USA TRIATHLON

# Art & SCIENCE OF TRIATHLON

## 2014 INTERNATIONAL COACHING SYMPOSIUM

*A ONE-OF-A-KIND EDUCATIONAL OPPORTUNITY FOR TRIATHLON COACHES*

# Dealing With Common Injuries

- What are they?
- How often do they occur?
- Who gets them?

# Dealing with Common Injuries

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Three out of four people have suffered an injury while training or competing in a triathlon

Triathlon will not reduce the risk of injury

Injury rate actually is slightly higher in triathlon than in single sport (running, cycling, swimming)

# Cumulative Stress of Cross Training

- More training time than single sport athletes
- Injured triathletes gain a “sweet spot”, where injuries were least likely to occur
- Overuse injuries more common in multi-sport
- Iron distance athletes have twice as many recurrent injuries than Olympic distance athletes

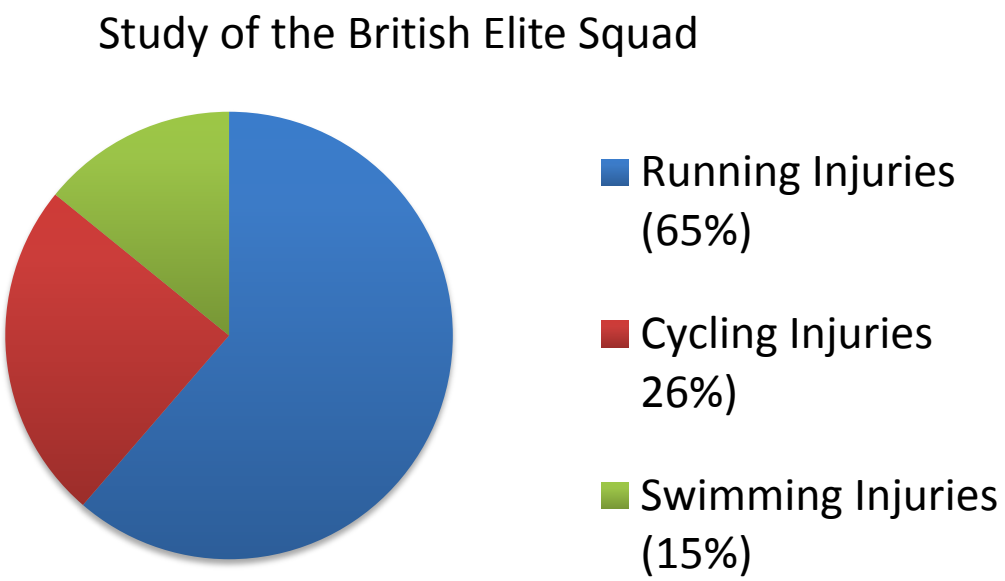
One study revealed Hawaii Ironman finishers had an incredible 90% injury rate in the year prior to the event

# Cumulative Stress of Cross Training

- Triathletes more likely to “train through” injury
- Despite easing off one sport, increase volume in others
- No difference in injury rate of coached vs non-coached groups
- Triathletes may have sub-optimal technique or equipment than their single sport counterparts

# Types of Injuries

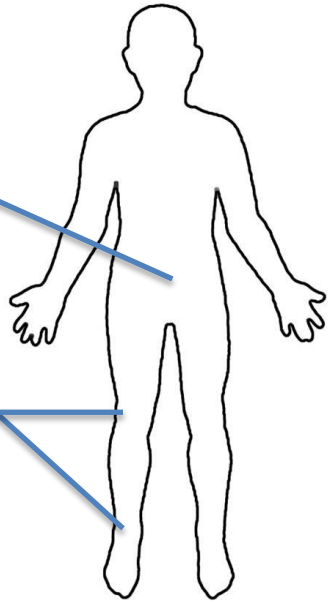
- Similar to the spectrum of injuries seen with single sport events



