Anatomy: The bone surfaces of the ball and socket have a smooth durable cover of articular cartilage that cushions the ends of the bones and enables them to move easily. A thin, smooth tissue called synovial membrane covers all remaining surfaces of the hip joint. In a healthy hip, this membrane makes a small amount of fluid that lubricates and almost eliminates friction in the hip joint. Normally, all of these parts of the hip work in harmony, allowing you to move easily and without pain. Osteoarthritis occurs when the cartilage that cushions the ends of bones in your joints deteriorates over time. The smooth surface of the cartilage becomes rough, causing irritation. Eventually, if the cartilage wears down completely, you may be left with bone rubbing on bone causing the ends of your bones to become damaged and your joints to become painful.

Causes/ Risk Factors

Older age. Osteoarthritis typically occurs in older adults. People under 40 rarely experience osteoarthritis.

Joint injuries. Injuries, such as those that occur when playing sports or from an accident, may increase the risk of osteoarthritis.

Bone deformities. Some people are born with malformed joints or defective cartilage, which can increase the risk of osteoarthritis.

Sex. Women are more likely to develop osteoarthritis.

Obesity. Carrying more body weight places more stress on your weight-bearing joints.

Certain occupations. If your job includes tasks that place repetitive stress on a particular joint, that may predispose that joint toward eventually developing osteoarthritis.

Heredity. You are more likely to get it if you have a family history of the disease.

Other diseases. Gout, rheumatoid arthritis, Paget's disease of bone or septic arthritis can increase your risk of developing osteoarthritis.

Muscle weakness, muscular weakness can create instability in a joint and cause abnormal wear of joint cartilage.

Mechanisms for Injury

Primary osteoarthritis: exact cause is unknown, but thought to be related to defects in the articular cartilage and due to normal wear and tear.

Secondary osteoarthritis: Degeneration of known cause such as infection, trauma, overuse, stress resulting from obesity, poor posture, orthopedic abnormalities, or immobilization. Symptoms: Your first sign may be a bit of discomfort and stiffness in your groin, buttock, or thigh when you wake up in the morning.
morning. The pain flares when you are active and gets better when you rest. **Pain.** Your hip may hurt during weight bearing activities. **Tenderness.** Your hip may feel tender when you apply light pressure to it. **Stiffness.** Joint stiffness may be most noticeable when you wake up in the morning, after a period of inactivity or in colder temperatures. **Loss of flexibility.** You may not be able to move your joint through its full range of motion. Limited hip internal rotation is the first sign of hip osteoarthritis. **Swelling,** The joint may be tender with soft tissue swelling

- **Grating sensation.** You may hear or feel a grating sensation when you use the joint.
- **Bone spurs.** These extra bits of bone, which feel like hard lumps, may form around the affected joint.
- **Management:** *Lifestyle Modifications*
  - **Rest.** Find activities that don't require you to use your joint repetitively. Avoid repetitive impact activities.
  - **Exercise.** Stick to gentle exercises, such as walking, biking or swimming. Exercise can increase your endurance and strengthen the muscles around your joint, making your joint more stable.
  - **Lose weight.** Being overweight or obese increases the stress on your weight-bearing joints, such as your knees and your hips. Even a small amount of weight loss can relieve some pressure and reduce your pain.
  - **Use heat and cold to manage pain.** Both heat and cold can relieve pain in your joint. Heat also relieves stiffness and cold can relieve muscle spasms.

**Surgical Treatment**

If you have later stages of osteoarthritis, your hip joint hurts when you rest at night, and/or your hip is severely deformed, your doctor may recommend total hip replacement surgery. You will get a two-piece ball and socket replacement for your hip joint. Rehabilitation is important to restore the range of motion in the hip and stabilize the muscles surrounding the hip.

**Exercises**

Exercises for osteoarthritis focus on maintaining hip range of motion through general strengthening and stretching of hip musculature.
**Stretch hamstrings supine w/towel**

- Lie on back holding a towel looped under foot with knee straight, as shown.
- Gently pull leg up.
- Repeat with other leg.

**Special Instructions:**
Maintain a straight knee.
Perform 1 set of 5 Repetitions, twice a day.
Use Towel.
Hold exercise for 30 Seconds.

**Stretch Hip flexors leg abd supine**

- Lie on back on bed.
- Slowly drop right leg off side of bed with knee bent.
- Pull left knee to chest and hold with both hands.

Perform 1 set of 4 Repetitions, twice a day.
Hold exercise for 20 Seconds.

