

Knee Osteoarthritis



Scan this QR Code to access a detailed video that enhances the information in this handout. It includes explanations for all the various treatments for knee osteoarthritis.

What is osteoarthritis?

Osteoarthritis is caused by the progressive loss of articular cartilage. Cartilage helps protect our bones and creates a smooth frictionless environment. Loss of cartilage results in grinding of the bones which leads to pain and inflammation. Osteoarthritis is a progressive disease that cannot be cured or reversed.

How does osteoarthritis occur?

Risk factors for osteoarthritis include age, genetics, trauma, injury, repetitive high impact activities, and metabolic factors such as high blood pressure, elevated blood sugar, excess body fat, increased triglycerides, and high cholesterol.

Chronic inflammation weakens articular cartilage resulting in joint dysfunction. Damage to cartilage leads to the release of harmful enzymes and proteins which further degrades cartilage in a self-perpetuating cycle. The ultimate result is stiffness, reduced mobility, swelling, and pain.

How is osteoarthritis treated?

Treatment of osteoarthritis should focus on prevention.

1. Exercise therapy is critical to decreasing pain and improving function. Aerobic exercise such as walking or stationary bike helps increase the production of lubrication in the joint. This helps the joint move smoothly.
 - a. **Aerobic exercise should be done at least 30 minutes daily.**
2. Resistance training and rehabilitation exercises strengthen the muscles around the leg to help improve stability and to take pressure off the joint.
 - a. **Strength training should be done at least 3 times a week.**
3. Weight and load management helps reduce overloading the joints.

Knee Osteoarthritis Rehabilitation Exercises

Consistent rehabilitation can accelerate recovery and prevent recurrence. Do the following rehabilitation program 3 times per week for 4-6 weeks.

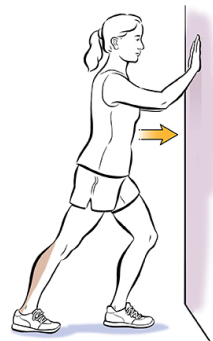
Standing Quadriceps Stretch

- Objective: reduce tension along the IT band
- Stand on the unaffected leg. Bend the knee of your injured leg bringing your heel towards the glutes. Grasp the ankle with your hand. You should feel a stretch along your thigh muscle.
- Hold this for 30 seconds, repeat on the other side.



Standing Calf Stretch

- Objective: alleviate tension in the calves to improve mobility
- Face a wall and step your unaffected foot forward, keeping your back leg straight. Lean forward towards the wall until you feel a stretch in the calf of your back leg.
- Hold this for 30 seconds, repeat on the other side.



Standing IT Band Stretch

- Objective: improve flexibility along the outer thigh and hip
- Stand on the affected leg and cross your other leg in front of it. Gently allow the hip of the affected leg to drop outwards away from your body. Lean your upper body slightly towards the opposite side to increase the stretch. You should feel a stretch along the hip and side of the affected leg.
- Hold this for 30 seconds, repeat on the other side.



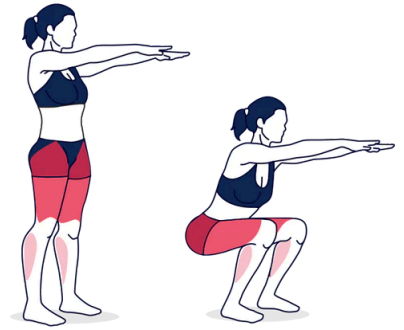
Sitting Hamstring Stretch

- Objective: improve flexibility of the hamstrings
- Straighten out the affected leg and bend your other leg inwards. Hinge forward at the hips and reach towards the toes. Try to keep the leg as straight as possible.
- Hold this for 30 seconds, repeat on the other side.



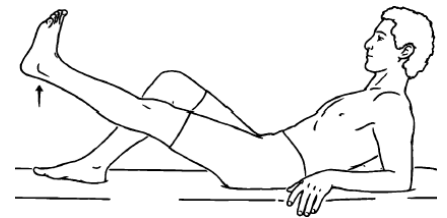
Body Weight Squat

- Objective: strengthen the quadriceps, hamstrings, glutes, and calf muscles
- Stand with your feet shoulder width apart. Slowly bend your knees, keeping your back straight and your core engaged. Lower until your thighs are parallel to the floor. Consider starting at a half squat and slowly progress to a full squat as you recover. Use weights to increase difficulty.
- Perform 2 sets of 15 repetitions.



Straight Leg Raise

- Objective: strengthen the quadriceps, hip flexors, and abdominal muscles
- Lie down and bend both your knees with your feet flat. Straighten out the affected leg and lift it upwards to an angle of about 45 degrees from the ground. Hold the leg at the top of the movement briefly and then gently lower the leg back down.
- Perform 2 sets of 15 repetitions.



