



Combating & Caring for Arthritis

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SEMINAR INSTRUCTOR



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Combating and Caring for Osteoarthritis

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GOALS AND OBJECTIVES

As a result of mastering this content, the learner will identify and discuss ways to combat and care for their joints affected by osteoarthritis through:

- the proper use of over-the-counter medications;
- optimizing nutrition through dietary changes;
- participating in aerobic, anaerobic, and flexibility exercises;
- using braces and orthotic devices to improve functional mobility;
- enlisting the services of a physical therapist to develop an individualized plan of care.

Overview of Osteoarthritis

- OA is NOT inevitable
- Degenerative joint disease that affects many tissues
- Can affect any joint, but most typically neck, hands, low back, knees, hips
- 2nd leading cause of disability in the U.S.
 - Limits function in 10-20% of people with OA
- No cure, but can be managed to minimize pain, remain active, enjoy a good quality of life

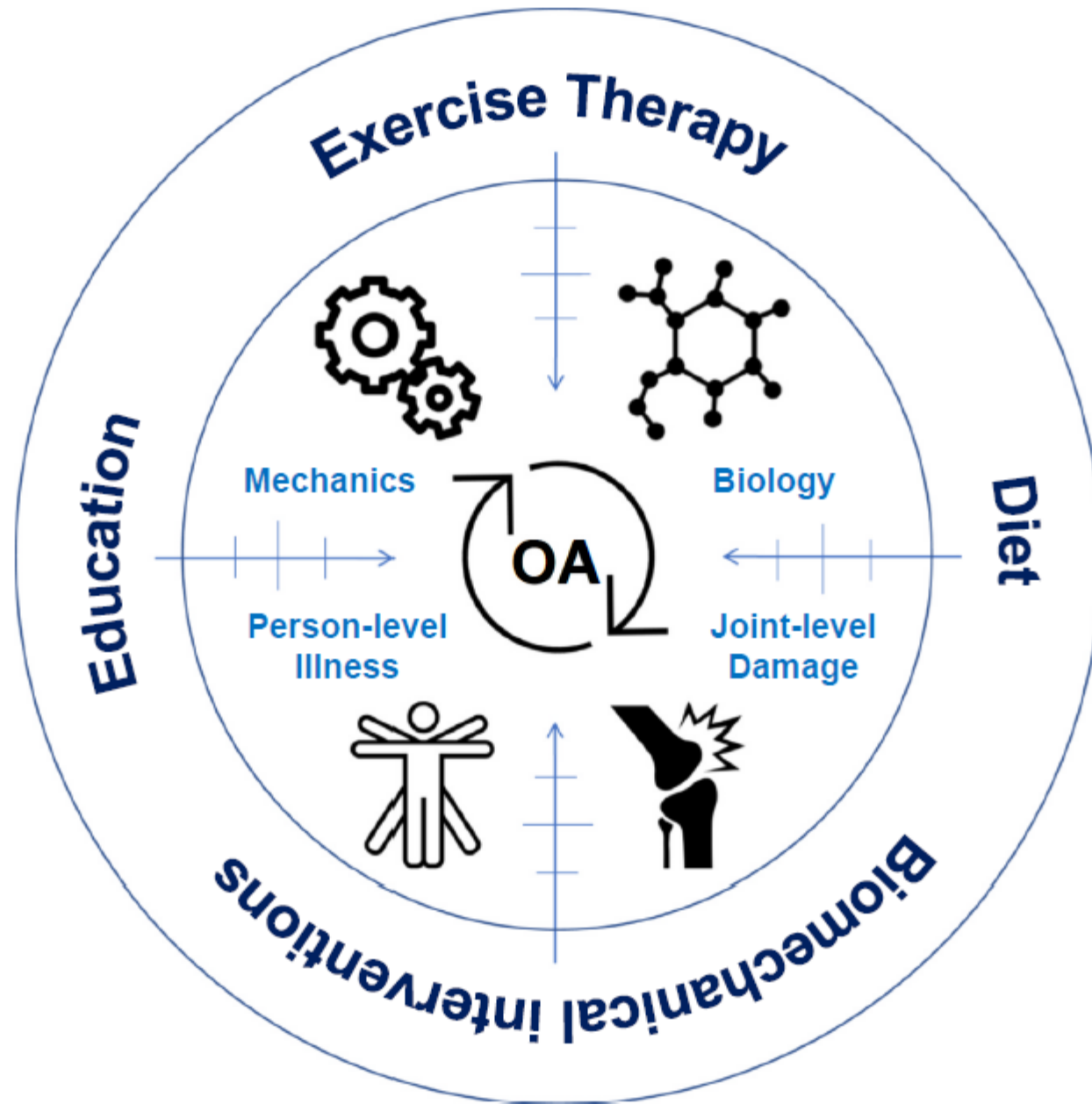
Osteoarthritis vs. Rheumatoid Arthritis



Osteoarthritis



Rheumatoid arthritis



Generalized Symptoms

- Stiffness, dull pain, or ache
 - “Movie sign”
- Crackling noise (“crepitus”) when joint bends
- Deformity
- Muscle weakness
- Instability or buckling
- Inflammation
 - Generalized pain; can’t point to it
 - Joint feels warm to the touch
 - Joint may be swollen
 - Constant, “24/7”, pain; no position of comfort

Over-the-counter medications

- Analgesics – acetaminophen
 - Most frequent overdose
- NSAIDs (e.g., aspirin, ibuprofen, naproxen)
 - Only for use in the short term
 - ≤ 3 days for fever, ≤ 10 days for pain



Factors that contribute to the development of OA

Modifiable

- Level of physical activity
- Quad (thigh) strength
- Overuse – using the same joints over and over in a job or sport
- Obesity
- Diet

Not modifiable

- Age
- Genetics
- Sex hormones (women > men)
- Bone density
- Prior joint injury
- Musculoskeletal abnormalities (poor alignment)

WOMAC – Pain subscale

(0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Extreme)

	0	1	2	3	4
Walking					
Stair climbing					
Nocturnal					
Rest					
Weight bearing					

Total: _____

WOMAC – Stiffness subscale

(0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Extreme)