# Types of Injuries

- Location of injury seems to vary depending on race distance being trained for

Olympic Distance

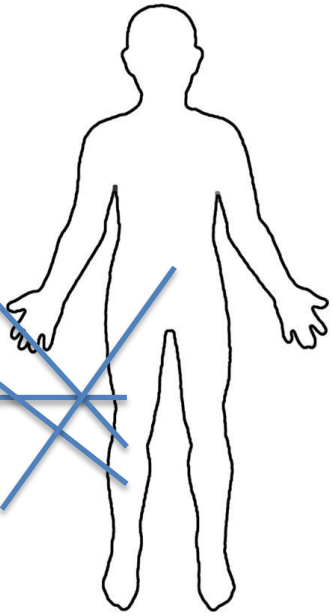


18% Lower back

14% Achilles

14% Knees

Iron Distance



44% Knees

20% Calf

20% Hamstring

20% Lower Back

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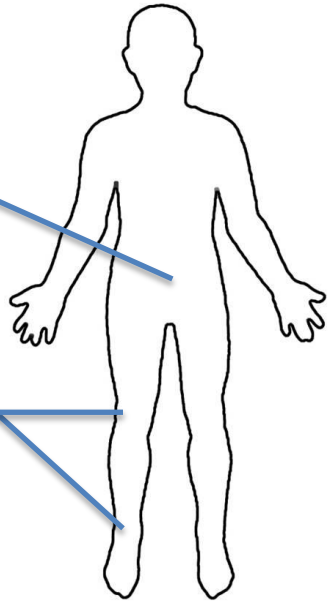

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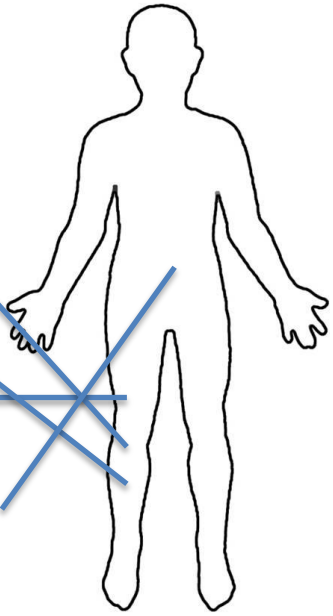

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# Types of Injuries - Swimming

- Swimming accounts for 5-10% of injuries in triathlon

- Primary location Shoulder

# Types of Injuries - Swimming

- Two Primary Mechanisms
  - Overhead reaching
  - internal rotation

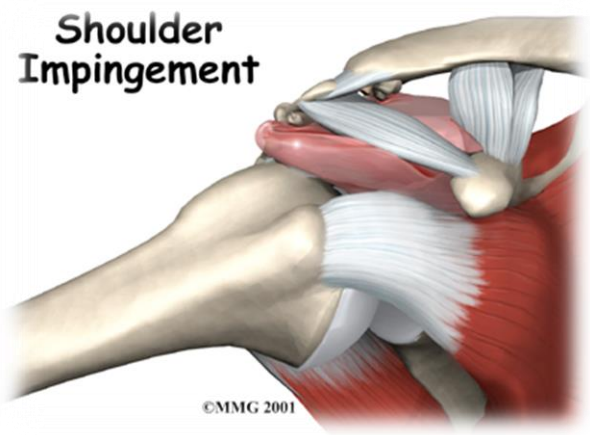
- Delicate Anatomy
  - Provides flexibility range of motion
  - Susceptible to injury
  - “Golf ball on a tee”

# Swimming Injuries

- Shoulder Impingement Syndrome
- Rotator Cuff Tendinitis
- “Swimmer’s Shoulder”

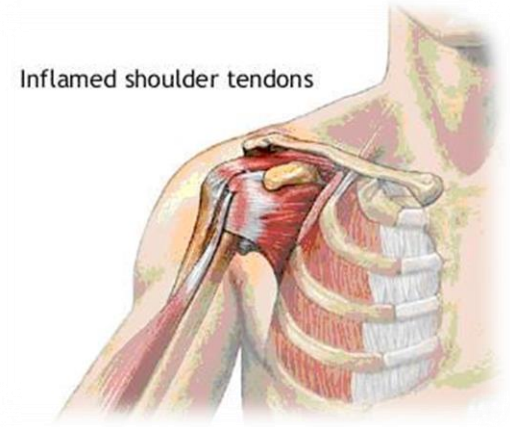
# Types of Injuries - Swimming

- **Shoulder Impingement Syndrome**
  - Pinching or trapping rotator cuff tendons between head of humerus and shoulder blade
  - Reaching overhead, slouched rounded shoulders and internal rotation causes pain
  - Worsened while riding in aero position



# Types of Injuries - Swimming

- **Rotator Cuff Tendinitis**
  - General inflammation and swelling of rotator cuff tendons
  - This happens when the pulling force is too strong relative to the rotator cuff muscles
  - Frequently causes pain when arm is lifted to the side

