



**UNIVERSITY OF ALBERTA**  
**GLEN SATHER SPORTS MEDICINE CLINIC**

***As we gather here today, we acknowledge we are on Treaty 6, 7 and 8 Territory and the Homeland of the Métis. We pay our respect to the First Nations and Métis ancestors and reaffirm our relationship with one another.***



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**YOUR JOINT PAIN  
IS PERSONAL**

**so is your treatment**



## A few housekeeping points before we get started:

1. please **MUTE** your microphone – you may unmute to ask a question
2. you may have your **VIDEO** on/off at your discretion
3. you may **ask a question** at any time in this presentation but we will pause to address questions and there will be time at the end for questions
4. you may type your questions in the **CHAT BOX**
5. **if you are signing into this presentation using someone else's zoom account/computer please let us know who you are**  
- send your name to **GSSMC Zoom** in the chat box
6. we are not recording/transcribing this presentation but the slides are on the website for you to review at any time



# OSTEOARTHRITIS AFFECTS ALL AGE GROUPS

- 56% of Canadians with OA are **less than 65 years of age**
- In 2017, **4.6 million Canadians** had arthritis and we spent **\$33 billion dollars** in health care costs treating arthritis
- By 2037, **7.5 million people** in Canada will have arthritis and it is expected to cost **\$67 billion** to care for those people!

Arthritis Alliance of Canada, The Impact of Arthritis in Canada: Today and Over the Next 30 Years (Fall 2011), 32, 40; <http://arthritis.ca/understand-arthritis/arthritis-facts-figures>. Accessed February 27, 2017.



# OSTEOARTHRITIS:

- **3<sup>RD</sup> most common self-reported chronic condition in Canada**
- **main cause of pain in patients 50+**
- most common in the knee > hip
- females > males; increases with increasing age
- **2019: 1/6 suffer from OA...**
- **Estimated that by 2035 1/4 Canadians will suffer with OA**



# ACTIVITIES AFFECTED BY ARTHRITIS/JOINT PAIN

- Physical exercise 73%
- Cleaning the house 52%
- Gardening 52%
- Daily chores 47%
- Working 42%
- Hobbies 32%
- Socializing 18%
- Driving 17%
- Personal Care 15%
- **Playing with kids 14%**



This lecture is primarily geared to discussion of HIP and KNEE arthritis, we will touch on SHOULDER as well...

But the process of arthritis is the same for any joint...