	0	1	2	3	4
Morning stiffness					
Stiffness later in the day					

Total: _____

Physical Function – Part 1

(0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Extreme)

	0	1	2	3	4
Descending stairs					
Ascending stairs					
Rising from sitting					
Standing					
Bending to floor					
Walking on a flat surface					
Getting in/out of the car					
Going shopping					
Putting on socks					

Physical Function – Part 2

(0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Extreme)

	0	1	2	3	4
Lying in bed					
Taking off socks					
Rising from bed					
Getting in/out of bath					
Sitting					
Getting on/off toilet					
Heavy domestic duties (e.g., mopping, taking out trash, changing the bed)					
Light domestic duties					

Total: _____

Grand Total: _____ / 96 = _____ %



X-rays are one way to stage arthritis



Grade 0



Grade 1



Grade 2



Grade 3



Grade 4





Do your x-ray results matter? **Maybe.**

- Joint damage increases with age and years of disease

BUT

- X-ray results are **NOT** associated with disability, pain, or stiffness

Caring for cartilage

- Hyaline cartilage (hard pearly white tissue on the end of chicken leg)
 - No circulation
 - No innervation
 - Depends on hydration
- Cumulative damage is due to an imbalance in the cycle of breakdown and repair
- Cartilage “feeds” and repairs through changes in pressure
- When we stop using the joint, the cartilage cannot “feed” and cannot repair

Caring for arthritic joints through Nutrition

- Obesity leads to low-grade systemic inflammation
- Metabolic syndrome:
 - Central obesity +
 - Hypertension +
 - Glucose intolerance/insulin resistance +
 - Dyslipidemia
- 10% weight loss =
 - increased function
 - reduced pain
 - improved metabolic health

Calories in, calories out, but it's complicated

- Weight reduction programs combining diet and exercise have the most benefit for function, joint repair, and reduced pain To lose 1.5 lbs. per week, reduce by 5250 calories a week, or 750 calories a day
 - - 375 calories in food
 - + 375 calories in activity (cumulative)
 - My Fitness Pal <https://www.myfitnesspal.com/>
- American Council on Exercise calculators (<https://www.acefitness.org/resources/everyone/tools-calculators/>)
 - Daily caloric needs estimate
 - Physical activity calorie counter
- When choosing between fat and fit, choose fit!
 - Diet *PLUS* exercise is the best prescription

