

*Sports Specific Safety*

# *Basketball*

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

# Objectives of Presentation

1. Identify the prevalence of injuries to basketball
2. Discuss commonly seen injuries in basketball
3. Provide information regarding the management of injuries seen in basketball
4. Provide examples of venue and equipment safety measure
5. Provide conditioning tips for basketball to reduce potential injuries

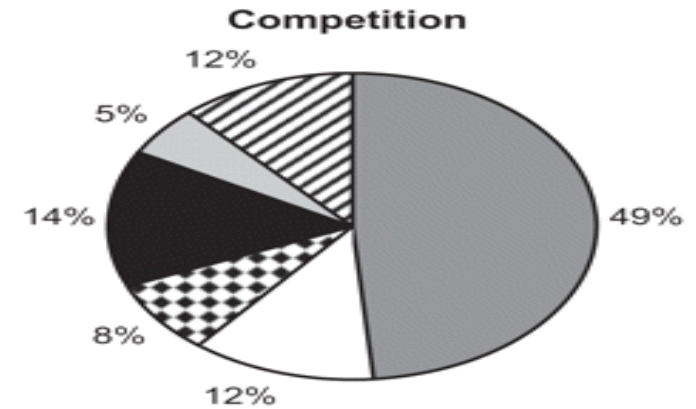
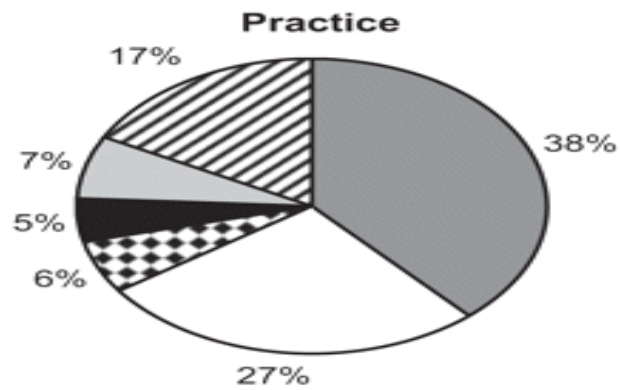
# Injury Statistics

- Injuries occur to males more than females(1)
- Injuries occur to African-Americans more than other races(1)
- Most injuries occur to lower leg. With Ankle sprains being the most common injury (1,2,3).
- Second most common injuries are fractures of the hand/wrist/fingers(1,2)

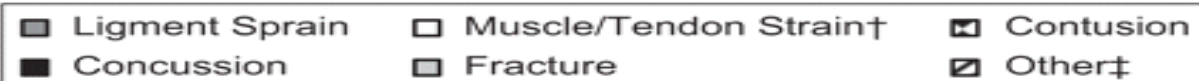
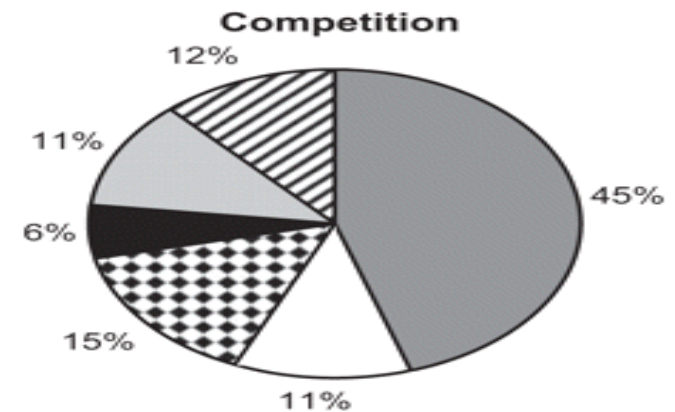
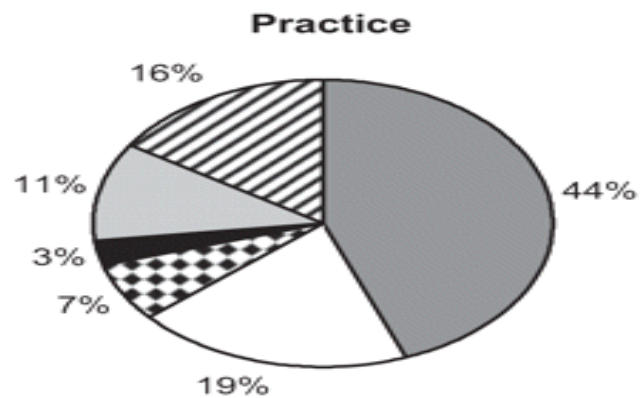
# References

