Thank You

- Thanks to 2018 CHICAGO SPORTS MEDICINE SYMPOSIUM for the kind invitation to present and share this information

- It is indeed an honor and privilege to be invited to participate and thank you for your time.

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Disclosures

Index Medicus 2015
Impact Factor: 2.694
20th out of 81 in Sports Sciences 6/25/2018

Disclosures:

Associate Editor, Sports Health

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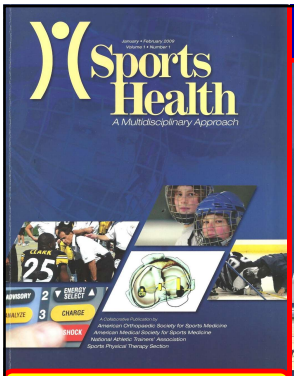
No Conflicts



2009-2018

Index Medicus-2015
Impact Factor-2018

Disclosures:

The following companies have provided research equipment support to Biodynamics & Human Performance Center-GSU:
Arthrometrics, Atlanta, GA.
Biodex, Shirley, N.Y.
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CDM Sport/Monitored Rehab Systems, Fort Worth, TX.
DS2 Rehab Systems, Missouri City TX
ERMI, Atlanta, GA.
ExerTools, Petaluma, CA.
Innovative Sports Inc, Chicago, IL.
TheraBand, Hygenic Corporation, Akron, OH.

No Conflicts

Disclosures

Disclosures

NO MORE FAKE NEWS

Rehabilitation of the Cartilage Deficient knee

OA of the Knee-Epidemiology

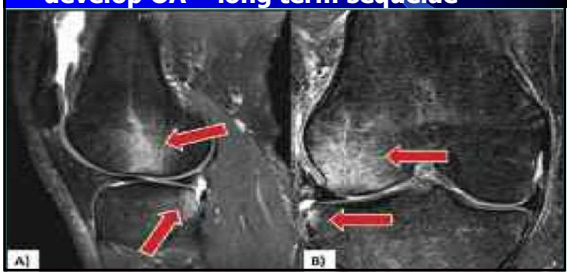
- Cartilage deficit (OA) is a worldwide problem
- Affects 350 million people in world
- Affects 91 million people in USA
  - (~25% of population)
  - ~21-25 million – KNEE
- World Health Organization
  - 4th - F; 8th M
  - Arthritis Foundation – 2018
  - Centers for Disease Control -2018

OA of the Knee-Epidemiology

- Athletes participating in contact/collision sports, or excessive impact sports are at a higher risk for OA

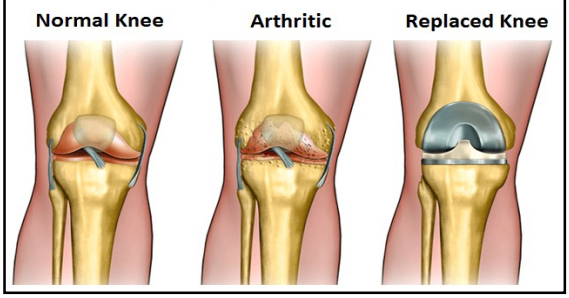
OA of the Knee-Epidemiology

- Athletes/patients with previous knee injuries are at a significant risk to develop OA – long term sequelae



OA of the Knee-Epidemiology

- Athletes/patients with repeated knee injuries have resultant long term effects



Chondral Defect Management

Management of symptomatic focal chondral and osteochondral defects in the knee is complex, multifactorial, and multidisciplinary

Chondral Defects

- The existence of a lesion on MRI or arthroscopic image should not automatically indicate surgery.
- It is well know that chondral defects are highly prevalent in both symptomatic and asymptomatic patients

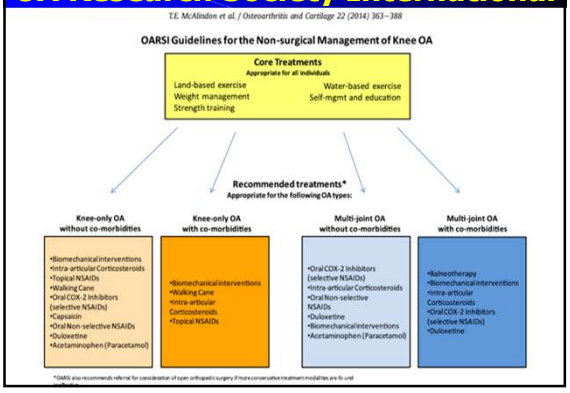
Examination Findings

- Ascribing symptoms to a lesion warrants determination of the exact location of the defect that is tender on exam:
- Location of pain exacerbated with WB
- Biological activity is present via detection of an effusion
- Reduction of pain with intra-articular injection