Increase your intake of PUFAs

(PolyUnsaturated Fatty Acids)

***n*-3 fatty acids**



***n*-6 fatty acids**

- ❑ 1 portion per week of fatty fish (e.g., salmon, mackerel, sardines, herring, trout, albacore tuna) –
- ❑ Flaxseeds (must be ground)
- ❑ Chia seeds
- ❑ Walnuts
- ❑ Seaweed and algae
- ❑ Canola oil
- ❑ Soybeans and soy products

- ❑ Vegetable oils (e.g., corn, safflower, sunflower, soybean)
- ❑ Hydrogenated oils (margarine and shortening)
- ❑ Beef and poultry raised on grains

Lower LDL Cholesterol

- Serum cholesterol is a systemic OA risk factor
- Cholesterol accumulates in cartilage
- OA may affect the cholesterol clearing system
- Statins may reduce incidence of clinical OA

Vitamins and OA:

Antioxidants A, C, and E Vitamins D and K

- Antioxidants (vitamins A, C, and E): not proven effective to treat OA
- Vitamin D
 - Helps regulate bone metabolism
 - May be anti-inflammatory
 - May have positive effects on muscle strength
- Vitamin K
 - Involved in bone and cartilage mineralization
- Vitamins D and K should be titrated in your system by your physician

Recommended Supplements

- 1 g. fishoil (PUFA)
- 25 g. soy protein isolate (Premier protein shakes, powder supplement)
- 2 g/day stanols/sterols
 - *PLUS* Eat 5 servings of fruits and vegetables like spinach, kale, carrots, and sweet potatoes
 - No benefit to taking extra
- Look for USP verified mark on label
 - <https://www.quality-supplements.org/verified-products>