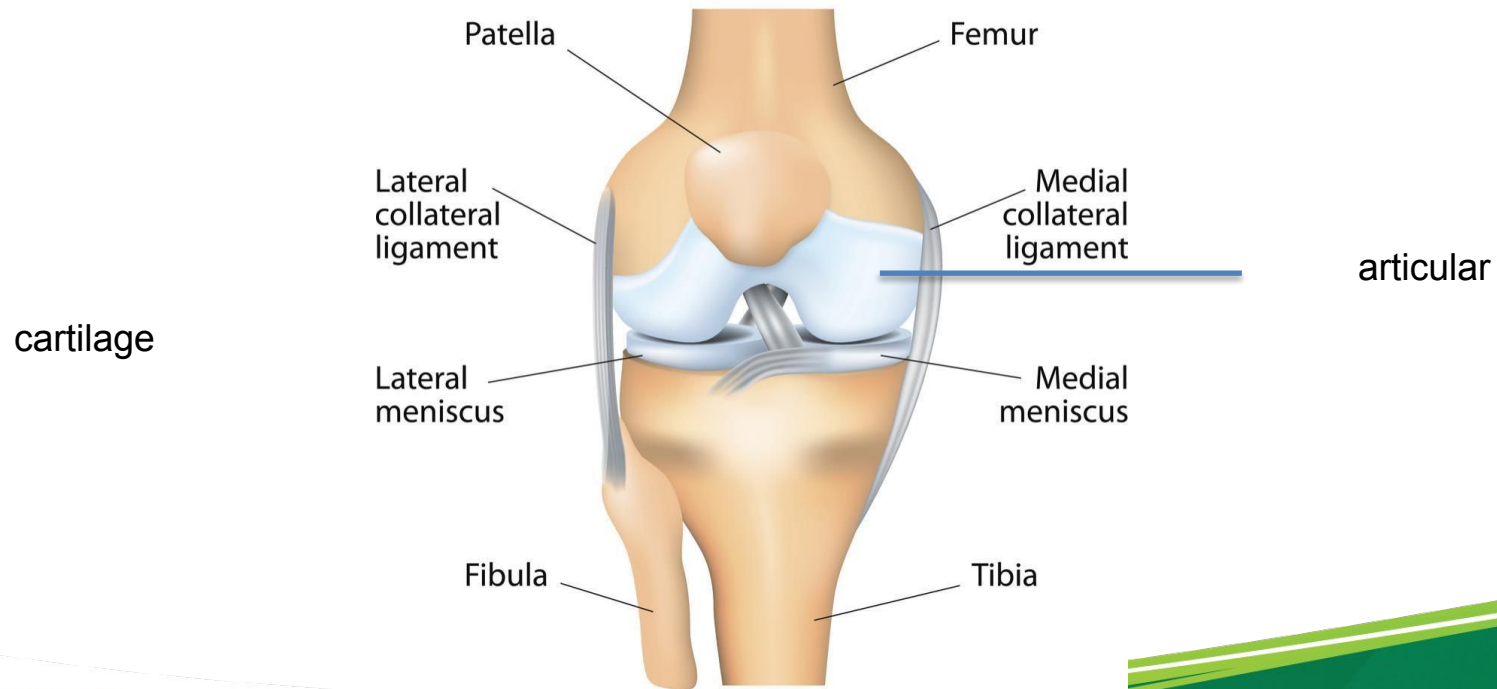
And the treatment principles are the same for any joint.

