

The Big O's Osteoarthritis & Osteoporosis

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Objectives:

- **To identify and learn about Osteoarthritis & Osteoporosis**
- **To recognize and understand the symptoms older adults may face with these conditions**
- **To demonstrate compassion and sensitivity for those suffering with these conditions**
- **To identify and understand the cautions and contraindications of exercise for those suffering with these conditions**
- **To be able to select, design and modify exercises and stretches for those who have these conditions**

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- **The content in this handout is not to be reproduced in any form without consent of the author**
- **All information provided is written for general knowledge and educational purposes**
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- **This information given does not replace consultation with a qualified health care or fitness professional**

Arthritis

- means joint inflammation
- 406 joints in the body
- 292 of them are susceptible to arthritis
- 1 pound of weight is equal to 4 pounds of pressure in the knees, 6 pounds of pressure through the hips
- 3 times the body weight is transferred through the hip joint when standing on one leg or when walking
- 2 common types of arthritis - **Rheumatoid**
- **Osteoarthritis**

Osteoarthritis

- affects larger joints – hips, knees, spine, ankles, hands
- joint deterioration – wearing away of the protective cartilage at the ends of bones
- progressive disease
- inflammation causes a synovial fluid build up & thickening which causes damaging cells – these cause more cartilage deterioration & bone growths, deformity

Symptoms

- pain
- tenderness
- stiffness - fluid in joints (swelling)
- loss of ROM
- loss of flexibility
- grating sensation when using joint
- bone spurs causing discomfort when moving

Causes of Osteoarthritis

- time – age
- excess weight
- heredity
- joint injury, trauma
- past surgery sites
- overuse
- occupation
- muscle imbalance

Medications & Other Interventions for Osteoarthritis

- Analgesics - Tylenol - pain relieving medications but does not reduce inflammation
- NSAIDS – Advil - anti-inflammatory medications - may lead to stomach/kidney issues
- Corticosteroids - injections - anti-inflammatory medications
- Opioid Analgesics - Vicodin, Darvon, Percocet
- COX-2 Inhibitors - Celebrex
- Hyaluronic Acid - viscosupplementation - lubricating injections
- Supplements – Glucosamine, Chondroitin, MSM, avocado-soybean unsaponifiables
- Platelet-rich Plasma injections
- Mesenchymal Stem Cell treatments - taken from bone marrow to regrow cartilage
- Bone Marrow Aspirate Concentrate - use of bone marrow
- Autologous Cultured Chondrocytes - taking cells from own joint to help form cartilage
- Botox Injections - may help ease pain
- Water-Cooled Radiofrequency Ablation - disabling nerves that cause pain with heat
- vitamin D research
- Bisphosphonates - medications for osteoporosis - may reduce progression
- surgery
- acupuncture
- electrical stimulation, ultrasound
- hydro therapy - water exercise
- physical therapy
- massage
- rest
- weight loss
- antioxidant rich foods - cherries, oranges, cranberries, spinach, kale, broccoli, beets
- Topical creams – 024, Voltarin, Traumeel, Arnica, capsaicin creams braces
- shoe inserts
- kinesio taping
- assistive devices
- ice ??? or heat???
- in Australia - Pentosan Polysulfate Sodium - used for blood clots & urinary tract infections - for reduction in bone pain
- in the UK - using a device to pick up sounds in a deteriorating knee joint
- medical Marijuana

Osteoarthritis & Exercise

The worse the joint is, the more important it is to strengthen the muscles around it.

However, it is crucial to find the right “dose” of sets, repetitions & weight to use, to not cause swelling and inflammation.

Use the Arthritis Rule of 2 hours – if you are still in too much pain after 2 hours, you did too much.

But if you do not move/exercise because of pain, the muscles will weaken and you will have a weaker joint.

Motion is Lotion

Work with Pain that is “comfortably uncomfortable”!

Why Exercise?

- pain & stiffness may make one not feel like exercising - becoming more stiff
- to compress & release the joints
- to bring blood flow to the area
- to bring nutrients & oxygen
- to assist with alleviating pain & stiffness
- longevity to the joints
- maintain or lose weight
- to help with fatigue, mood changes, depression

Include:

- cardio - which equipment/activity is best for you/client?
- strength building for the lower anti-gravity muscles
- balance work, but not too much
- range of motion movements
- stretching

Medical Exercise Training Laws

“DO NO HARM”

Respect Swelling and Inflammation

Connective Tissue/Fascia is King

Watch for Red Flags

Train for Function

Stabilize, Activate and/or Mobilize

Watch for Red Flags

- history
- unexplained changes
- recent illnesses, surgery
- fever
- swelling, redness
- facial expressions
- constant pain at rest
- pain at night
- age
- numbness, tingling, weakness
- dizziness, vertigo

Exercises Suggestions for Osteoarthritis

- longer, gradual warm up
- use heat before exercise
- warm the joints – leg warmers, tights
- more support & cushioning in shoes
- avoid causing pain & swelling
- low impact
- avoid weight bearing on one joint for long periods
- build muscle strength around the joint for support
- stretch, but careful not to overstretch
- shorter periods of exercise
- cross train
- water activities
- Nordic pole walking
- use assistive devices

Wrist & Hand Arthritis

Cervical Neck Arthritis

- most mobile part of the spine
- we use our neck for ADLs most of the time
- the head weighs 10-12 pounds
- the pressure on the cervical spine increases with every inch of a forward lean of the head
lean of 15° = 27lbs lean of 30° = 40lbs
- **lean of 60° like texting, reading emails on your hand held device = 60lbs**

Some Exercise Suggestions

Neck Exercises

- movements with breathing
- rotation, flexion, lateral flexion
- with resistance - supine, prone, sitting, standing

Try this.... Turn head & notice how far it will go comfortably.

