Knee Osteoarthritis for the Primary Care Physician

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Objectives

1. Describe the clinical course of knee osteoarthritis.
2. Formulate a patient-centered and evidence-based treatment plan.
3. Focus on issues of particular importance to the primary care physician, such as prevention, therapeutic lifestyle changes, and health maintenance.
“The weakest and oldest among us can become some kind of athlete, but only the strongest can survive as spectators. Only the hardest can survive the perils of inertia, inactivity and immobility.”
What is OA?

- Usually a progressive disease of synovial joints that represents failed repair of joint damage from stress
- This results in breakdown of cartilage and bone, leading to symptoms of pain, stiffness, and functional disability.
- This may occur as result of biomechanical, biochemical, and/or genetic factors.
- This may be localized to a single joint, a few joints, or generalized.
- Initiating factors likely vary amongst different joints
- This complexity and variability of OA suggests the need for patient-specific, etiology-based treatments.
The Burden of Knee Osteoarthritis

- 27 million Americans affected
- Leading cause of disability in the US for those over 65 years old (7 million)
- Prevalence Knee OA 9.5% of those aged 55 and over
- By 2030: Estimated 20% population, 6 fold increase in TKR’s; obesity, baby-boomers
- Indirect and direct costs of knee OA in the US equal $100 billion annually

www.medicographia.com
Risk Factors

- Age >50 years old
- Female Gender
- First-degree Family member with Osteoarthritis
- History of Major Injury to the Joint
- Previous Surgery to the Joint
- Overweight/Obesity
- Job requiring bending or carrying
Signs and Symptoms

- Pain
- Stiffness
- Swelling
- Reduced range of motion
- Weakness
- Deformity
Diagnostic Workup

- History, Physical Exam
- Labs? ESR/CRP, RF studies, joint fluid analysis
- Plain films- preferably weight bearing
- MRI- usually not needed
Natural History of Knee OA


- The incidence and natural history of knee osteoarthritis in the elderly. The Framingham Osteoarthritis Study.

- Felson DT1, Zhang Y, Hannan MT, Naimark A, Weissman BN, Aliabadi P, Levy D.

- Mean 8.1 year follow up of >1000 surviving subjects, mean age 71
  - 2% per year radiographic disease
  - 1% per year symptomatic disease
  - 4% per year progressive knee osteoarthritis
Management of Knee OA

“We do not treat groups, we treat individuals.”
Conservative Management Options

- Exercise
- Nutrition and Supplements
- Pharmacologic Options (NSAIDs and Tylenol)
- Intra-articular corticosteroids
- Intra-articular hyaluronic acid
- Bracing and orthotics
Exercise and Knee OA

“The major challenge many physicians face is how to get their patients with OA moving. There’s currently very little empirical evidence defining what type of exercise is best or most effective for relieving OA symptoms.”
What we know

- Activity
  - Decreases bone loss, promotes healthy cartilage
  - Increases physical function
  - Decreases pain and joint fatigue
  - Psychological benefits, improving depression
  - Prevention and delay of arthritis onset and symptoms
Exercise Recommendations

- 50 minutes of moderate-intensity aerobic exercise per week
- OR
- 75 minutes of vigorous-intensity aerobic exercise per week
- OR
- an equivalent combination of moderate and vigorous exercise
Strengthening and aerobic exercises can both reduce pain and improve function (1B)

A program that has a general aerobic fitness component and more local strength training is ideal (4)

This should be patient centered and individualized (4)

Advice and education to promote a positive lifestyle change (1B)

- Lifestyle Medicine Initiative; motivational interviewing
The MOVE Consensus: Contraindications (4)

- Hypertrophic Cardiomyopathy
- Severe aortic stenosis
- Acute Febrile Illness
- Acute viral illnesses, myocarditis
- Exercise-induced cardiac arrhythmias
- Unstable cardiac symptoms
The MOVE Consensus

- Group and home exercise programs have been shown to be equally effective ➔ patient preference (1A)
- Adherence to regimen is important predictor of long term results (1B)
- Strategies to improve and maintain adherence should be adopted, e.g. long-term monitoring/review and inclusion of spouse/family in exercise (1B- exercise)
- Effectiveness of exercise is independent on severity of radiographs (4)
- Improvements in strength and proprioception may halt progression (4)
Where have we come in the last 10 years?
Impact of Exercise Type and Dose on Pain and Disability in Knee Osteoarthritis: A Systematic Review and Meta-Regression Analysis of Randomized Controlled Trials

- Arthritis and Rheumatology 2014
- Meta-analysis of 48 randomized control trials, >4000 patients

Optimal exercise programs for knee OA should have one aim and focus on improving aerobic capacity, quadriceps muscle strength, or lower extremity performance.

In patients with poor aerobic capacity and muscle strength, aerobic exercise and strength training should be performed on different days in order to achieve the best effect.

For best results, the program should be supervised, carried out 3 times weekly, and comprise at least 12 sessions.

Such programs have similar effects regardless of patient characteristics, including radiographic severity of OA.
Exercise for osteoarthritis of the knee: a Cochrane systematic review.