1. **Epidemiology of Basketball Injuries Among Adults Presenting to Ambulatory Care Settings in the United States. Original Research** Clinical Journal of Sport Medicine. 17(6):446-451, November 2007. Hammig, Bart J PhD, MPH \*; PhD, Heewon Yang +; Bensema, Brian MS +
2. **Descriptive Epidemiology of Collegiate Men's Basketball Injuries: National Collegiate Athletic Association Injury Surveillance System, 1988–1989 Through 2003–2004** Randall Dick, MS, FACSM,\* Jay Hertel, PhD, ATC, FACSM,† Julie Agel, MA, ATC,‡ Jayd Grossman, MEd, ATC,§ and Stephen W Marshall, PhD|| \*National Collegiate Athletic Association, Indianapolis, IN;
3. **Prospective epidemiological study of basketball injuries during one competitive season: Ankle sprains and overuse knee injuries** Journal of Sports Science and Medicine (2007) 6, 204-211 **Elke Cumps 1 □□, Evert Verhagen 2 and Romain Meeusen 1 1** Vrije Universiteit Brussel, Faculty of Physical Education and Physical Therapy, Department of Human Physiology and Sports Medicine – Policy Research Center Sports, Physical Activity and Health, Belgium **2** Department of Public and Occupational Health, EMGO-Institute, VU University Medical Centre, The Netherlands

**Girls' Basketball, n = 212 662**



**Boys' Basketball, n = 197 296**



**US High School Basketball Injuries, 2005–2007**

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# Commonly Seen Injuries

- Ankle sprains
- Patellar tendonitis
- Anterior Cruciate Ligament tears
- Quadriceps contusions
- Finger dislocations

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# Ankle Sprain

- Mechanism
  - Inversion or stepping on another player's foot. Commonly called “rolling your ankle.”
- Acute Management
  - R.I.C.E. for at least the first 48-72 hrs
  - NSAIDS (Advil) for inflammation
  - Doctor for x-rays if severe

# Ankle Sprain

- Prevention Techniques
  - Tape/Bracing
  - Ankle strengthening exercises
  - Balancing drills

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# Patella Tendonitis

- Mechanism
  - Usually chronic from overuse or lack of quadriceps strength
- Acute Management
  - Rest and Ice
- Prevention Techniques
  - Proper stretching and strengthening of the lower body, particularly the quadriceps/hamstrings/calves
  - Patella tendon strap while playing
  - Educate on proper landing/jumping techniques

# 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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# PEP

- What is the PEP Program?

The PEP (Prevent injury, Enhance Performance) Program is a highly specific 15-minute training session that replaces the traditional warm-up. It was developed by a team of physicians, physical therapists, athletic trainers and coaches, and has funding support from the Amateur Athletic Foundation of Los Angeles (AAF).