Stretch one leg out, point foot, spread toes & down. Do the other leg.

Now turn head & notice an improvement.

Postural Exercises

- chin positioning
- shoulders - rotations with hands forward
- scapular work (scapular activation)
- semi-prone clams for neck & shoulders

Hip Exercises

- supported leg swings, rotations
- gluteus maximus
- gluteus medius
- squats, bridges, clams - standing, lying, semi-prone

Knee Exercises

- quad muscles
- hamstrings
- vastus medialis

Osteoporosis

Osteopenia is the beginning stages of bone loss.

- loss of bone mineral density
- bones become thin & porous
- no symptoms in early stages (“The Silent Thief”)
- may have dull pain, progressing to radiating, sharp pain in later stages
- increased bone fragility & potential for fractures
- more common in females
- hip, spine, wrist & shoulder
- is more common than a heart attack, stroke, breast cancer combined
- may cause crush & compression fractures

Osteoporosis Risk Factors

- heredity
- parental hip fracture
- female
- thin framed body
- age
- medications – NSAIDS
- menstrual cycle issues
- low estrogen levels
- sedentary living
- BMI
- poor diet
- low calcium, vitamin D
- eating disorders
- smoking
- excessive alcohol intake
- medical issues such as rheumatoid arthritis, hysterectomy, thyroid, scoliosis
- femoral neck bone density

Prevention & Treatments for Osteoporosis

- good diet
- supplements – calcium, vitamin D, magnesium
- healthy lifestyle
- lifting, pushing, pulling loads type of exercises
- weight bearing & impact exercises
- reduce smoking & alcohol
- reduce carbonated drinks
- reduce medications if possible

Exercise Contraindications for Osteoporosis

No Flexion of the Spine

No Hyperextension of the Spine

No Lateral Flexion

No Twisting

Never Combine Flexion with Twisting

Exercise Suggestions for Osteoporosis

- closed chain exercises - weight bearing
- work against gravity – standing
- moderate impact exercises if possible - speed walking, stairs, hiking
- avoid quick, jerking movements
- avoid high impact aerobics - too much load on the spine
- NO abdominal crunches
- limit hip abduction - too much load on supporting leg/hip
- high load training if possible – check for tolerance
- balance training with a focus on prevention of falls
- supportive footwear
- squat, lunge, plie, isometric squats, dead lifts
- core strength to help support the spine

Check Points

- posture, posture, posture
- move slowly through the exercise
- avoid/modify standing to floor to standing activities
- monitor breathing through exercise
- maintain neutral spine
- protect/brace the spine

Weight Bearing Exercises

- load must be significant and should be applied to the axial skeleton, not just the appendicular skeleton
- need high-load/low repetitions - 1-10 reps at 85-100% of your one repetition maximum
- on both legs before single leg work
- walking on heels forwards & backwards
- walk purposefully heel to toe
- heel tapping/heel drops - “Wolf’s Law” - bones respond to stress

Avoid

- front raises - taking a weighted load in front of & away from the body
- overhead presses - takes the body into forward flexion & puts more stress on the spine
- jogging, jumping - puts more stress on the lower extremities & lumbar spine
- don’t hold a weight behind head/neck/shoulders - too much downward stress on spine
- machines that encourage forward flexion or rounding of the lower spine

Focus On: Leg & Buttock Exercises, Back Extensors, Gait, Mobility & Balance

Thank You!

Upcoming Workshops at the Academy

October 27th

Chair Fitness Part 1 - Cardio & The Core

9:00am - 12:00pm

2 CECs

Chair Fitness Part 2 - Strengthening & Stretching

1:00pm - 4:00pm

2 CECs

November 17th

Oh Those Aching Knees & Hips - Pre & Post Knee & Hip Replacements

9:00am - 12:00pm

2 CECs

December 8th

Common Medical Conditions & Exercise Prescription for the Older Adult

9:00am - 4:00pm

4 CECs

References

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Osteoporosis Canada

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The Basics of Osteoarthritis

<http://www.webmd.com/osteoarthritis/guide/osteoarthritis-basics#1>

What are the Facts about Treating Osteoarthritis

<http://www.everydayhealth.com/specialists/arthritis/kitridou/qa/facts-about-treating-osteoarthritis/index.aspx>

About Osteoarthritis

<http://aboutjoints.com/patientinfo/topics/osteoarthritis/Osteoarthritis2.html>

Arthritis: Causes, Types & Treatments

<http://www.medicalnewstoday.com/articles/7621.php>

The Arthritis Society

<https://arthritis.ca/understand-arthritis/arthritis-facts-figures>

Osteoporosis

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Osteoporosis: Symptoms & Types

http://www.webmd.com/osteoporosis/guide/osteoporosis_symptoms_types

Osteoporosis: Causes, Symptoms, Treatments

http://www.emedicinehealth.com/osteoporosis/page3_em.htm

What's New in Knee Osteoarthritis Treatments

<https://www.webmd.com/osteoarthritis/knee-arthritis-treatment-advances#1>

Potential New Treatment for Osteoarthritis

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Arthritis Research: New Breakthrough Osteoarthritis Molecule

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<https://www.arthritis.org/living-with-arthritis/exercise/>

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<https://www.nejm.org/medical-research/osteoporosis>

Medical News Today

<https://www.medicalnewstoday.com/articles/318321.php>

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<https://www.pilatesanytime.com/Pilates-Blog/990/Exercises-to-Avoid-for-Osteoporosis>

Melio Guide

<https://melioguide.com/osteoporosis-exercises/osteoporosis-exercise-contraindications/>

Osteoporosis Canada

<https://www.osteoporosis.ca/wp-content/uploads/2014-06-27-Module-5-Part-1-Slides1.pdf>