

*Sports Specific Safety*

# *Football*



*Sports **M**edicine & **A**thletic **R**elated **T**rauma  
**SMART** Institute*

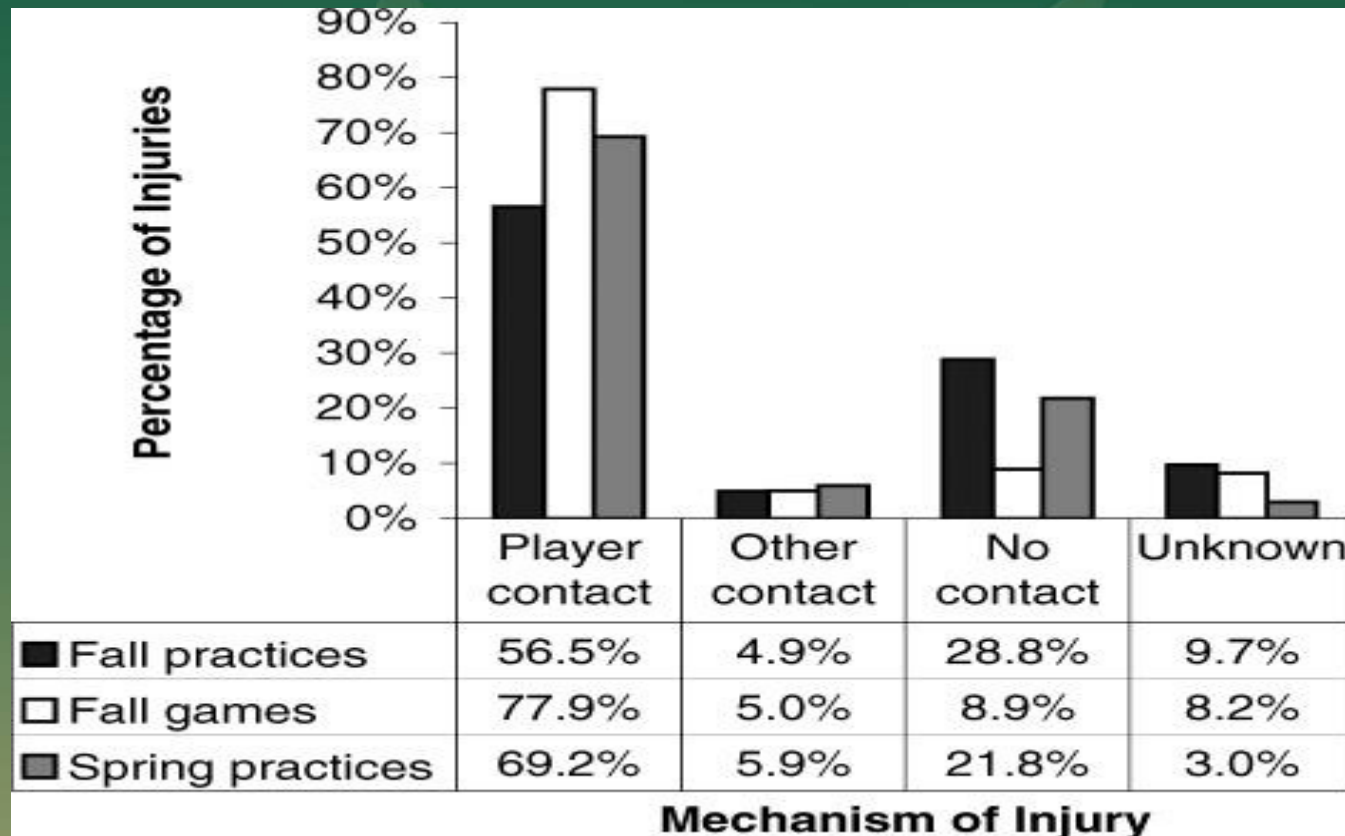
## Percentage of Game and Practice Injuries by Major Body Part, Men's Football, 1988–1989 through 2003–2004

Body Part	Fall Games	Fall Practices	Spring Practices
Head/neck	11.5	10.1	9.8
Upper extremity	22.6	20.1	22.9
Trunk/back	9.9	13.2	9.9
Lower extremity	54.7	50.8	55.7
Other/system	1.4	5.9	1.6

J Athl Train. 2007 Apr–Jun; 42(2): 221–233.