**What you learn here today can apply to any arthritic joint.**



# ANATOMY LESSON: THE KNEE – bone, cartilage, meniscus, and 4 ligaments holding it all together

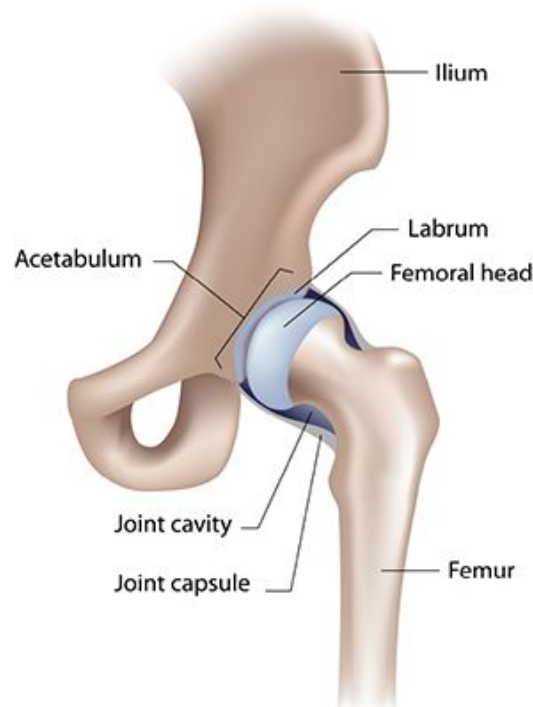
## THE HUMAN KNEE



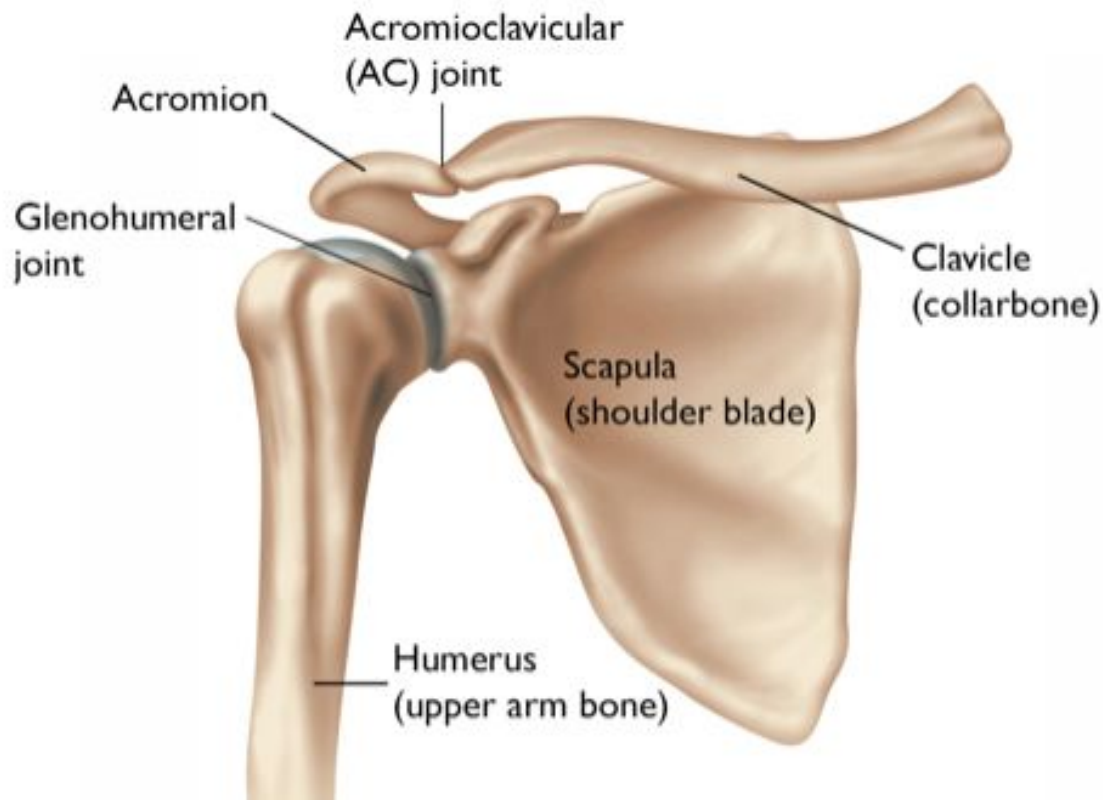


# ANATOMY LESSON: THE HIP – deep, stable, ball and socket joint: cartilage, labrum, large capsule

The Hip Joint



# ANATOMY LESSION: THE SHOULDER – big ball on a flat socket, 360° movement with stability dependent on the muscles and tendons around the joint



# WHAT IS ARTHRITIS?

- ARTHRO – meaning joint
- ITIS – meaning inflammation
- Arthritis is a wearing away of the **cartilage that caps the ends of the bones**, resulting in pain, stiffness, swelling reduced ROM and warmth of the joint



# A WORD ABOUT CARTILAGE:

There are two types of cartilage in the knee:

1. **ARTICULAR** cartilage – this caps the ends of the bones and is what wears away with arthritis
2. **MENISCAL** cartilage – this is different type of cartilage that acts like a ‘spacer’ between the ends of the bones in the knee
  - ***95% of people with knee arthritis also have tears in the meniscus.*** This is an expected finding! Surgery for the meniscal tear won't improve the knee function or pain