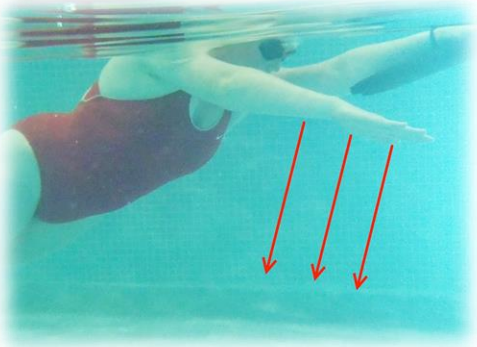


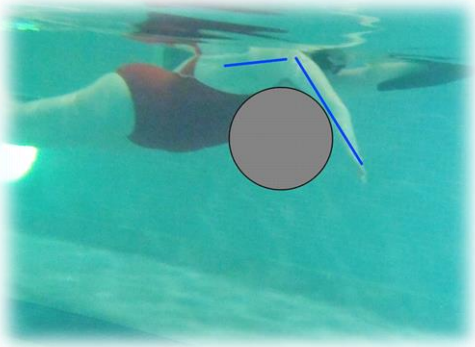
# Types of Injuries - Swimming

- **Swimmer's Shoulder**
  - Combination of rotator cuff tendinitis, impingement, and laxity of the shoulder joint
  - Excessive stretching of the shoulder joint is common and may contribute to joint laxity

# Types of Injuries - Swimming

- Do not ignore pain while swimming
- Swimmers of all abilities can benefit from technique evaluation
- One of the most common swimming errors is “pushing down” on water with arm in full extension





# Swimming - Common Flaws

- Pushing Down at full extension
- Crossing Over
- Support during breath
- Reaching ‘up’ during extension
- Forcing a high elbow during catch/pull or recovery

# Types of Injuries - Swimming

- Tips for good shoulder health:
  - Have your technique evaluated
  - Ice the painful area
  - Consider *short-term* use of pain relievers
  - Add stabilizing exercises to training
  - Seek a medical professional if pain does not resolve after 7-10 days

# Types of Injuries - Bicycling

- Bicycling injuries account for 10-20% injuries in triathletes
- Traumatic injuries include injuries to the skin, strains and fractures.
- These result from falls or crashes while riding the bicycle
- Seeking medical evaluation is prudent if you have severe pain, swelling over a joint, or decreased movement after a fall

# Types of Injuries - Bicycling

- Skin Injuries
  - Abrasions
  - Cuts & Lacerations
  - Sunburns
  - Skin Cancer

# Types of Injuries - Bicycling

- **Injury – Skin Abrasions**
  - Abrasions result from contact with ground while moving at speeds
  - “Road Rash”
  - Friction between skin and road surface tears away layers of the skin, sometimes deeply

# Types of Injuries - Bicycling

- **Treatment – Skin Abrasions**
  - Clean the wound and surrounding skin
  - Apply three-layer dressing
    - Layer 1 – the non-stick layer
    - Layer 2 – the absorbent layer
    - Layer 3 – holding it all together
  - Maintain ongoing care

# Types of Injuries - Bicycling

- **Injury – Skin Cuts**
  - Also called lacerations
  - Caused by impact over a bony area resulting in the overlying skin splitting open
  - Also caused by cutting forces such as broken glass, metal, or other road debris

# Types of Injuries - Bicycling

- **Treatment – Skin Cuts**
  - Immediately assessed for rapid bleeding
    - If so, apply pressure to reduce bleeding
  - Cut should be cleaned with running water if possible
  - Get to medical care for stitches before the window has passed

# Types of Injuries - Bicycling

- **Injury – Skin Cancer/Sunburn**
  - Outdoor athletes are at a higher risk for skin cancer
  - Sweating increases sensitivity of the skin to injury from ultraviolet rays

# Types of Injuries - Bicycling

- **Treatment – Skin Cancer/Sunburn**
  - Always use SPF30, especially in colder weather
  - Reapply frequently during ride
  - Lip balm with SPF
  - Seek medical opinion for any skin changes (moles, spots, discoloration, etc.)

# Types of Injuries - Bicycling

- **Injury – Strain**
  - Common sites of strain include the shoulder and the wrist
  - Can be in a variety of places depending on the position of the wrist and site of impact

# Types of Injuries - Bicycling

- **Injury – Separated Shoulder**
  - An injury to a small band of tissue that holds the end of the collarbone down against the shoulder
  - This ligament can get stretched to varying degrees
  - Severe separations involve tearing of the ligaments holding the collarbone down

# Types of Injuries - Bicycling

- **Treatment – Separated Shoulder**
  - Treatment is rest, ice, and anti-inflammatory medicine
  - Place arm in a sling to gently rest it at the side of your body
  - Icing over most painful area will reduce pain as well as swelling
  - Seek medical care