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# Game and Practice Injury Mechanisms



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# Ankle Sprains

- Lateral ankle injuries are more common than medial, sometimes the result of stepping on another person's foot.
- Acute Management: Rest, Ice , Compression, Elevation. Tape/brace as needed. Rehabilitation program makes a huge difference in preventing another ankle sprain!
- Prevention: Stretching (Achilles), strengthening, proprioceptive training, proper footwear, and taping/bracing when appropriate.

# Ankle Injuries

- Most common sports injury
- 1 per 10,000 population per day
- 85% of ankle injuries are sprains
- 85% of sprains involve lateral ligaments
- 20% - 40% lead to chronic symptoms

# Knee Injuries

- Ligament or meniscal (cartilage) tears.
- Acute management: Rest, Ice, Compression, Elevation. Crutches could be warranted. Brace may be necessary, early range of motion may be critical, or stabilization may be preferred.

# Ligament Injuries - ACL

- 200,000 new ACL injuries per year
- History
  - Non-contact injury with knee in extension (70%)
  - Hemarthrosis within a few hours
  - Audible pop in 50%
  - More common in females

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# Anterior Cruciate Ligament Tears

- Mechanism
  - Sudden stopping and pivoting or changing direction
  - Improper landing
- Acute Management
  - Ice, immobilization, crutches, pain medication if necessary (per MD)
  - Orthopedic referral for surgical options



# Anterior Cruciate Ligament Tears

- Prevention Techniques
  - Proper landing/jumping techniques
  - Balance/proprioception drills
  - Hamstring strengthening

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# Meniscal Tears

- Foot planted, body rotated, hear a “pop”
- May be able to play, swelling next day
- Must address the swelling, pain and limited range of motion first
- Diagnosis may be based on history and/or medical imaging tests alone
- May require an “unlocking” of the joint
- Prevent quadricеп shutdown

# Quadriceps Contusion

- Mechanism
  - Getting kicked or kneed by another player
- Acute Management
  - Ice massage
  - Compression wrap
  - Stretching

# Shoulder Injuries

- Acromioclavicular joint injury
- Ligament sprain
- Dislocations / Subluxations
- Contusions
- Strains
- Nerve Injuries

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# Acromioclavicular (AC) Joint Sprains

- The acromion and the clavicle (collar bone) form the AC joint
- Mechanism of injury: Direct impact to the shoulder such as falling on your shoulder or on a outstretched arm
- Treatment: Sling, X-ray(to determine the extent of injury), ice and a supervised rehab.

# Shoulder Dislocations / Subluxations

- Result of torn and/or stretched tissues ( ligament/musculature )
- Most often caused by a direct blow or by falling on an outstretched hand.
- Subluxation( popping out then quickly returning)
- Dislocation(popping out and staying out)

# Brachial Plexus Stretch

- “Burner” or “Stinger”
- Stretching of a group of nerves that are located in the neck and travel down the arm.
- The head side-bends in one direction while the body moves in another direction.
- A person may complain of “dead arm” sensation

# Cervical Spine Injuries

- Improper handling of the c-spine on the field or during transport can worsen or even cause spinal cord dysfunction.
- Emergency management of c-spine injuries should be put into place and practiced before the season starts.



# C- Spine Injuries

- Major Mechanism- Axial load  
(compressive force applied to the top of the head)
- Increased danger when the neck is slightly flexed- does not allow for proper distribution of force

# C-Spine Management

- Unconscious- ABCs
- Conscious- numbness, weakness, neck pain?
- Every unconscious or injured athlete with any of the above should be treated as if they have a c-spine injury.

# C-Spine Management

- Face Mask Removal (helmet and shoulder pads are not removed)
  - cordless screwdriver
  - cutting tools
- Spine Board
  - log roll
  - scoop stretcher
- Transport

# Low Back Strains

- Common in every population
- Excessive body weight contributes
- Posture contributes
- Management includes conditioning to improve flexibility, strength and endurance of both small and large spinal stabilization muscles

# Concussions

- Signs & Symptoms - it is important that the athlete understand the signs and symptoms of a concussion and the importance of reporting even the slightest incident.
- Acute management: seek medical attention.
- Prevention: reporting of each incident with proper medical care can prevent “Second Impact Syndrome.”