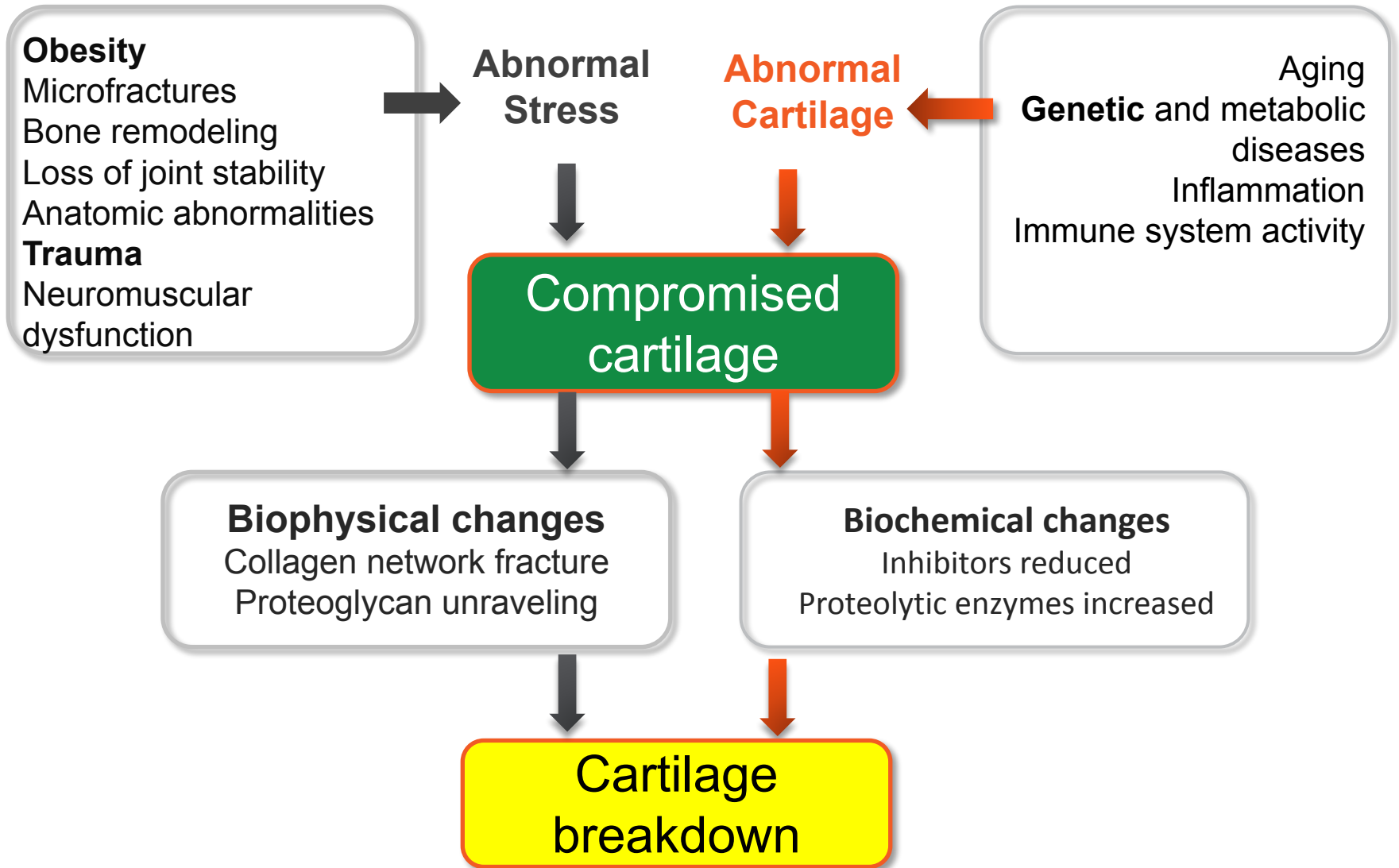
# WHAT CAUSES ARTHRITIS?

