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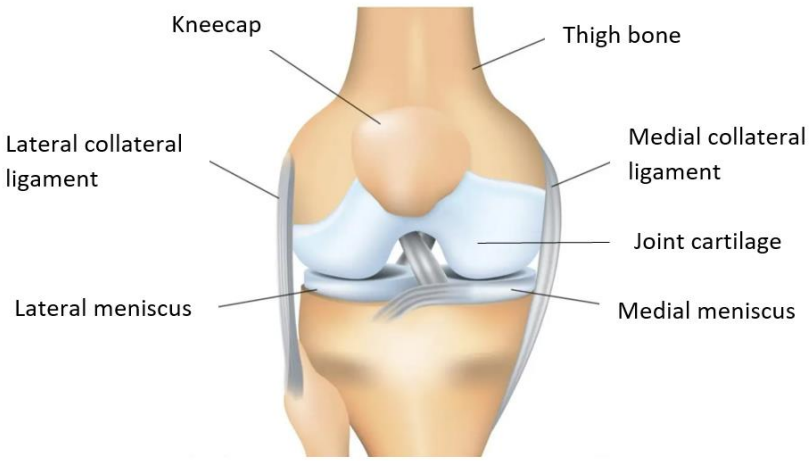
Understanding and Managing Knee Osteoarthritis

Knee Osteoarthritis (OA) is a common knee condition in adults aged 45 years and above. It involves symptomatic degenerative changes of the cartilage and bones within the knee joint. Over time, this can lead to pain and stiffness, usually felt around the front of the knee or at either side of the knee.



Common symptoms

- Morning stiffness that gets better with movement, lasting less than 30 minutes.
- Pain and stiffness when getting up from a chair, especially after sitting for a long time.
- Pain with long periods of walking.
- Swelling in the knee.

Risk factors

- Overweight
- Previous knee injury or surgery
- Genetics

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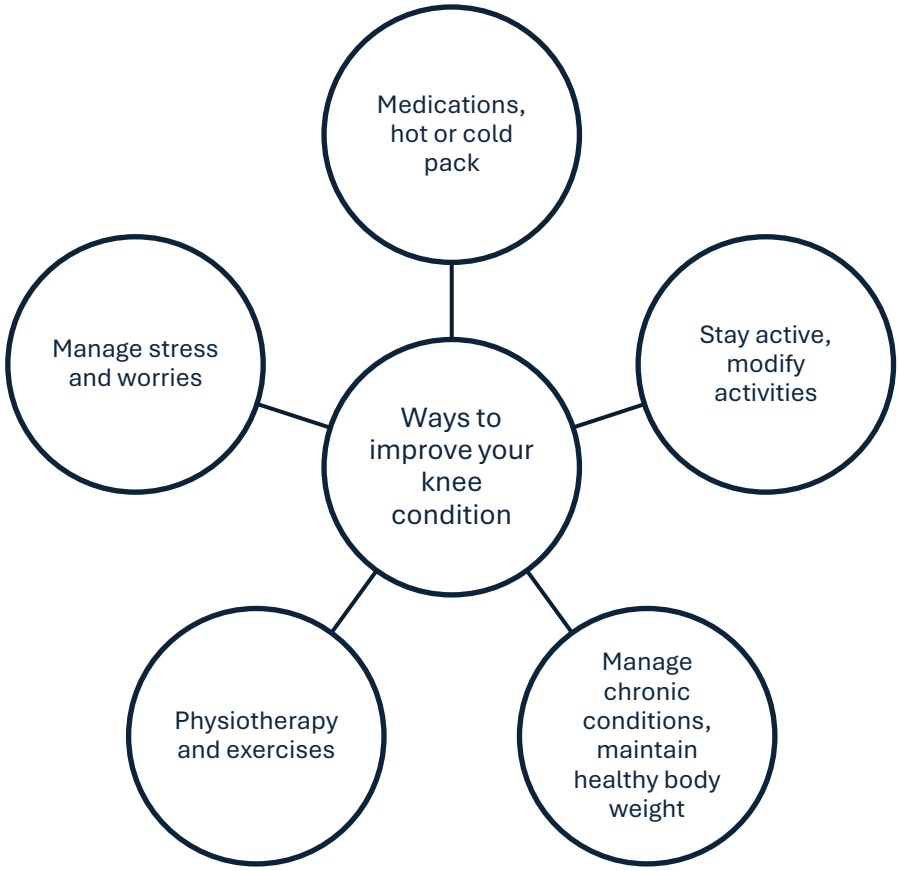
What can I do?