# PEP Program

- **The Goals of the Program are to:**
  - 1) Avoid vulnerable positions
  - 2) Increase flexibility
  - 3) Increase strength
  - 4) Include plyometric exercises into the training program
  - 5) Increase proprioception through agilities

# Quadriceps Contusion

- Mechanism
  - Getting kicked or kneed by another player
- Acute Management
  - Ice massage
  - Compression wrap
  - Stretching
- Prevention Techniques
  - Wearing padded girdle underneath shorts

# Finger Dislocations

- Mechanisms
  - Usually from contact with ball
- Acute Management
  - Stabilize joint with splint
  - Ice and wrap
  - Doctor referral for x-rays and reduction
- Prevention Techniques

# Field/Playing Area Safety

- Clear loose balls/gym bags from under net/court area
- Proper lighting in gym
- Indoor courts should have a clean/dry floor and padded walls underneath the rim.
- Outdoor courts should be clear of debris (rocks, holes)
- Adequate space between floor/benches/bleachers



# 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.

# Equipment Safety

- Mouthpieces (required in high school games)
- Ankle/knee braces
- Padded girdles
- Faceguards (nose fracture)

# Conditioning Tips to Avoid Injury

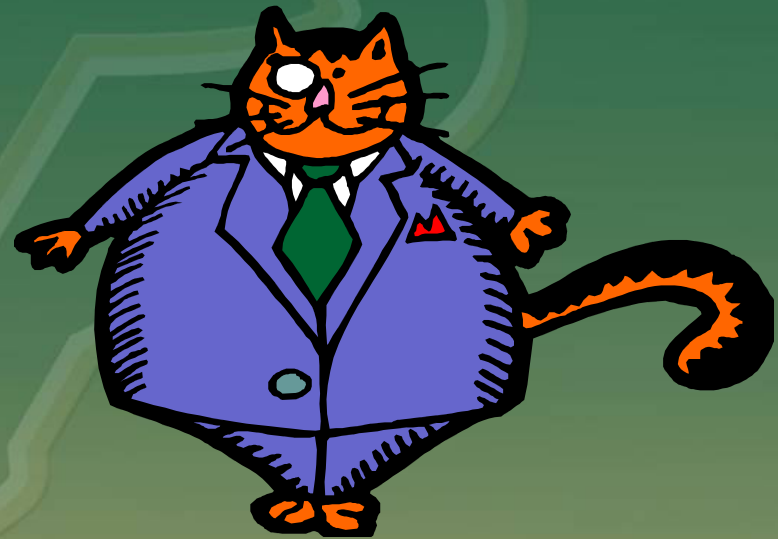
- PEP program for females
- Proprioception/balance drills
  - Cone touches
  - Star drill
- Plyometrics
- Cardiovascular
  - Line drills
  - Figure 8's
  - Court widths