# S & S of Concussion

## Physical Symptoms

Headache  
Vision difficulty  
Nausea  
Dizziness  
Balance difficulties  
Light sensitivity  
Fatigue

## Emotionality Symptoms

Irritability  
Sadness  
Nervousness  
Sleep disturbances

## Cognitive

Memory loss  
Attention disorder  
Reasoning difficulty

People working with younger (pediatric) athletes should be aware that *recovery may take longer than in older athletes*. Additionally, these younger athletes are maturing at a relatively fast rate and will likely *require more frequent updates of baseline measures* compared with older athletes.

JAT 2004 Position Statement

Because damage to the maturing brain of a young athlete can be catastrophic (ie, *almost all reported cases of second-impact syndrome are in young athletes*), athletes under age 18 years should be managed more conservatively, using stricter RTP guidelines than those used to manage concussion in the more mature athlete.

JAT 2004 Position Statement



# F/U Guidelines

- Avoid meds – only acetaminophen from MD
- Avoid ingesting alcohol, illicit drugs, or other substances
- Instructed to rest, but complete bed rest is not recommended
- Eat a well-balanced diet that is nutritious in both quality and quantity
- An athlete should be awakened during the night to check on deteriorating signs and symptoms only if he or she experienced LOC, had prolonged periods of amnesia, or was still experiencing significant symptoms at bedtime

JAT 2004 Position Statement



# Field/Playing Area Safety



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# Field Safety

- Uneven playing surfaces
- Surfaces with greater than normal friction
- Slippery playing surfaces, fields with puddles
- Improper illuminated lighting for night events
- Irrigation systems not completely buried
- Fences that surround fields with protruding parts
- Goalposts and other fixed apparatus that are not properly protected with padding

# Field/Playing Area Safety

- Lightning
  - Flash to Bang or 30-30 Rule
    - If there is 30 seconds or less between the time that you see lightening and hear thunder then seek shelter immediately.
    - Wait at least 30 minutes after the last thunder is heard before resuming play. If you see further thunderstorm clouds building, you should wait at least another 30 minutes.
  - Seek shelter in an enclosed vehicle, restroom, or other nearby building. Golf carts, trees, or other “shaded” locations are not safe.
- Sun
  - Don’t forget sunscreen.

# Purposes of Protective Equipment

1. Dispose & absorb forces
2. Limit anatomical movement
3. Support joint structures
4. Support musculotendinous structures
5. Enhance proprioceptive feedback

# Protective Equipment Guide

- Does the equipment protect the area of concern appropriately?
- Can the athlete perform the skills required for his/her sport and position while wearing the device?
- Will the device maintain proper anatomical alignment?
- Is the device potentially hazardous or injurious to other participants?
- Is the device legal by the rules and regulations of the sport?

# Mouth Guards

- Stock, mouth formed, and custom-fitted
- Required for lacrosse, ice hockey, football, field hockey
- Recommended for basketball & soccer
- Intra-oral, upper teeth, visible color

# Helmets

- **The Helmet:**

A protective helmet, equipped with face mask, chin pad and a cupped four point chin strap fastened to all four hookups, must be worn by all players. All helmets and face masks should be [NOCSAE](#) (National Operating Committee on Standards for Athletic Equipment) approved.

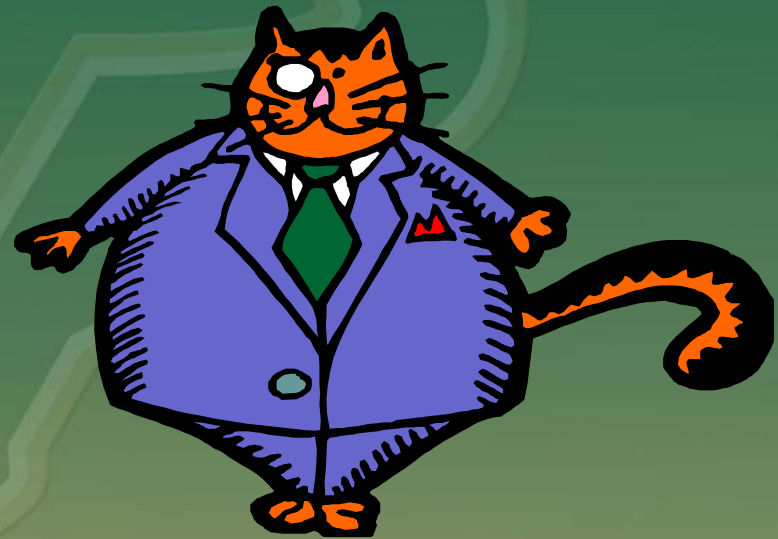


# Prevention of Heat Illnesses (NCAA)

- Allow for 7-10 days to acclimatize
  - 80% acclimatization
- 2 months for full acclimatization