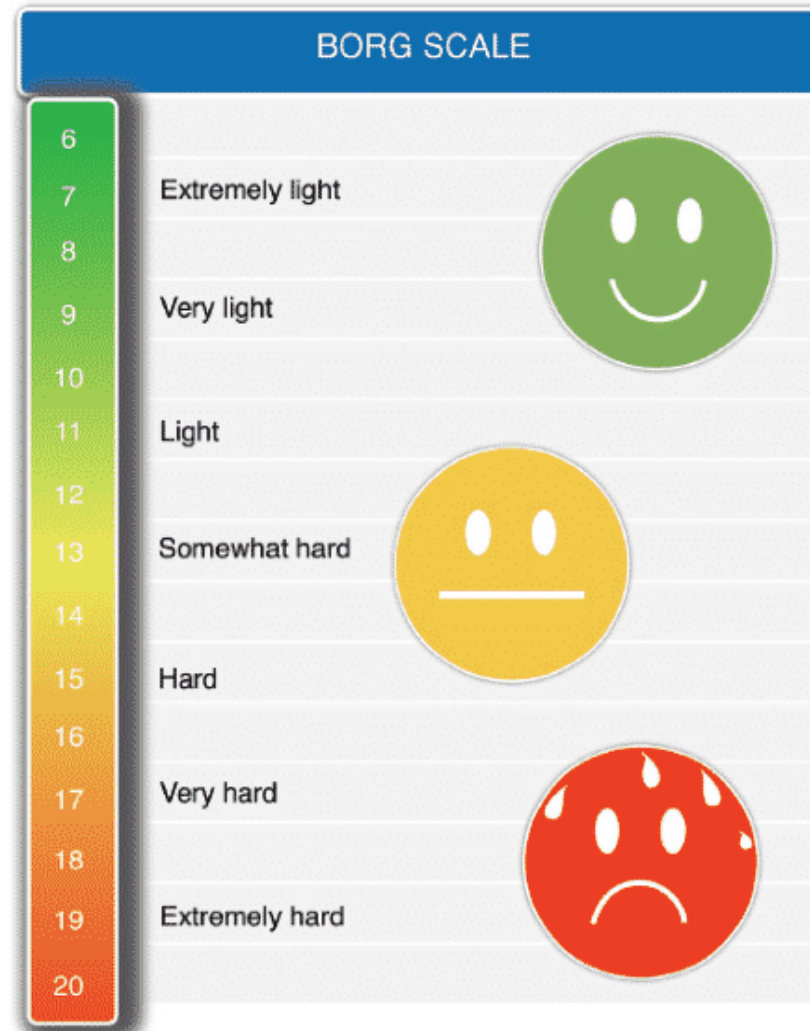
Recommended Dietary Changes

- 1 ½ c. of oatmeal or 3 packets of instant for 3 g oat (β)-glucans
- Aim for 25-30 g **viscous** fiber daily.
- Each of the following provides 1-3 g. viscous fiber. Choose 8-10 daily.
 - ½ c. barley, quinoa, black-eyed peas, lentils, split peas, beans, green peas
 - ¼ avocado
 - ¼ c. sunflower seeds, tree nuts
 - ½ c. broccoli, cauliflower, carrots, green beans, winter squash
 - 1 medium sweet or white potato
 - 1 medium apple, banana, orange, peach, pear
 - 4 dried apricots or prunes
 - ½ c. blackberries
 - 1 c. raspberries, strawberries

Exercise is for *every* body, including those with OA!

- Exercise is a healthy approach to the treatment of OA and can mitigate its symptoms and slow its progress
- Develop a well-defined exercise program with
 - Moderate intensity
 - At least 30-minutes per day
 - 3-5 days per week
- Must be continued regularly for optimal effect

Rate of Perceived Exertion



Credit: Ayumi Kojima

Aerobic training

- Aerobic activity, especially done outdoors in sunlight even on cloudy days can reduce depression, improve well-being
- Light-to-moderate intensity (RPE 3-5/10) like walking, swimming, cycling
- Walking quickly improves walking speed which is associated with reduced illness and death
- Where to begin
 - Volume before intensity
 - Goal of > 30 minutes most days of the week

Beginning walking program

AHA-walking-plan

	Monday	Tuesday	Wednesday	Thursday	Friday	Weekend Workout (optional)
Week 1	Easy walk: 5–10 mins Stretch: 2 mins Easy walk: 5–10 mins	Easy walk: 10–15 mins NOTE: always rest when necessary!	Easy walk: 5–10 mins Stretch: 2 mins Easy walk: 5–10 mins	Easy walk: 10–15 mins	Rest	Easy walk: 15–20 mins Window shopping is great!
Week 2	Easy walk: 5–10 mins Stretch: 2 mins Brisk walk: 5–10 mins	Easy walk: 10–15 mins	Easy walk: 10–15 mins Stretch: 2 mins Brisk walk: 5–10 mins	Easy walk: 10–15 mins Remember: rest when necessary.	Rest	Easy walk: 15–20 mins
Week 3	Easy walk: 10–15 mins Stretch: 2 min Brisk walk: 5–10 mins	Easy walk: 15–20 mins Stretch: 2 mins	Easy walk: 10–15 mins Stretch: 2 mins Brisk walk: 5–10 mins	Easy walk: 15–20 mins Stretch: 2 mins	Rest	Easy walk: 15–20 mins Don't window shop! Keep moving!
Week 4	Easy walk: 10–15 mins Brisk walk: 5–10 mins Stretch: 2 mins	Easy walk: 15–20 mins Stretch: 2 mins	Easy walk: 10–15 mins Brisk walk: 5–10 mins Stretch: 2 mins	Easy walk: 15–20 mins Stretch: 2 mins	Rest	Brisk walk: 20–25 mins
Week 5	Easy walk: 10–15 min Brisk walk: 10–15 mins Stretch: 2 min	Easy walk: 25–30 mins Stretch: 2 mins	Easy walk: 10–15 mins Brisk walk: 10–15 mins Stretch: 2 mins	Easy walk: 25–30 mins Stretch: 2 mins	Alternate Activity of your choice: Go dancing, rake leaves for 20+ mins	Easy walk: 25–30 mins
Week 6	Total Time: 24–34 mins Easy walk: 15–20 mins Power Intervals –Power walk: 30 secs –Easy walk: 1 min Repeat 4–6 times. Easy walk 3–5 mins	Alternate activity of your choice for 20–30 minutes	Easy walk: 30–35 mins Stretch: 2 mins	Easy walk: 25–30 mins Stretch: 2 mins	Rest	Easy walk: 25–35 mins

