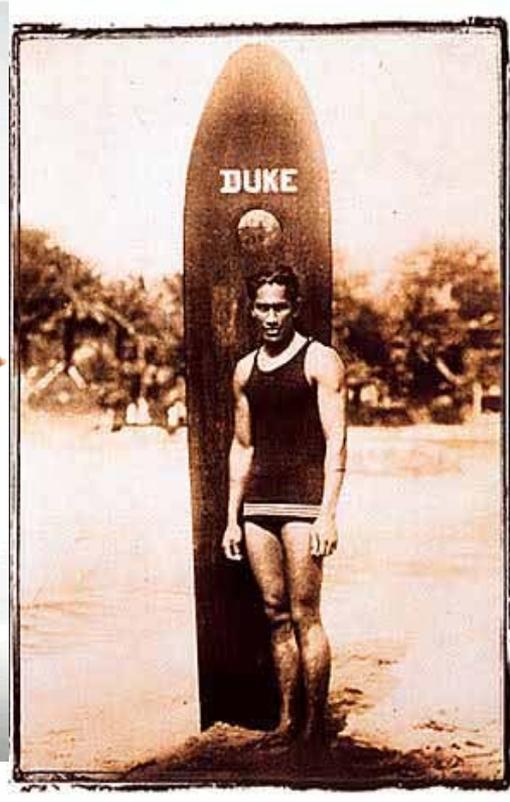


# Sports Medicine

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**What comes to your mind  
when you hear the words  
Sports Medicine?**



# Discussion Points

- Do you participate in any physical activity?
- Have you had a sports-related injury?
- How do you evaluate and treat an injury?
- Can athletic injuries be prevented? If so, how?
- What do you know about common athletic injuries?
- Who treats athletic injuries?
- How does one prepare for a career in sports medicine?

# Do you participate in Physical Activity?

- 52% of girls and 74% of high school boys
- 69% of 12-13 year olds, but only 38% of 18-21 year olds exercised vigorously 3 days of the week
- 33% of adults engage in regular physical activity and embrace most heart healthy behaviors

# Health Benefits of Physical Activity

- Improves cardio-respiratory endurance, flexibility and muscular strength.
- May help with reducing obesity, alleviating depression and anxiety.
- Physically active adults are less likely to develop chronic diseases such as high blood pressure, diabetes and colon cancer
- Adolescents can decrease their blood pressure and weight and have higher levels of self esteem and lower levels of anxiety and stress.

# CDC Physical Activity Guidelines for Children and Adolescents

- One hour or more daily physical activity.
- Aerobic activity should make up the majority of the activity (walking and biking)
- Muscle strengthening--sit ups, (jungle gym)
- Bone strengthening--jumping rope and running.

<http://www.cdc.gov/physicalactivity/everyone/guidelines/>

# CDC Physical Activity Guidelines for Adults

- 2 hours and 30 minutes (150 minutes) of moderate-intensity aerobic activity (i.e., brisk walking) every week **OR** 1 hour and 15 minutes (75 minutes) of vigorous-intensity aerobic activity (i.e., jogging or running) every week, **AND**
- muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms)

# Have you had any athletic injuries?

- Muscle pull
- Neck pain
- Shoulder impingement
- Lower back strain
- Tennis elbow
- Runner's knee
- Shin splints
- Ankle sprain
- Achilles tendonitis
- Arch pain

# Lower Limb Injuries at Punahou over the past 17 years

- 65% of all injuries
- 53% of the total days loss from participation
- Percentage of total injuries based on body part
  - Knee 14.5
  - Ankle 14.0
  - Shin 8.7
  - Shoulder 6.7
  - Back 6.4
  - Hip 6.0

# How do you evaluate and treat an injury?



# History

- Acute (traumatic) vs. chronic (overuse)
- Extrinsic (environmental) vs. intrinsic (anatomical)
- Prior injuries and treatments