- **Genetics**
- **Obesity**
- **Previous injury**



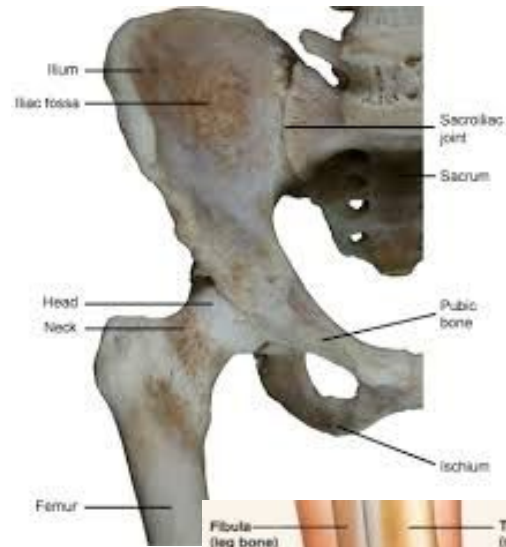


# MANY FACTORS CONTRIBUTE TO ARTHRITIS





# ARTHRITIS CAN AFFECT ANY JOINT



# WHY DOES ARTHRITIS CAUSE PAIN?

- There are no nerve endings in cartilage... **bone has lots of nerve endings**
- The loss of cartilage results in exposed bone... **Bone rubbing on bone is painful**
- **The capsule/lining of the joint gets inflamed** which causes pain
- The capsule secretes more **fluid into the joint which increases the pressure/pain in the joint** as the fluid 'splints' the joint making it stiff and painful





# TYPES OF ARTHRITIS

There are two broad categories of arthritis:

## 1. OSTEOARTHRITIS (OA)

## 2. INFLAMMATORY ARTHRITIS

- *a.k.a inherited arthritis*, autoimmune arthritis
- Rheumatoid Arthritis (RA)
- Gouty arthritis
- Psoriatic arthritis
- Arthritis associated with Chron's disease
- Ankylosing Spondylitis



# ARTHRITIS IS EASY TO DIAGNOSE:

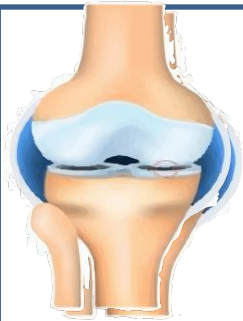
- **History of the joint problem**
  - Usually non-traumatic onset of increasing pain, swelling , stiffness of the joint
  - Sometimes history of prior injury to the joint
- **Physical exam**
  - Heat, swelling, loss of range of motion, angular deformity, grinding sensations
- **Weight-bearing X-ray...**
- **NOT MRI or US**



# KELLGREN-LAWRENCE GRADING SYSTEM

- OA diagnosed based on symptoms and clinical findings
- Imaging: joint space narrowing, subchondral sclerosis, osteophytes, cysts
- Severity of OA is only weakly correlated with knee pain or x-ray findings

## Grade I Doubtful



- Minimum disruption
- Already 10% cartilage loss

## Grade II Mild



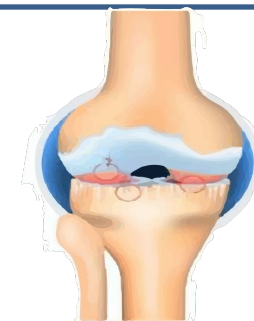
- Joint space narrowing
- Cartilage is beginning to break down
- Osteophytes present

## Grade III Moderate



- Moderate joint space reduction
- Cartilage loss down to bone

## Grade IV Severe



- Joint space greatly reduced
- 60% of cartilage lost
- Large osteophytes

*“uplifting the whole people”*

# WHAT YOU NEED TO KNOW ABOUT ARTHRITIS

- Pain does not always correlate to the x-ray findings
- Joints will get stiffer/lose range of motion as the arthritis progresses
- It is not going away
- It will get worse with time
- **You should be in the driver's seat of your arthritis care and management**
- **PROPER EXPECTATIONS:** pain management but not total pain relief
  - decrease functional limitations
  - increase quality of life



# **EVIDENCE-BASED\* TREATMENT OF ARTHRITIS**

## **NONSURGICAL**

- 1. \*Non-drug related treatment**
- 2. \*Medication-related treatment**
  - 2.1. \*Injection-related treatment**
- 3. Unproven treatments**
  - 3.1. Ineffective, potentially harmful treatments**