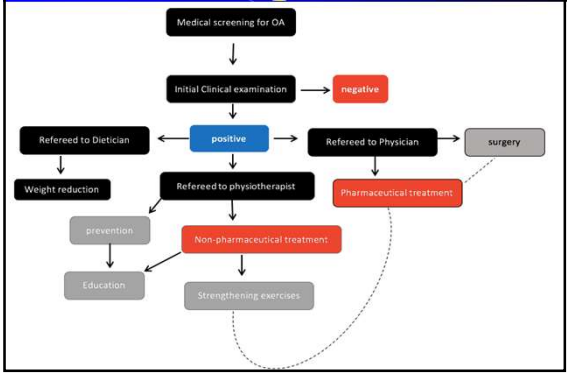
Full-Thickness Lesions

- Patients with full-thickness lesions may demonstrate clinically important limitations in pain, function, sports and recreation, and quality of life as measured by the KOOS sub-scores

OA Research Society International

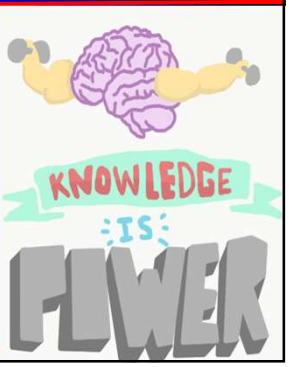


BJSM, August, 2018



Treatments of Chondral Lesions

- Education
- Education
- Education
- Education
- Education

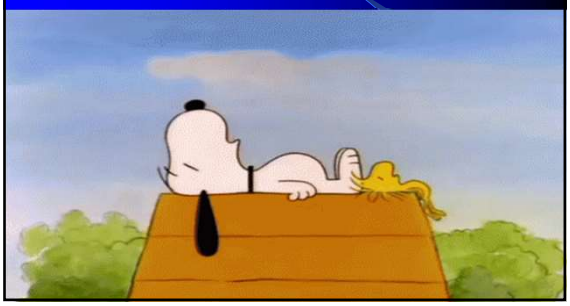


Treatments of Chondral Lesions

- Once the determination that a defect is symptomatic has been made, conservative treatment should commence:
- Relative rest
- Activity modification
- Reduction of BMI
- Proper nutrition
- Oral anti-inflammatory meds
- Supplements: Glucosamine-chondrotin
- Injection therapies (steroids, non-steroids)
- Hyaluronate visco-supplementation
- Cell Based Therapies: PRP

Treatments of Chondral Lesions

- Relative rest



Treatments of Chondral Lesions

- Reduction of BMI/Weight Loss

Treatments of Chondral Lesions

- Proper nutrition

Treatments of Chondral Lesions

- Proper nutrition

Treatments of Chondral Lesions

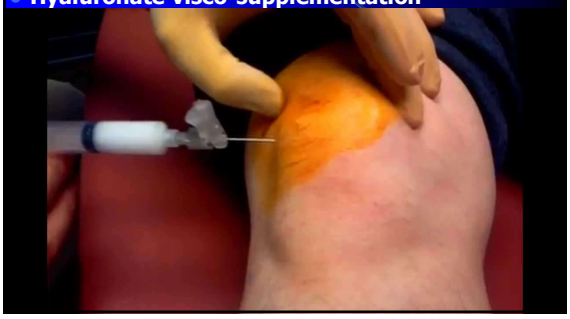
- Oral anti-inflammatory meds

Treatments of Chondral Lesions

- Supplements: Glucosamine-chondroitin
- Clegg, et.al. N Eng J Med, 2006
- Sample size = 1583
- Results:
- One interpretation: there were no differences
- Careful analysis of data suggest subjects did improve on G & CS