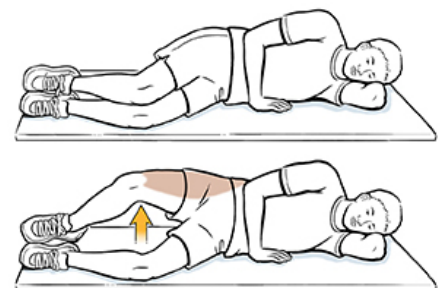
Glute Hip Bridge

- Objective: strengthen gluteus maximus, hamstrings, pelvis, and torso
- Lie down with your knees bent and feet flat. Keep your arms flat at your sides. Lift your hips, aiming to form a straight line from your shoulders to your knees. Squeeze your glutes and hold briefly at the top before gently lowering back down. To increase the challenge, wrap a resistance band around your waist.
- Perform 2 sets of 15 repetitions.



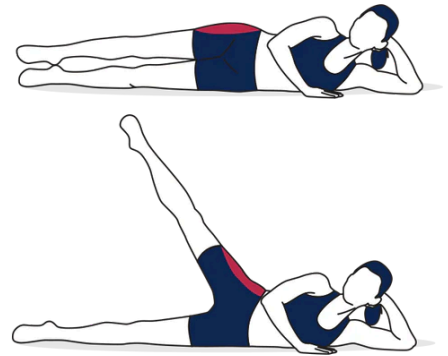
Side Lying Clamshell

- Objective: strengthen hip and pelvic muscles
- Lie on your side with both your hips and knees bent. Keep your feet together. Then, raise the top knee as high as possible without moving your hips or pelvis. Pause at the top, where you feel maximum engagement in your glutes, and then lower back down. Use resistance bands around your thighs, just above the knees to increase difficulty.
- Perform 2 sets of 15 repetitions.



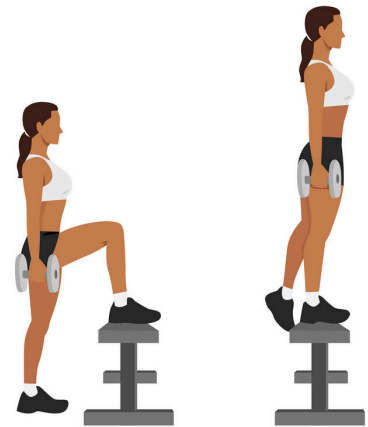
Side Lying Leg Raise

- Objective: strengthen hip abductors to enhance stability and balance
- Lie on your side with your legs straight. Raise the upper leg while maintaining a straight line with your body. Aim to lift it to about 45 degrees, hold it briefly at the top, and then gently lower it back down.
- Perform 2 sets of 15 repetitions.



Step Ups

- Objective: strengthen lower extremity muscles, improves balance and stability, addresses imbalances between legs
- Stand in front of a sturdy platform. Step up onto the platform with your injured foot first, followed by the other leg. Then step back down, leading with the injured foot. To further challenge yourself, increase the step height or perform the exercise while holding weights.
- Perform 2 sets of 15 repetitions.



Single Leg Balance Exercise

- Objective: improve stability, coordination, and lower body strength
- Stand on the affected leg on a stable surface. Put your hands on your hips and slowly shift your weight onto one foot. Carefully lift your other foot and raise the leg so that your thigh is as close as parallel to the ground. You can make this exercise more challenging by holding weights.
- Hold this position for 1 minute and then repeat on the other side.



Patient Education - Knee Osteoarthritis

www.JeffreyPengMD.com | youtube.com/c/JeffreyPengMD

<p>Everything on Knee Arthritis Treatment Without Surgery: https://youtu.be/z3veeAgR8AQ</p> 	<p>Knee Arthritis Exercises: https://youtu.be/aMMHfJwAmM</p> 	<p>The Top 7 Signs and Symptoms of Knee Arthritis: https://youtu.be/qyPGw1KmGel</p> 
<p>Anti-Inflammatory Diet & Weight Loss for Arthritis https://youtu.be/MY1_6EnkChg</p> 	<p>5 Easy Home Treatments for Knee Arthritis Pain Relief: https://youtu.be/f49OKQum87w</p> 	<p>This is What CAUSES and WORSENS Arthritis: https://youtu.be/jWnNS5I5Zv8</p> 
<p>Exercise Reduces Pain for Knee Arthritis: https://youtu.be/1rFO54npL5A</p> 	<p>PRP Injection for Knee Arthritis: https://youtu.be/H0OQwpctKKE</p> 	<p>PRP Slows Down Knee Arthritis Progression: https://youtu.be/_7HU_-YDfQY</p> 
<p>How Many PRP Injections Do You Need? https://youtu.be/6ZcvgWxMIXQ</p> 	<p>Are PRP Booster Injections Necessary? https://youtu.be/4pHwrWVDQTc</p> 	<p>PRP Injections vs Stem Cell Injections for Knee Arthritis: https://youtu.be/JjkQvbM6rsw</p> 
<p>X-ray Stages of Knee Arthritis: https://youtu.be/WiZoV8PJ_tQ</p> 	<p>Meniscus Tear Treatment Without Surgery https://youtu.be/hmSsJpg03k</p> 	<p>Is it Safe to Walk with Knee Arthritis? https://youtu.be/m1hqe5DBEqM</p> 