Interval Walking Program

Begin when you can walk 30 minutes per day RPE 4-6

- 5-minute bouts of intervals of higher intensity activity
 - 3 minutes at RPE 4-6/10;
 - 2 minutes at self-selected pace (RPE 2-3/10)
- Begin with 10 minutes comfortable walking (RPE 3/10) + 1 interval + 10 minutes comfortable walking
- Progress by increasing 1 interval, decrease 1 minute of warm up and cool down
 - 9 minutes comfortable walking + 2 intervals + 9 minutes comfortable walking
 - 8 minutes comfortable walking + 3 intervals + 8 minutes comfortable walking
 - 7 minutes comfortable walking + 4 intervals + 7 minutes comfortable walking

Strength (anaerobic) training

- Muscle weakness is common in people with OA
- Strength training is safe for people with OA
- Benefits of strengthening programs to people with OA
 - Improved joint function
 - Reduced potential for injury
 - Development in the quads can reduce knee-joint forces, lower pain levels, decrease localized inflammation
- Strength is best improved with lifting heavier loads with fewer repetitions

Guidelines for Resistive Exercise

- Before doing strengthening exercises, pain should be no more than mild discomfort (0-4/10)
- Exercise soreness should not last more than 24 hours
- If your limp is worse after the exercise, change or stop that activity
- Begin with 2 days per week; build up to 3
- Keep RPE in the recommended range
 - First 8 weeks - “somewhat hard” 3-5/10
 - > 8 weeks - “hard” 5-6/10

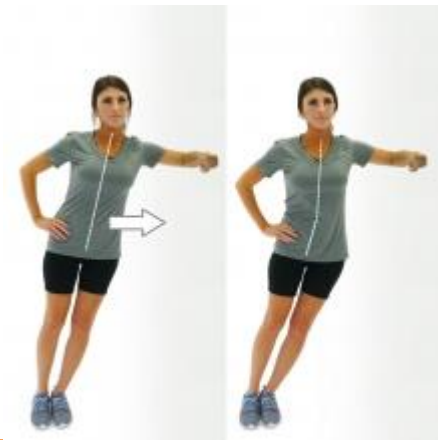
Plank for 60 seconds

(10 x 6 → 6 x 10 → 4 x 15 → 3 x 20 → 2 x 30 → 1 x 60)



HEP2Go

Side Plank for 60 seconds



Hip Thrust



Wall Sits



HEP2Go

Heel raises



Up on both, Down on one



Unilateral



Up on big toes

Hip Sweeps



Place a towel under your foot

Sweep your foot from in front and across
to in back and across

HEP2Go

Sit-to-Stand



HEP2Go

Toe Raises



Lean forward to make the exercise easier initially.



Progress by moving feet further from wall.

Leg Extension



Step Ups



Standing Calf Stretch

(The back leg is the stretching leg.)

- Stand arms length from a wall or other sturdy object
- Step half the distance forward with one foot
- Step back with the other foot just until the heel starts to lift
- Press through the heel while gently leaning forward at the hips
- Hold 30 seconds
- Repeat 3 times



Seated Hamstring Stretch

- While seated, rest heel on floor with your knee straight
- Gently lean forward until you feel a stretch behind your knee/thigh
- Hold 30 seconds
- Repeat 3 times



Half Kneel Hip Flexor Stretch

- Gently lower yourself into a half kneeling position
 - Back knee under your hips
 - Front knee well forward
- Lean forward bending your front knee until you feel a stretch across the front of the back hip
- Hold for 30 seconds
- Repeat 3 times



Child Pose

- Begin in quadruped (on “all fours”)
- Slowly lower your bottom back toward your feet until you feel a stretch in your back and bottom
- Hold 30 seconds
- Repeat 3 times