# Types of Injuries - Bicycling

- **Treatment – Wrist Pain after a fall**
  - Unique injury
  - Navicular or scaphoid bone gives thumb range of motion
  - Taking care of this injury is important for mobility of opposable thumbs

# Bicycling Injuries – Fractures

- Wrist
- Elbow
- Collarbone

# Bicycling Injuries – Fractures

- Identification
  - Severe ones are obvoius
    - “Snap”, angulation, deformity, “tenting”
  - Subtle ones may still allow movement
- First Aid
  - Splint above and below

# Bicycling Injuries – Overuse

- Top 3…
  - Patellar tendinitis
  - Patello-femoral syndrome
  - Ilio-tibial band syndrome

# Bicycling Injuries – Overuse

Triahletes have Same injury patterns as pure cyclists

Bicycle Fit is important –really important!

# Bicycling Overuse Injuries – Knee

- Anatomy
  - Hinge Joint
  - Simple movement, complex structure
- Structure
  - Two weight bearing surfaces
  - Patella
  - Meniscii
  - Ligaments & Muscle attachments

# Patellar Tendonitis

- Inflammation just distal to knee cap
- Downstroke pedal force transmitted to tip of shin (tibial tuberosity)
- More common when resuming or increasing mileage

# Patello-Femoral Syndrome (PF Syndrome)

- “Biker’s Knee”  aka “Runner’s Knee”
- Mis-alignment of kneecap
- Relatively stronger lateral quad muscles
- More common in women (Q-angle)

# PF Syndrome – Treatment

- Bike Fit
- Cleats & Shoes
- Strengthening medical quads / PT

# Ileotibial Band Syndrome

- ITBS / IT Band
- Originates at hip, connects below knee
- Crosses two joints, causing pain either at hip or at knee laterally
- Seat height, fore/aft position

# Cycling Injuries – Lower Leg

- Achilles tendonitis
- Transmits all the force of the downstroke
- Swimming Contributor??

# Cycling Injuries – Head & Spine

- Both Traumatic & Overuse injuries
- Overuse Injuries
  - Low Back Pain
  - Neck Pain
- Traumatic Injuries
  - Concussion / Head Injuries

# Running Injuries

- Account for up to ¾ of missed workouts in triathletes
- Full body support with every step – increases magnitude of force & injury
- Most common locations: Knee, Foot, Ankle

# Running Injuries – Knee

- Majority of running reported injuries in triathletes
- Similar to cycling related injuries
- Most Common:
  - PF Syndrome
  - IT Band Syndrome
  - Runner's Knee (aka Cyclist's knee)

# Running Injuries – Knee

- Contributing Factors
  - Rapid increase in mileage
  - Running on a crowned slope
  - Aggressive hill running

# Running Injuries – Ankle

- 15 -25% of running injuries from triathletes
- Common Injuries
  - Metatarsalgia
  - Plantar Fasciitis

# Running Injuries – Metatarsalgia

- Stress reactions/Stress fracture
- Cycling Cleats “hot spot”
- Carbon Cycling Shoes with large platforms can help

# Running Injuries – Plantar Fasciitis

- ~50% of foot & ankle related complaints
- Plantar Fascia helps support the arch, provides shock absorption, allows elastic recoil
- Pain usually worse in AM, notably in front of heel

# Plantar Fasciitis - Treatment

- Night Splits
- Stretching / Strengthening

  -Foot  & Achilles

# Running Injuries – Lower Leg

- 10% of all injuries in triathletes
- Shin Splints
- Tibial Stress Fractures

# Running Injuries – Shin Splints

- Front of shin, inner edge of shin bone
- Muscles pull on attachment to bone
- Treatments: gait analysis, activity modification

# Running Injuries – Tebial Stress Fractures

- May be a progression of shin splints
- Sharp pain in small area
- Requires an MRI
- Treatment requires rest! (4-6 weeks or longer)

# Running Injuries – Hip & Groin

- Hip injuries 10-20% of all injuries
- Anatomy – Ball & socket joint
  - More stable than shoulder
  - Less ROM
- Femoral Neck Stress Fracture

# Running Injuries – Femoral stress fx

- Occurs at the narrowest part of the bone
- Mis-diagnosis can result in long term disability
- My require future surgery
- Early suspicion and identification is crucial

# Running Injuries – Femoral Stress fx

- Most common in long distance & ultra-distance
- Used to idea of “running through discomfort”
- Full healing takes 6 weeks or longer

# Injuries in Triathletes

- Tend to mirror single sport injuries
- Tend to have higher injury rates
- "U-shaped" injury distribution
  - Fewer than 8 hours
  - More than 10 hours