## **SURGICAL**





# NON-DRUG RELATED TREATMENT OPTIONS

1. Exercise
2. Physical therapy
3. Activity modification
4. Braces
5. Weight loss/management
6. Cane/walking poles



# EXERCISE & PHYSICAL THERAPY

- **MOST important part of treatment!**
- Goal to develop and maintain strength, flexibility and ROM
- DAILY home program to address aerobic conditioning, strength and flexibility
- Follow up with your PT 3-4x/yr
- **Online resource: *Glen Sather Sport Medicine Clinic website*  *patient resources*  *exercises for arthritis***



# EXERCISE & PHYSICAL THERAPY

- **GLA:D Canada**
- **A well researched, very successful group exercise program for arthritic hips and knees**
  - Neuromuscular retraining, not the same thing as sport activities
  - Example: in/out of chair...
  - 74 locations across Alberta- in person or virtual options
    - Cost associated with different programs differs
    - ***GladCanada.ca*** has a listing of all the clinics offering this program





# ACTIVITY MODIFICATION

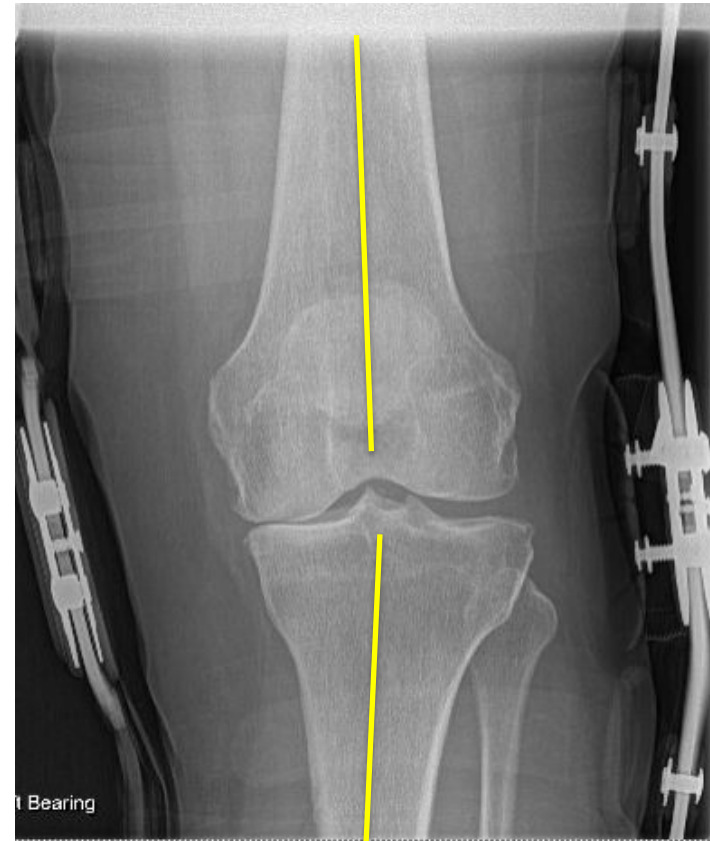
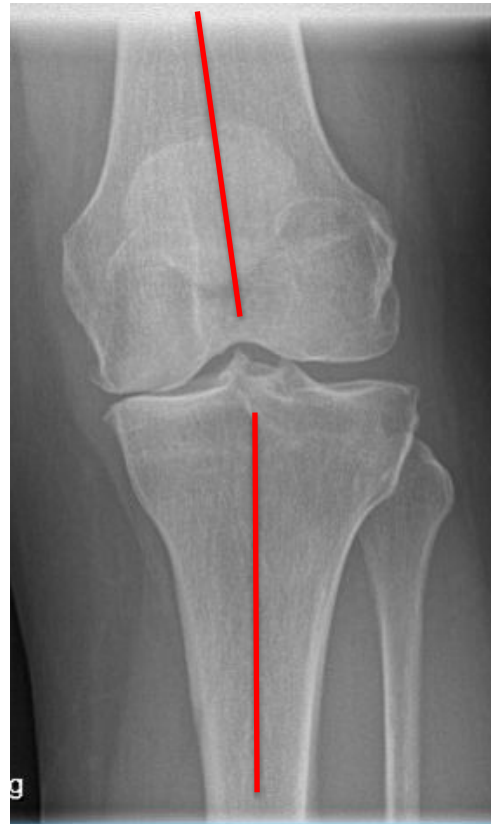
- Joints need activity to stay healthy
- Non-impact activity is best
- Use pain as guide
  - Causing or increasing pain
- Hurt vs. Harm principle