Treatments of Chondral Lesions

- Injection therapies (steroids, non-steroids)
- Hyaluronate visco-supplementation



Treatments of Chondral Lesions

- Cell Based Therapies: PRP

Treatments of Chondral Lesions

- Physical Therapy:
- Patient Education
- ROM & flexibility
- Balance & proprioception
- Aerobic exercise
- TLS strengthening
- Assistive devices
- OA Unloader Braces
- Surfaces
- Orthotics
- Footwear

Treatments of Chondral Lesions

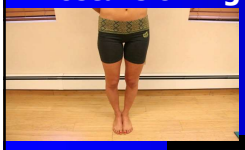
- Physical Therapy:
- Patient Education:
- Impact loading
- Exercise types
- Exercises dosage
  Coping skills
- Biopsychosocial model

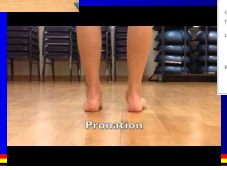
Treatments of Chondral Lesions

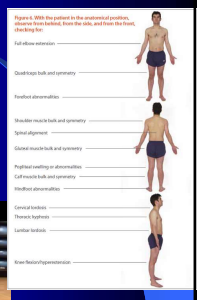
- Physical Therapy:
- Patient Education
- Pain Coping skills
- Research demonstrates patients with OA indicate learned cognitive and behavioral coping skills are useful in managing pain and disability
  - Keefe, J Consult Clin Psych, 1987
  - Keefe, Pain, 1989
  - Zautra, Ann Behav Med, 1992
  - Rapp, Arthr Care, 2000

Treatments of Chondral Lesions

- Physical Therapy:
- Posture & Alignment

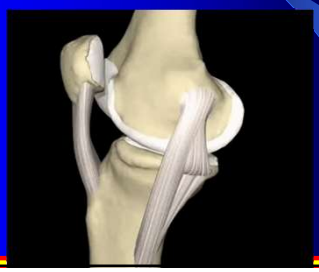






Treatments of Chondral Lesions

- Physical Therapy:
- Knee ROM – normalize ROM



Treatments of Chondral Lesions

- Physical Therapy:
- Flexibility – normalize flexibility – TLS
- Hip flexors
- Hip Abductors/TFL/ITB
  Quadriceps
  Hamstrings
- Gastrocs
  Soleus
- Foot intrinsics

Treatments of Chondral Lesions

- Physical Therapy:
- Flexibility; static & dynamic

Treatments of Chondral Lesions

- Physical Therapy:
- Balance, proprioception, coordination
- (Tai Chi)

Treatments of Chondral Lesions

- Physical Therapy = Exercise
- Exercise is Medicine – ACSM
- Active Healthy Lifestyle

Treatments of Chondral Lesions

- Activity modification:
- Instead of performing impact loading activities on the joint…..

Treatments of Chondral Lesions

- **Physical Therapy:** Aerobic exercise

Treatments of Chondral Lesions

- Physical Therapy:
- Exercise
- "It hurts after I exercise"
- "Well don't do that !!!!!"
- "Let's find a form of exercise you can do without pain."

Treatments of Chondral Lesions

- Physical Therapy:
- TLS strengthening
- TBS strengthening
- Flexibility
- Balance, proprioception, coordination
- (Tai Chi)
- Neuromuscular dynamic stability
- EDUCATION & HEP

Treatments of Chondral Lesions

- Physical Therapy:
- TBS strengthening
- TLS strengthening

Exercise Dosing with Knee OA

- Recommendations:
- Exercise type: Variable-customize to patient
- Single session duration: 30-60 minutes
- Frequency: 3 x/week (every other day)

Young, JL, et.al. The influence of exercise dosing on outcomes in patients with knee disorders: a systematic review. JOSPT. 48(3):146-161, 2016