Thigh Stretch

- Fasten a belt or stretch strap around your ankle
- While holding the loose end of the strap, roll onto tummy
- Use the strap to bend your knee until you feel a stretch down the front of your thigh
- While stretching, press your hip bone into the floor

- Hold for 30 seconds
- Repeat 3 times



Tai Chi

- Overwhelmingly supported for the treatment of OA
- Tai Chi enhances
 - Flexibility
 - Balance
 - Self-efficacy
 - Strength
 - Improves physical function
 - Reduces pain
 - Depression
 - Anxiety



Aquatic exercise

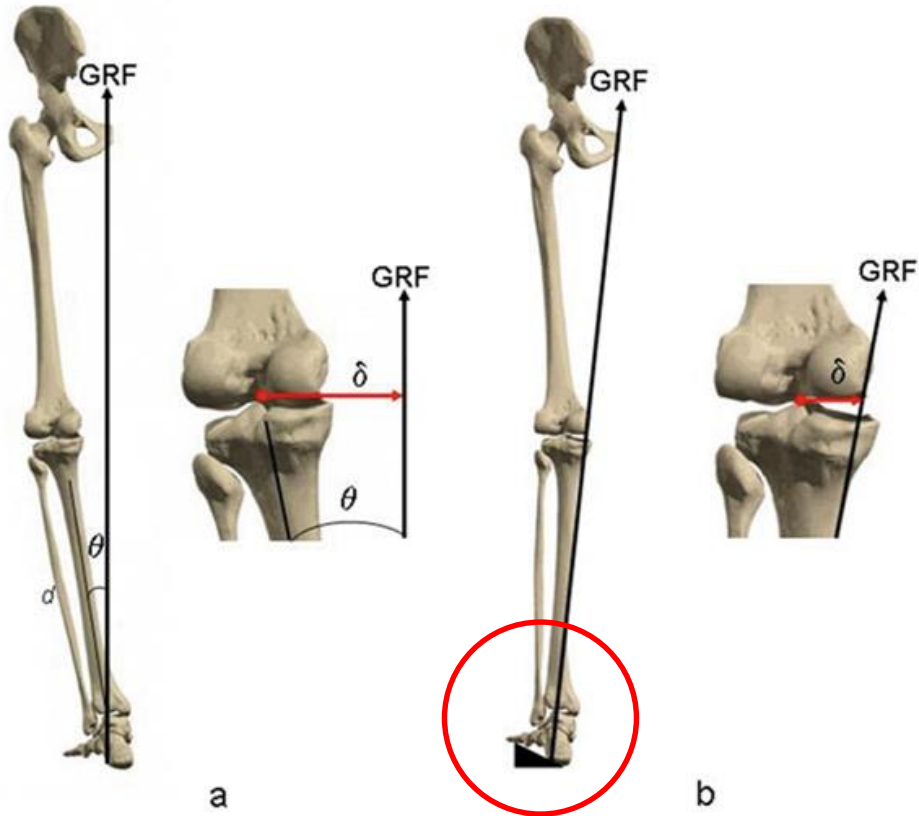
- Good starting place
 - Adherence is typically high
 - No adverse effects
 - May reduce OA symptoms
 - Can improve cardiovascular fitness
-
- Does not stop, reverse, or slow progress
 - Does not improve mobility or walking
 - Questionable for strengthening