- British Journal Sports Medicine 2015
- 54 RCT’s, >5000 patients
- High-quality evidence suggests that land-based therapeutic exercise provides benefit in terms of reduced knee pain and improved quality of life and moderate-quality evidence of improved physical function among people with knee osteoarthritis.
- It can be assured that any type of exercise program that is performed regularly and is closely monitored can improve pain, physical function and quality of life related to knee OA in the short term.
- The magnitude of immediate treatment effects of exercise on pain and physical function increases with the number of face-to-face contact occasions with the healthcare professional.
High-intensity versus low-intensity physical activity or exercise in people with hip or knee osteoarthritis.

- Cochrane Database 2015
- 6 RCT’s, >650 patients

We found very low-quality to low-quality evidence for no important clinical benefit of high-intensity compared to low-intensity exercise programs in improving pain and physical function in the short term.

There was insufficient evidence to determine the effect of different types of intensity of exercise programs.
Land-based versus aquatic therapy

- Small study, data presented at AMSSM 2013
- Patients were randomly assigned to exercise using an underwater treadmill, a regular treadmill, or an upright stationary cycle for thirty minutes, three times per week for eight weeks.
- Patients were allowed to continue their regular oral or topical analgesic treatments for OA.
- About 80 percent of the water treadmill patients experienced clinically significant OA symptom improvement versus about 60 percent of patients in the other exercise groups.
- More water treadmill patients stuck with the regimen and completed the study
Aquatic exercise for the treatment of knee and hip osteoarthritis.

- Cochrane Systematic Review 2016
- 13 RCT’s, nearly 1200 patients

Moderate quality evidence that aquatic exercise may have small, short-term, and clinically relevant effects on patient-reported pain, disability, and quality of life in people with knee and hip OA.
General Exercise Recommendations

- Start with range of motion exercises and isometric strengthening

- If active inflammation, advanced knee OA, profound functional impairment, this may be your mainstay

- Low impact exercises (recumbent bike), aquatic therapy may be better for those with severe knee OA or deconditioning

- Avoid excessive stair climbing. Running ok for some
General Exercise Recommendations

- Both aerobic and strength exercises can reduce pain and improve function; any type of exercise program will help.
- Fight obesity, lose weight; Lifestyle medicine.
- Get to know your patients; advice and education, give them best chance of success; HEP, YMCA, physical therapy → adherence.
- See them back; long term follow up and accountability.
- Treat the patient, not the Xray.
- Supervised PT probably offers the most contact with health care professional.
- Unknown if low or high intensity programs offer best results.
What if I don’t want to exercise?
Supplements- Glucosamine and Chondroitin

- Multicenter, double-blind, placebo- and celecoxib-controlled Glucosamine/chondroitin Arthritis Intervention Trial (GAIT)
  - the combination of glucosamine and chondroitin sulfate may be effective in the subgroup of patients with moderate-to-severe knee pain.

- People with osteoarthritis who take glucosamine:
  - may reduce their pain
  - may improve their physical function
  - will probably not have side effects
Pharma for Knee OA

- Comparative Effectiveness of Pharmacologic Interventions for Knee Osteoarthritis: A Systematic Review and Network Meta-analysis
- Annals of Internal Medicine 2015
- 137 randomized trials of adults with knee OA comparing 2 or more of the following: acetaminophen, diclofenac, ibuprofen, naproxen, celecoxib, intra-articular (IA) corticosteroids, IA hyaluronic acid, oral placebo, and IA placebo.

- For pain, all outperformed oral placebo with effect sizes from 0.18 to 0.63.
IA Corticosteroids

- **Intra-articular corticosteroid for knee osteoarthritis**
- **Cochrane Database Systematic Review, 2015**
- 27 trials, >1700 participants

“Whether there are clinically important benefits after one to six weeks remains unclear.”

www.rheumatologynetwork.com
IA Hyaluronic Acid

- AMSSM News Release
- BJSM, January 2016
- Meta-analysis of 11 papers, using OMERACT-OARSI criteria
- 15% more likely to respond versus IA-steroids, and 11% more likely than IA-placebo
- For Grades 2 and 3 Kellgren and Lawrence knee osteoarthritis, high quality data supporting use of hyaluronic acid in those age >60 years old
- Moderate quality data in those <60 years old
“Braces and Orthoses for treating osteoarthritis of the knee.”

Cochrane Database 2015

• Low-quality evidence suggests that people with OA who use a knee brace may have little or no reduction in pain, improved knee function and improved quality of life.

• Moderate-quality evidence suggests that people with OA of the knee who wear laterally wedged insoles or neutral insoles probably have little or no improvement in pain, function and stiffness.
Surgical Management

- Arthroscopy, with or without debridement, typically not recommended.

- Total Knee Arthroplasty recommended when patient has failed conservative measures and their osteoarthritis has impacted their quality of life.

- 1% per year failure rate = 90-95% chance will last 10 years, 80-85% chance will last 20 years
Nonsurgical Candidates

- Pain management
  - Opioid-based pain options
  - Radiofrequency Treatment
Questions?


Raveendhara R, Bannuru, MD; Christopher H. Schmid, PhD; David M. Kent, MD; Elizaveta E. Vaysbrot, MD; John B. Wong, MD; and Timothy E. McAlindon, MD. “Comparative Effectiveness of Pharmacologic Interventions for Knee Osteoarthritis: A Systematic Review and Network Meta-analysis.” Ann Intern Med. 2015;162(1):46-54. doi:10.7326/M14-1231
References


References