**Stretch Piriformis supine w/hip ER**

- Lie on back with knees bent.
- Cross one leg over the other.
- Grasp knee and ankle as shown.
- Pull knee across chest to opposite shoulder as shown.
- Repeat with other leg.

Perform 1 set of 4 Repetitions, twice a day.
Hold exercise for 20 Seconds.

**Stretch IT/TFL stand bent knee on chair**

- Stand next to chair or stool with knee of involved leg bent, resting on chair as shown.
- Flatten low back, tilting pelvis backward.
- To increase the stretch, step forward slightly and then tilt pelvis backward.

**Special Instructions:**
Hold 20-30seconds. repeat 3-5 times.
Perform 1 set of 4 Repetitions, twice a day.
Hold exercise for 20 Seconds.

**Stretch Hip adductor stand w/chair**

- Stand with leg out to side with foot on chair, foot turned inward as shown.
- Squat to 45 degrees on weight bearing leg until a stretch is felt in groin area.

Perform 1 set of 4 Repetitions, twice a day.
Use 2 Lbs.
Hold exercise for 20 Seconds.

**Stretch Quads prone w/towel**

- Lie face down.
- Bend knee and loop towel around ankle.
- Gently pull towel to stretch muscle on front of thigh.

Perform 1 set of 4 Repetitions, twice a day.
Use Towel.
Hold exercise for 20 Seconds.

**AROM lumbar bridging bil**

- Lie on back with knees bent.
- Return to start position.

**Special Instructions:**
Maintain neutral spine.
Perform 3 sets of 20 Repetitions, once a day.
Rest 1 Minute between sets.
Perform 1 repetition every 4 Seconds.

**AROM lumbar flx uni knee to chest**

- Lie on back.
- Bring right knee up to chest.
- Return to start position.
- Repeat with left knee.

**Special Instructions:**
It may help to grasp your leg behind your knee and pull to your chest.
Perform 3 sets of 20 Repetitions, once a day.
Rest 1 Minute between sets.
Perform 1 repetition every 4 Seconds.
• Lie on back, legs straight.
• Rotate legs inward and outward.

**Perform 3 sets of 20 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

**Special Instructions:**
- Do not roll trunk forward or backward.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ext stand w/elastic**

**Hold exercise for 20 Seconds.**

• Lie on right side with knees bent and elastic looped around thighs just above knees.
• Keep heels together and lift left knee upward.
• Repeat series lying on left side and raising right leg.

**Perform 3 sets of 10 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

**Special Instructions:**
- Do not roll trunk forward or backward.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

• Lie on back, legs straight.
• Keep knee straight on involved leg.
• Lift involved leg upward.
• Return to starting position.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ER sidelying w/elastic**

**Perform 3 sets of 10 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on back, legs straight.
• Rotate legs inward and outward.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ER/IR supine bil**

**Perform 3 sets of 10 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

- Lie on back, legs straight.
- Rotate legs inward and outward.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ext stand w/elastic**

**Perform 3 sets of 10 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ext prone straight leg**

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on back.
• Keep knee straight on involved leg.
• Lift involved leg upward.
• Return to start position.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on back, legs straight.
• Rotate legs inward and outward.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on back, legs straight.
• Rotate legs inward and outward.

**Perform 3 sets of 20 Repetitions, once a day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist hip ER sidelying w/elastic**

**Perform 3 sets of 10 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on right side with knees bent and elastic looped around thighs just above knees.
• Keep heels together and lift left knee upward.
• Repeat series lying on left side and raising right leg.

**Perform 3 sets of 10 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Attach elastic to secure object at ankle level.
• Loop around ankle.
• Stand, facing toward the pull.
• Extend leg backward, keeping knee straight.
• Slowly return to start position.

**Special Instructions:**
- Keep back straight.
- Rest 1 Minute between sets.
- Perform 1 repetition every 4 Seconds.

**Resist IT band sidelying**

**Perform 3 sets of 20 Repetitions, once every other day.**

**Rest 1 Minute between sets.**

**Perform 1 repetition every 4 Seconds.**

• Lie on uninvolved side.
• Extend involved leg backwards and slowly lower until a gentle stretch is felt in outer side of thigh.
• Keep leg straight and rotated outward.

**Perform 1 set of 4 Repetitions, twice a day.**

**Hold exercise for 20 Seconds.**

• Lie on uninvolved side.
• Extend involved leg backwards and slowly lower until a gentle stretch is felt in outer side of thigh.
• Keep leg straight and rotated outward.

**Perform 1 set of 4 Repetitions, twice a day.**

**Hold exercise for 20 Seconds.**