avoid locking them. Keep your chest lifted and shoulders relaxed.

5. Sit Down: Slowly lower yourself back down to the seated position, bending your knees and shifting your hips backward. Aim to lower yourself under control, engaging your leg muscles throughout the movement.

6. Repeat: Perform 8-12 repetitions, focusing on using your leg muscles to lift and lower your body.

Progression to Squat:

1. Starting Position: Stand with your feet slightly wider than hip-width apart, toes pointing slightly outward.

2. Engage Core: Tighten your core muscles and keep your chest lifted.

3. Initiate Movement: Hinge your hips back as if sitting into an imaginary chair, keeping your weight in your heels. Bend your knees and lower your body down into a squat position.

4. Depth: Aim to lower yourself until your thighs are parallel to the ground, or as far as comfortable while maintaining proper form. Try to push your knees outwards, to avoid them falling in as you lower.

5. Press Through Heels: Push through your heels to return to the starting position, straightening your legs and returning to a standing position.

6. Repeat: Perform 8-12 repetitions, focusing on maintaining proper form and control throughout the movement.

Form Points:

- Keep your back straight and chest lifted throughout both exercises.
- Engage your core muscles to stabilise your spine and pelvis.
- Ensure your knees track in line with your toes and avoid letting them collapse inward.
- Lower yourself down and rise up with control, using your leg muscles rather than momentum.
- Progress gradually, increasing the depth of the squat as you gain strength and mobility.
- These exercises target the muscles of the lower body, including the quadriceps, hamstrings, glutes, and core muscles. Start with a comfortable range of motion and progress slowly as you build strength and confidence. If you experience any pain or discomfort, stop the exercise and consult with a healthcare professional.

See video for further squat variations and additional exercises.

How to protect the knees during exercises that require you to knee:

1) Place a rolled-up mat or towel under your shins to raise the kneecap off the floor.
2) Ball or cushion behind knee joint in child's pose to reduce the angle of the knee bend.

Chair stretches – see video

1) Quads – straight legs toes pointed.
2) Drop knee to side and lean back in chair.
3) Glute stretch seated by crossing the leg over.
4) Standing or seated hamstring back stretch.

Summary:

We hope that these exercises and information provide you with valuable tools to maintain the health of your knees for years to come. Remember, regular movement and consistent practice of these exercises are key to promoting knee strength, stability, and flexibility. By incorporating these exercises into your routine and staying mindful of proper form, you can support the longevity of your knee health and enjoy an active lifestyle. If you have any concerns or questions about your knee health, consult with a healthcare professional for personalised guidance and support. Keep moving, stay proactive, and here's to keeping your knees healthy for the long haul!