- It is common to have days when you might have more pain. During these episodes, pain medications or a cold pack placed on your knee for 20 minutes can help to reduce pain.

- Stay active but modify your activities such that you are still active. For example, going for a shorter walk than what you normally do.

- Stress and worries can affect our pain sensitivity. Talk to your loved ones or a healthcare professional if you need to.

- Exercise is the encouraged treatment for people with osteoarthritis1. Exercises can help to reduce pain, improve your flexibility and strength so to help you move better.

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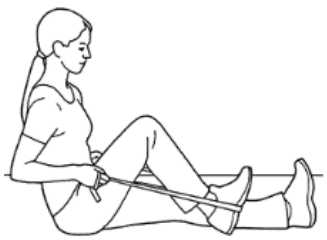
Exercises

You may experience some pain as you start to exercise. It is important that you do the exercises in a relaxed manner by breathing in and out normally. Please consult your doctor or physiotherapist if you feel increased pain when doing the exercises.

The guide below can help to make sure you are exercising at the right level[2]:

- 0-3 out of 10: Continue with exercise.
- 4-5 out of 10: Reduce the repetitions, duration, and intensity.
- 6 or above: Stop exercise. Consider another exercise instead.

Flexibility exercises	
Knee bending 	1. Sit with your back supported against headrest of bed. 2. Place a towel around your foot as shown. 3. Bend your knee as you gently pull your leg in with the towel. 4. Slowly straighten knee. 5. Repeat 5 to 10 times or as tolerated.

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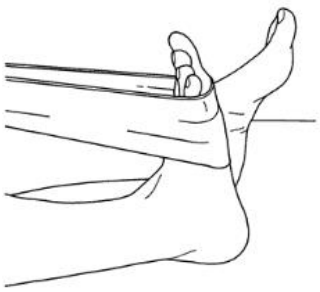
Flexibility exercises	
Calf stretch 	1. Sit with your back supported against headrest of bed. Straighten your leg. 2. Place a towel around your foot. 3. Gently pull your foot towards you until you feel a stretch in your calf muscle. 4. Hold for 15 to 30 seconds. 5. Repeat 3 to 5 times or as tolerated.
Hamstring stretch 	1. Sit with one leg straightened out. 2. Lean forward from the hips, place both hands on your knee and gently push the knee down until a stretch is felt at the back of the thigh. 3. Ensure back is kept straight. 4. Hold for 15 to 30 seconds. 5. Repeat 3 to 5 times or as tolerated.

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Light strengthening exercises	
Quad (front thigh muscle) contraction 	1. Place a rolled towel under knee. 2. Tighten front thigh muscles by pressing the knee on the towel gently. 3. Hold for 10 seconds or as tolerated. 4. Repeat 5 to10 times or as tolerated.
Inner range quads strengthening 	1. Place a rolled towel under knee. 2. Tighten thigh muscles by pressing the knee on the towel. 3. Lift heel off the surface and hold for 10 seconds or as tolerated. 4. Repeat 5 to 10 times or as tolerated.
Straight leg raise 	1. Lie on back with one leg straight and the other bent. 2. Tighten front of thigh muscles on the straightened knee and lift leg to about 20cm from the bed. 3. Keep knee straight. 4. Hold for 10 seconds or as tolerated. 5. Lower leg slowly. 6. Repeat 5 to 10 times or as tolerated.