# BRACING

## KNEE

- UNLOADER BRACE
- For those who have one side of the knee joint wearing more than the other
- Wear for all ADL, not just for activity
- Custom made
- Expensive  AADL



# UNLOADER BRACE OPTIONS FOR KNEE

BREG



OSSUR



OSSKIN



# EVEN A SIMPLE KNEE SLEEVE HELPS...

- Provides some support, warmth
- Compression helps with swelling
- Stimulates the nerve endings in the skin and helps the brain know where the knee is in space which helps with muscle recruitment and feeling of stability and trust in the knee



# UNLOADER BRACE FOR HIP

can be fitted for one side or bilateral arthritic hips





# ANKLE, FINGER AND WRIST BRACES...



# WEIGHT LOSS / MAINTENANCE

- 1/4 adults and 1/10 children in Canada are clinically obese
- Average Canadian takes less than 5000 steps a day (sedentary)
  - Goal should be 10 000+ steps a day
- **Weight is magnified 3-5x as it goes through the lower limb joints with ambulation**
- If you are 10lbs overweight, that is 50 extra pounds being carried on worn-out, painful joints with each step



# MOBILITY AIDS: CANE OR WALKING POLES

**Can transfer 25% of body weight to the shoulders and off-load the joints**

**Keep a more upright and fluid gait, decreases the altered forces of limping gait**

**Some will feel more stable, more confident with a walker. Any manner of mobility aid is helpful.**





# MEDICATION-RELATED TREATMENT OPTIONS

## 1. Medications

1. NSAIDs
2. COX-II
3. Cymbalta
4. \*Tylenol – max 1 gm 4x/day  
(OARSI guidelines vs. your doctor's recommendations)



# MEDICATION-RELATED TREATMENT OPTIONS

## 2. Injections

- a. Hyaluronic Acid (HA)
- b. Steroid (cortisone)
- c. PRP and ACP preparations
- (d. stem cell)



# HYALURONIC ACID

- a.k.a. HA, viscosupplementation
- **Provides benefit for 6-12 months\***
- **Can take 3-6 weeks before notice effect**
- Most effective if product is high molecular weight and highly cross-linked



# **STEROID (cortisone injection)**

- **To settle a 'flare' of arthritis, settle swelling**
- **Works quick (2-5 days)**
- **Won't create lasting pain relief**
- **3-4x per year when waiting for joint replacement**



# PLATELET RICH PLASMA (PRP)

- **Benefit similar to HA in early OA**
- **More expensive than HA**
- **It *may* alter the biochemistry of arthritis as well as provide pain relief**
- **Uncertain value in more advanced OA**
  
- **nSTRIDE and other ACP formulations**

## Stem cell therapy

- Research based, not practically effective
- in AB, only in a minor OR/procedure room



# Radiofrequency Ablation of the Geniculate Nerve

- The geniculate nerve provides sensation to the knee
- Can 'freeze' the nerve, with good pain relief may benefit from a simple procedure that 'burns' the nerve
- May provide 6-12 months pain relief
- Does not change the underlying OA process
- NOT covered under medical benefits
- Starting to do it at the hip too



# ALTERNATIVE MEDICINE and UNPROVEN THERAPIES

- **Only if treatment is affordable and doesn't create financial burden as not scientifically proven to be beneficial, but some do gain relief:**
- Acupuncture
- Massage
- Glucosamine & Chondroitin Sulfate