# Who is at greatest risk?

- Unaccustomed to heat
- Overweight
- Intense athletes
- Sick athletes
- Recent immunizations due to elevated body temperature



# General Information

- White → Reflects 30% of the heat
- Dark → Reflects 18% of the heat  
(skin or clothing)
- Male: Lower % body fat
- Female: Higher % body fat
  - Core temperature must get higher before sweating occurs
- Core temperature: for every one degree of increased core temperature – there is an increase in heart rate (about 10 beats/1 degree)

# General Information

## Body Temperature



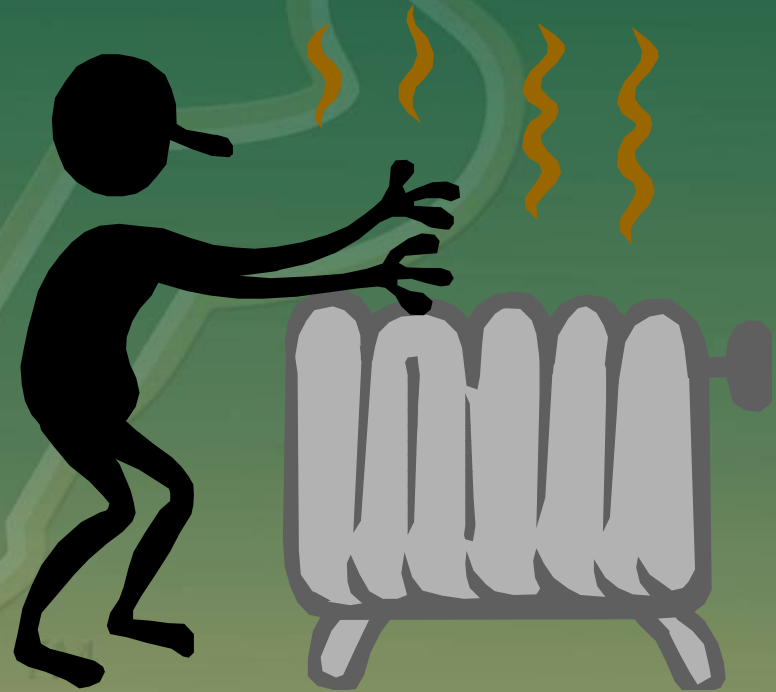
- Sweat increases
- Blood is pushed towards the skin
- Respiration increases
- Desire for food decreases
- Desire for fluids increases
- Desire for salt increases
- Muscle contraction decreases (willingness)

# Heat Illnesses - Causes

- Dehydration
  - 60+ % of total body water
  - Sugar in the stomach prevents rehydration
  - Observe until urination occurs (key)
- Electrolyte Imbalance
  - Depletion occurs over a period of 2-5 days
  - Ion-chemical charge

# Types of Heat Illnesses

- Heat rash
- Heat syncope
- Heat cramps
- Heat exhaustion
- Heatstroke



# Monitoring

- Weight Change
- Symptoms
- Urine specific gravity
- Bioelectrical impedance
- CoreTemp
  - “Heat Pill”
  - Correlate with signs/symptoms
  - Ability to track rate of change
  - Monitor the whole team simultaneously
  - Cost?
  - Uncharted waters
  - Parameters?
  - Godek SF, Godek JJ, Bartolozzi AR, *Thermal Responses in Football and Cross Country Athletes During Their Respective Practices in a Hot Environment*, Journal of Athletic Training, vol 39, no 3, 235-240, 2004.
- Others



Orthopaedics & Sports Medicine Research



# Fluid Replacement

- **Before exercise:** drink 17-20 oz. 2-3 hrs prior.
- 17-20 oz 10-20 min. prior to exercise.
- **During exercise:** 7-10 oz. every 10-20 min.
- **After exercise:** within 2 hrs, drink enough to replace weight loss from exercise.

## **MRSA**

# Methicillin-Resistant Staphylococcus Aureus

### *The Silent Killer*

#### **Ways to combat MRSA:**

- Keep hands clean
- Shower immediately after exercise
- Keep cuts and scrapes covered
- Wear clean exercise clothes
- Don't share razors or other personal items
- Notify the athletic trainer of any unusual sores



# THANK YOU

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