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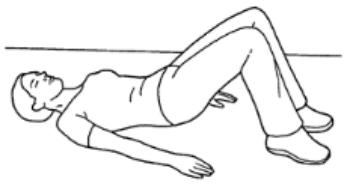
Knee extension 	1. Sit on chair with back on backrest, tighten front of thigh muscles and straighten knee. Keep toes pointed up towards ceiling. 2. Keep knee straight. 3. Hold for 10 seconds or as tolerated. 4. Repeat 5 to 10 times or as tolerated.
Sit to stand 	1. Sit at edge of chair with hands on hips or thighs. 2. Lean body forward from hips and stand up. 3. Slowly lower yourself to sit. 4. Repeat for 5 to 10 times or as tolerated. Optional: You may progress this exercise by placing hands across chest or performing the movement on a slightly lower chair.
Bridging 	1. Lie on back with knees bent. 2. Push through your feet. 3. Tighten buttock muscles and lift your bottom up to a comfortable height. 4. Repeat 10 times or as tolerated. Optional: You may progress this exercise by lifting your buttocks and hold for up for 5 to 10 secs.

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Please note that the instructions illustrated in this handout is strictly for information purpose. If you have any queries, kindly proceed to check with your doctor or physiotherapist.

Frequently asked questions

1. Is it true that my knee pain is due to degeneration?

It is natural for our joints and muscles to degenerate with age. However, the level of pain is not a good indicator of degeneration.

There are other factors that can also contribute to pain:

- Depression, anxiety, and poor sleep affect our pain sensitivity.
- Health conditions such as obesity, diabetes, high cholesterol, and high blood pressure are closely linked to the health of our muscles and joints. These conditions increase inflammation in our body and speed up the degeneration process.

2. Is my weight related to my knee OA?

Carrying extra body weight increases the risk of developing knee OA4. This is due to increased load on the knees and chronic low-grade inflammation in the body.

3. Will I live with pain

It is normal to feel anxious about your pain. A common myth is that OA will never get better, no matter what you do. This is not true. People with knee OA can still be healthy and active by exercising and making lifestyle changes.

4. Will exercise increase the amount of wear and tear in my knees?

Research shows that only a small percentage of recreational runners develop OA, whereas a higher percentage of inactive individuals develop OA5. There is no evidence to state that exercise increases wear and tear of knees.

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5. Do I need an X-ray?

An X-ray is only needed when there is a recent fall or trauma. However, the X-ray findings are unlikely to change the management of your condition. Speak with your doctor if your pain does not get better or if you have any new medical history.

6. Do I need surgery?

Surgery is usually not the first treatment option for knee OA. Most people do get better with exercises and making lifestyle changes.

7. Is it true that my knee has run out of cartilage or "gel"?

As we age, the amount of cartilage in our joints decreases. However, the body is still able to produce cartilage, but at a slower rate. Exercises can help to encourage the production and strengthening muscles help to protect your joints.

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1. Wood, G., Neilson, J., Cottrell, E., & Hoole, S. P. (2023). Osteoarthritis in people over 16: diagnosis and management—updated summary of NICE guidance. bmj, 380.

2. Wong-Baker FACES Foundation. (2023, April 28). Home - Wong-Baker FACES Foundation. https://wongbakerfaces.org/

3. General exercises 2nd Edition by PhysioTools (PT1) (2016). PhysioTools.

4. Reyes C, Leyland KM, Peat G, Cooper C, Arden NK, Prieto-Alhambra D. Association Between Overweight and Obesity and Risk of Clinically Diagnosed Knee, Hip, and Hand Osteoarthritis: A Population-Based Cohort Study. Arthritis Rheumatol. 2016 Aug;68(8):1869-75. doi: 10.1002/art.39707. PMID: 27059260; PMCID: PMC4966641.

5. Alentorn-Geli E, Samuelsson K, Musahl V, Green CL, Bhandari M, Karlsson J. The Association of Recreational and Competitive Running With Hip and Knee Osteoarthritis: A Systematic Review and Meta-analysis. J Orthop Sports Phys Ther. 2017 Jun;47(6):373-390. doi: 10.2519/jospt.2017.7137. Epub 2017 May 13. PMID: 28504066.

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