# 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)

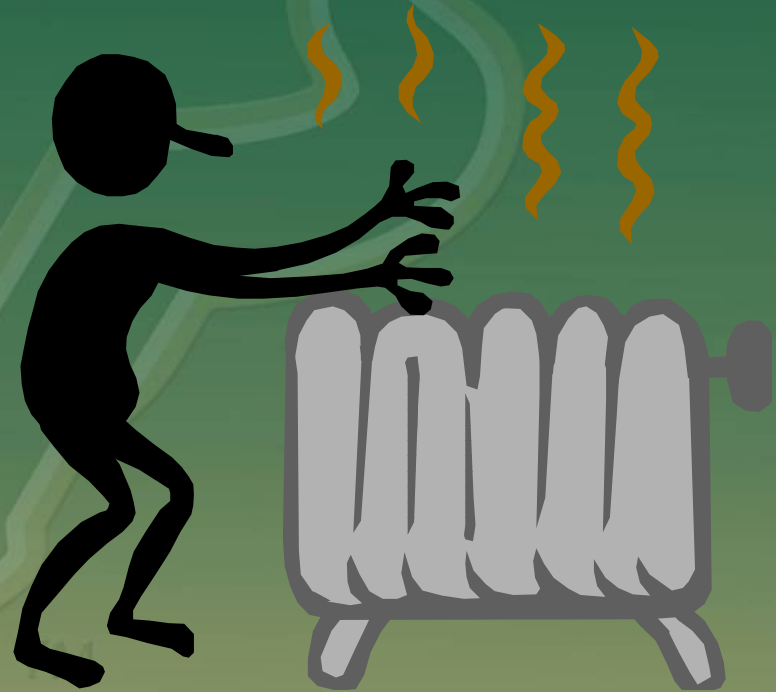
# Heat Illnesses - Causes

- 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

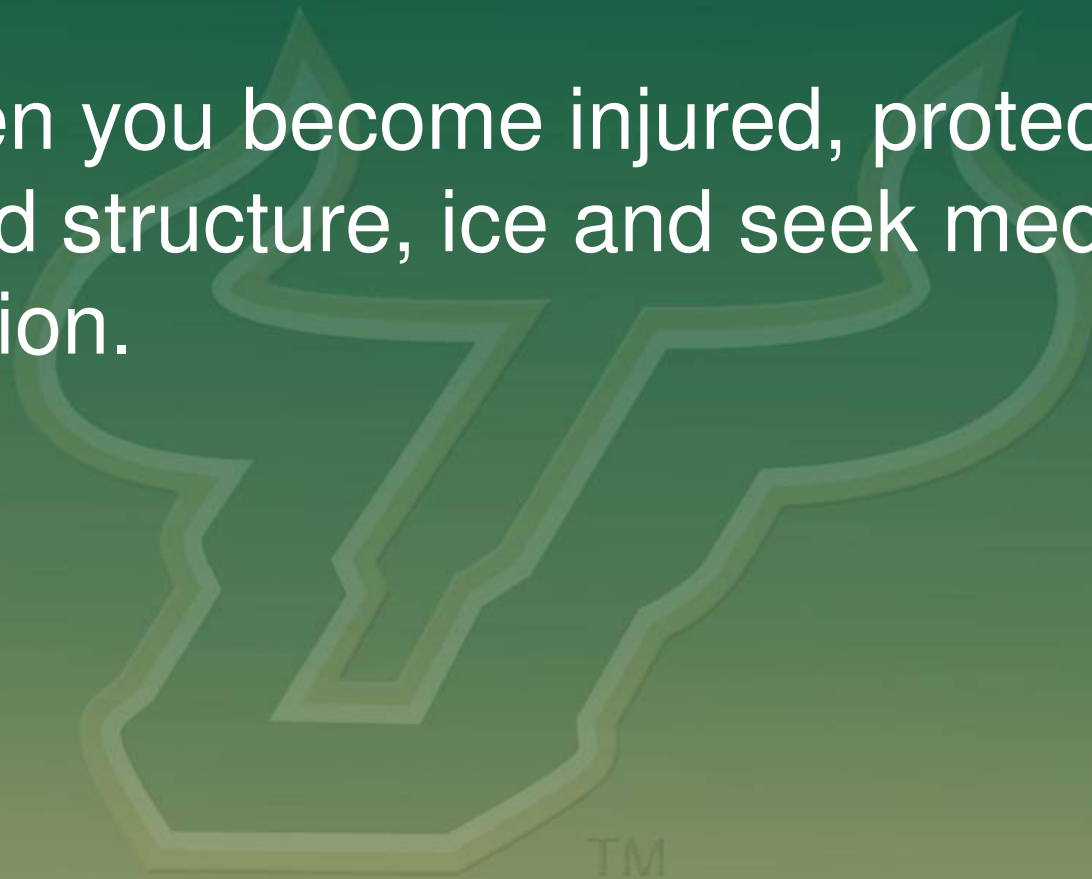


# Fluid Replacement

- **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.

# If you remember nothing else....

- If/when you become injured, protect the injured structure, ice and seek medical attention.



## **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

# Summary

- Wear ankle braces to prevent ankle re-injury
- RICE immediately following injury
- Seek medical attention if loss of function is severe
- Keep the playing area clean and clear of objects
- Conditioning may help prevent some injuries

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