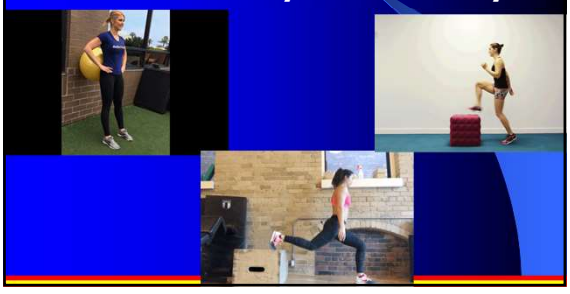
Exercise Dosing with Knee OA

- Recommendations:
- Total sessions: 24-36 (Ins. dependent)
- Duration: 8-12 weeks
- Outcome measures: VAS, WOMAC, KOOS
- Interpret:
- Strength and functional components of WOMAC & KOOS

Young, JL, et.al. The influence of exercise dosing on outcomes in patients with knee disorders: a systematic review. JOSPT. 48(3):146-161, 2016

Treatments of Chondral Lesions

- Physical Therapy:
- Neuromuscular dynamic stability



Treatments of Chondral Lesions

- Physical Therapy:
- Exercise selection for Surfaces
- Bicycle: 0.8-1.0 x BW
  EllíptiGo: ?
- Rowing: 0.8-1.0 x BW
- Aquatic Therapy: Depends on depth of water (waste-50%)
- Walking: 3.0-3.5 x BW
  Unloader Devices (Suspension, Alter-G):
- Squatting: 4-4.5 x BW
- Running: 6-7.5 x BW

Treatments of Chondral Lesions

- Physical Therapy:
- Bicycle: 0.8-1.0 x BW
  EllíptiGo: ?

Workouts at the Beach

Treatments of Chondral Lesions

- Physical Therapy:
- Aquatic Therapy: Depends on depth of water (waist-50%)

Treatments of Chondral Lesions

- Physical Therapy:
- Exercise selection for Surfaces
- Walking: 3.0-3.5 x BW

Treatments of Chondral Lesions

- Physical Therapy:
- Exercise selection for Surfaces
- Unloader Devices (Suspension, Alter-G):

Treatments of Chondral Lesions

- Physical Therapy:
- Exercise selection for Surfaces
- Squatting: 4-4.5 x BW

Treatments of Chondral Lesions

- Physical Therapy:
- Exercise selection for Surfaces
- Running: 6-7.5 x BW

Treatments of Chondral Lesions

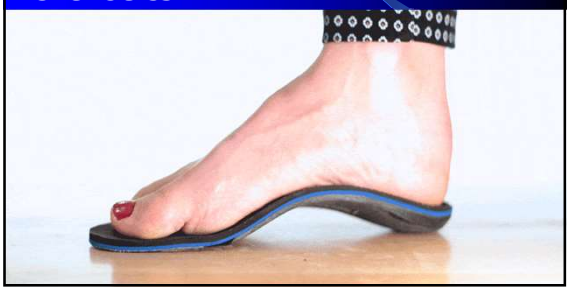
- Physical Therapy:
- Assistive Devices

Treatments of Chondral Lesions

- Physical Therapy:
- OA Unloader Braces

Treatments of Chondral Lesions

- Physical Therapy:
- Orthotics

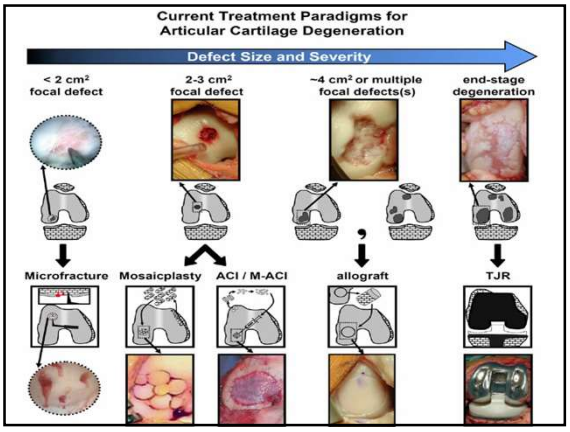


Treatments of Chondral Lesions

- Footwear-cushioning

Surgical Decision Making

- If conservative treatment fails, then surgical decision is predicated on:
- Patient's informed consent
- Pre-op expectations
- Disclosure of surgical algorithms:
- Each technique's advantages, disadvantages, risks, benefits, alternatives, expected outcomes, post-operative rehabilitation




Summary
And
Conclusions


Thanks to 2018 Chicago Sports Medicine Symposium
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