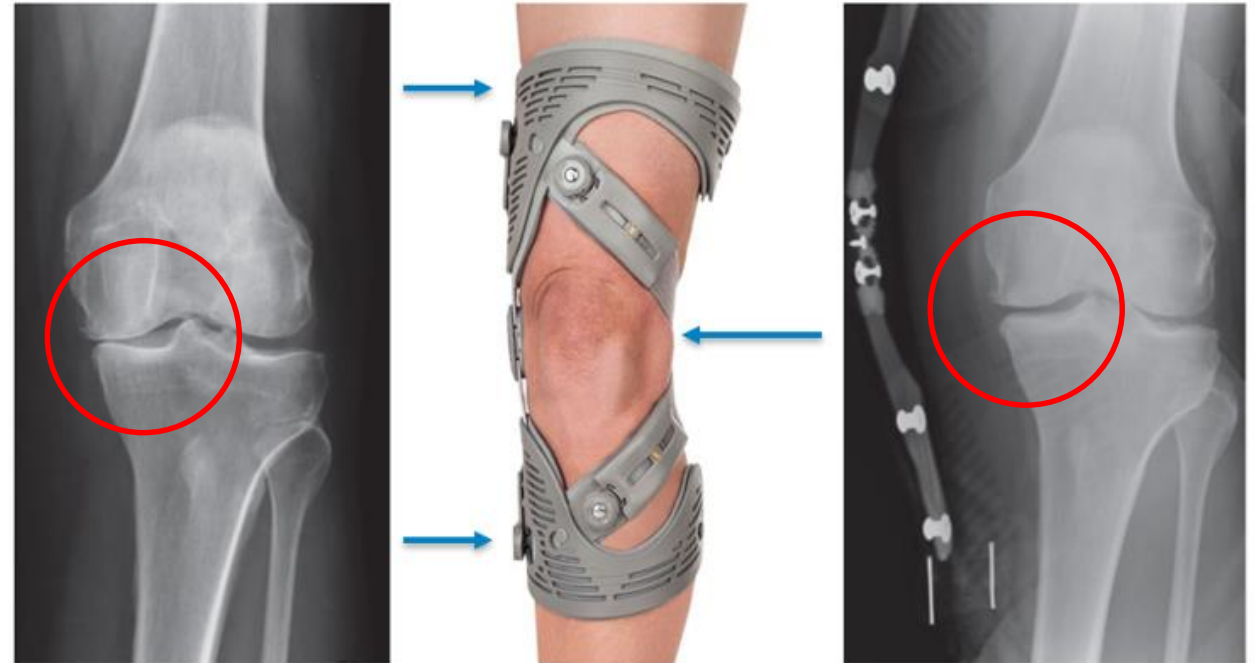
Which exercise is best

- Pain control is greater in land-based programs
- Pain responds better to aerobic exercise
- Gait speed is improved by walking faster
- Strength-training has the potential to reduce knee-forces and improve quality of life
- Aquatic protocols have higher adherence

Orthotics and Bracing



Lateral Wedge Insole



Unloader Knee Brace

Assistive Devices



Physical Therapy

- Medicare DOES pay for home exercise progression
- Physical therapist delivered interventions are individualized
- Benefits are greater when recommended dosage guidelines are following, goals are defined, and strategies to improve adherence are implemented
- In some situation, physical therapy can be delivered in the home or remotely

Take-Home Points

1. Osteoarthritis is NOT a part of typical aging.
2. Disability does NOT affect everyone with OA.
3. You CAN take control of your life and your disease.
4. Use over-the-counter medications appropriately.
5. If you are overweight, set a goal of losing 10% of your weight within the year.
6. Optimize your diet to support your joints.
7. Choose exercises that work for you and then do them regularly.
8. Increase your level of physical activity.
9. Find the right physical therapist for you.

Resources

- **American Council on Exercise calculators** (<https://www.acefitness.org/resources/everyone/tools-calculators/>)
 - *Daily caloric needs estimate*
 - *Physical activity calorie counter*
- **Integrative Health and Sports Medicine.** (2019) HEP: Knee Osteoarthritis. Accessed at March 28, 2024. <https://www.integrativesports.com/hep/knee-oa>.
- **My Fitness Pal** <https://www.myfitnesspal.com/>
- **American Heart Association: Beginning Walking Program** <https://www.bu.edu/fitrec/files/2020/03/AHA-walking-plan.pdf>
- **NIHAN Home Health Exercise Videos for Older Adults** <https://www.nihan.care/older-adults-families/older-adults-and-families-welcome-and-login-2/>
- **Henderson Happenings** <https://www.cityofhenderson.com/government/departments/parks-and-recreation/programs-classes>
- **Clark County Parks and Rec** https://www.clarkcountynv.gov/government/departments/parks_recreation/index.php

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Creating an Age-Friendly Health System & Dementia-Friendly Community in Nevada

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