Patient Education - Supplements for Osteoarthritis Pain

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The best available clinical trial evidence suggests the following:

High effect size in reducing symptoms:

- Turmeric & Curcumin 1000mg daily
- Boswellia Serrata extract 100mg daily, increase to 250mg daily as needed
- It is generally safe to take Turmeric and Boswellia together.

Low to moderate effect size in reducing symptoms:

- Glucosamine 1500mg & Chondroitin 800-1200mg daily (G&C must be taken together)

Low effect size in reducing symptoms:







- Vitamin D 2000 IU daily

Likely no benefit in reducing symptoms:

- Omega-3 & fish oil

Insufficient evidence:

- Type 2 Collagen

<p>Glucosamine & Chondroitin For Joint Pain & Arthritis: https://youtu.be/ERfMAqLLd_4</p> 	<p>Turmeric & Curcumin For Joint Pain & Arthritis: https://youtu.be/B4Wf5-K5PmM</p> 	<p>Omega-3 & Fish Oil For Joint Pain & Arthritis: https://youtu.be/CIVQYr5c21w</p> 
<p>Type 2 Collagen For Joint Pain & Arthritis: https://youtu.be/l1h5v663x4E</p> 	<p>Boswellia Serrata For Joint Pain & Arthritis: https://youtu.be/kIEePlw76Is</p> 	<p>Vitamin D For Joint Pain & Arthritis: https://youtu.be/BMYiOX3Dn1c</p> 

Knee Osteoarthritis Treatments

Knee Osteoarthritis Treatment	Short term pain benefits	Mid to Long term pain benefits	Impact on Arthritis Progression	Risk of MAJOR side effects	Cost of Treatment	Dr Peng's Recommendation
Weight Management	Mild	High	Decreases	None	None	Highest
Exercise Therapy	Mild	High	Decreases	None	None	Highest
Anti-Inflammatory Diet	Mild	Mild - Moderate	May decrease	None	Minimal	Highest
Platelet Rich Plasma	Mild - Moderate	High	May decrease	None	\$\$	Moderate
Turmeric / Boswellia	Mild	Mild	None	None	Minimal	Low - Moderate
Hyaluronic Acid	Mild - Moderate	Moderate	None	Very low	\$ - \$\$	Low
Trigger Point Injection	Mild - Moderate	Mild	None	None	\$	Use as needed
Knee Braces	Mild	None	None	None	Minimal	Use as needed
Topical NSAIDs / Capsaicin	Mild	None	None	None	Minimal	Use as needed
Topical CBD	Mild	None	None	None	Minimal	Use as needed
Tylenol	Mild	None	None	Very low	Minimal	Use as needed
Oral NSAIDs	Mild	None	None	Low - Moderate	Minimal	Use sparingly
Corticosteroid Injection	Moderate	None	Increases	Low	\$	Limit use
Knee replacement	Poor	High	N/A	Moderate	\$\$\$\$	Personal decision
Genicular Treatment	Mild - Moderate	None	None	None	\$\$	Consider prior to arthroplasty
Dextrose Prolotherapy	Mild - Moderate	None	None	None	\$\$	Consider prior to arthroplasty
Red Light Therapy (PBM)	Mild	None	None	None	\$ - \$\$	Insufficient evidence
Opioids	Mild	None	None	High	Minimal	Not recommended
Knee arthroscopy	Mild	Mild	May Increase	Low - Moderate	\$\$\$	Not recommended
Bone Marrow Stem Cells	Insufficient evidence	Insufficient evidence	Insufficient evidence	Low	\$\$\$\$	Not recommended
Adipose Tissue Stem Cells	Insufficient evidence	Insufficient evidence	Insufficient evidence	Low	\$\$\$\$	Not recommended
Umbilical Cord Stem Cells	Insufficient evidence	Insufficient evidence	Insufficient evidence	Low	\$\$\$\$	Not recommended