# **CANNABIS** – medical marijuana, smoked or vaped pot, edibles, oil, etc...

- July 2013: Canada approved the use of marijuana on the basis of a legal determination of the right to use, **NOT** based on medical knowledge of efficacy or safety of the substance
- Marijuana and cannabis are the common names for a plant that contains over 100 psycho-active compounds, most importantly:
  - Delta-9 tetrahydrocannabinol (**THC**)
  - Cannabidiol (**CBD**)
- **Health Canada: “there is no scientifically defined dose of cannabis for any medical condition”**
- **Cannabis is NOT considered a safe or effective drug**





# CANNABIS con't ....

- The risks far outweigh any benefits
  - In 2018, the first very well designed, large, 4-year prospective study of **non-cancer pain** treated with marijuana products was published:
    - NNT= 24
    - NNH = 6
  - Findings identified that people who used cannabis had greater pain and lower self-efficacy in managing pain
- **EVERY** provincial medical College in Canada has reviewed medical marijuana
  - **The consistency of literature identifies a lack of benefit for use of cannabinoids/marijuana**



# THE RIGHT TREATMENT AT THE RIGHT TIME



After this education session:

- take some time to consider what you have done to manage your arthritis,
- consider what more you can/want to do to help control your pain and improve your function,
- **follow up with your family doctor to discuss and implement your choices for managing your OA**

**You may call 780-407-5167 to make an appointment with one of the GSSMC physicians if you would like to pursue injections to manage your OA.**



# SURGICAL TREATMENT OPTIONS

**JOINT REPLACEMENT :** *when pain interferes with work, sleep and play and all other treatments have been tried/exhausted and are no longer effective*



# OTHER JOINTS CAN ALSO BE REPLACED



# WHAT TO EXPECT FROM JOINT REPLACEMENT

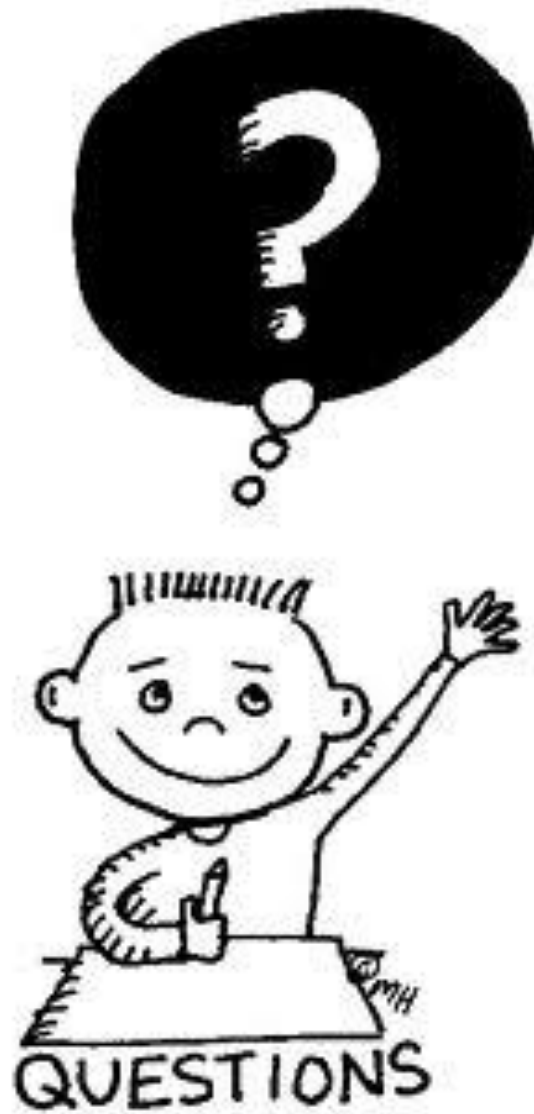
- Pain relief
- Near normal range of motion
- Return to low-impact activity
- Better sleep
- Discontinuation of medications



# LIMITATIONS OF JOINT REPLACEMENT

- **Not a 'normal' joint**
- **May dislocate if in precarious positions**
- **Impact, contact, collision activity/exercise is NOT recommended**
- **They do 'wear out' with time**
- **Hardware presents risk for infection, stress riser for further injury**









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