# Physical Examination

- First be sure there are no serious injuries
- *A*irway, *B*reathing, *C*irculation, *D*ecision, *D*efibrillation, *D*iagnosis, *D*isability
- Identify the source of the problem
- Bone: bruise, fracture
- Ligament: stretched/torn, ACL tear
- Tendon: tendinitis/tear, Achilles tendinitis
- Muscle: strain/tear, hamstring strain
- Nerve: stretched/pinched, stinger or burner
- Internal organ: contusion/tear, kidney or liver

# What are the basic steps in treating an athletic injury?

- RICE                      PRICE                      PRICER
- Rest: active rest
- Ice: 15-20 min. every 1-2 hours 1<sup>st</sup> 72 hrs
- Compression: ACE bandage
- Elevation: decreases pain and swelling
- Prevention: Why did the injury occur?
- Rehabilitation: early motion, cross training

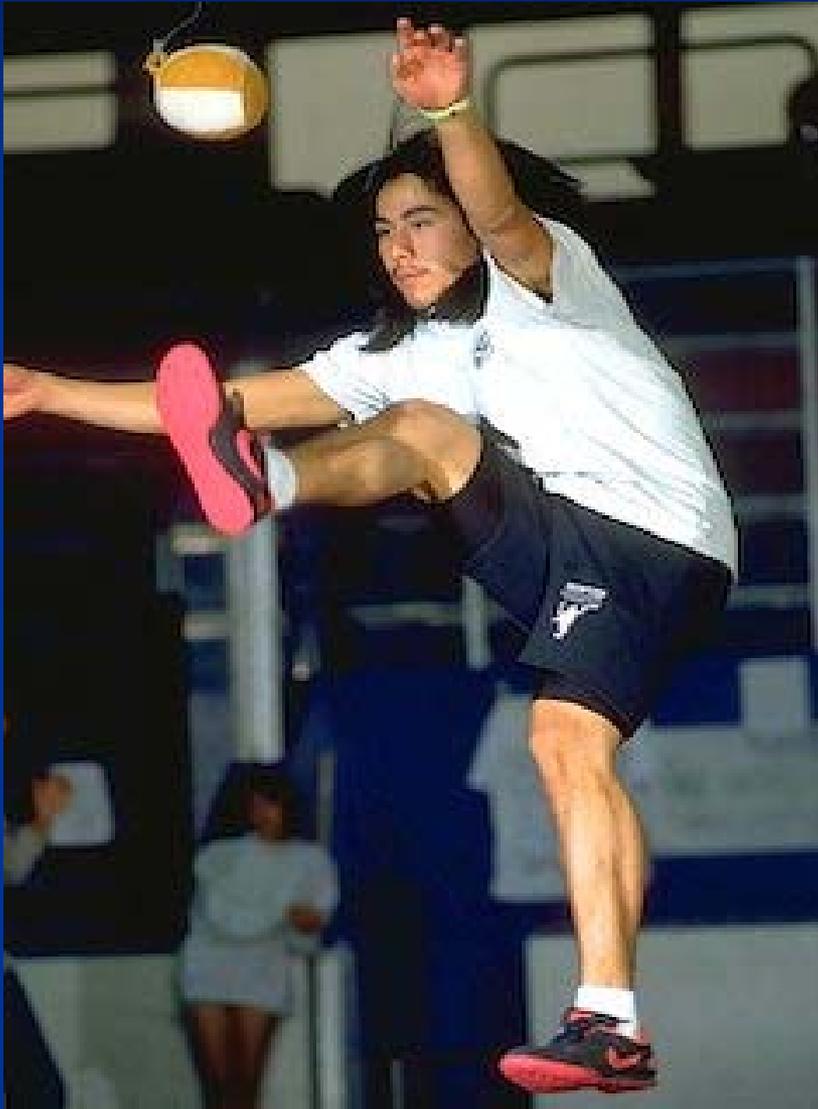
# How can you prevent athletic injuries?

- Proper condition to play the sport
- Start low and go slow
- Know and abide by the rules
- Wear appropriate protective gear and equipment
- Get adequate rest
- Warm up and use good body mechanics
- Avoid playing when injured, tired, in pain
- Cross train
- Fuel up and hydrate

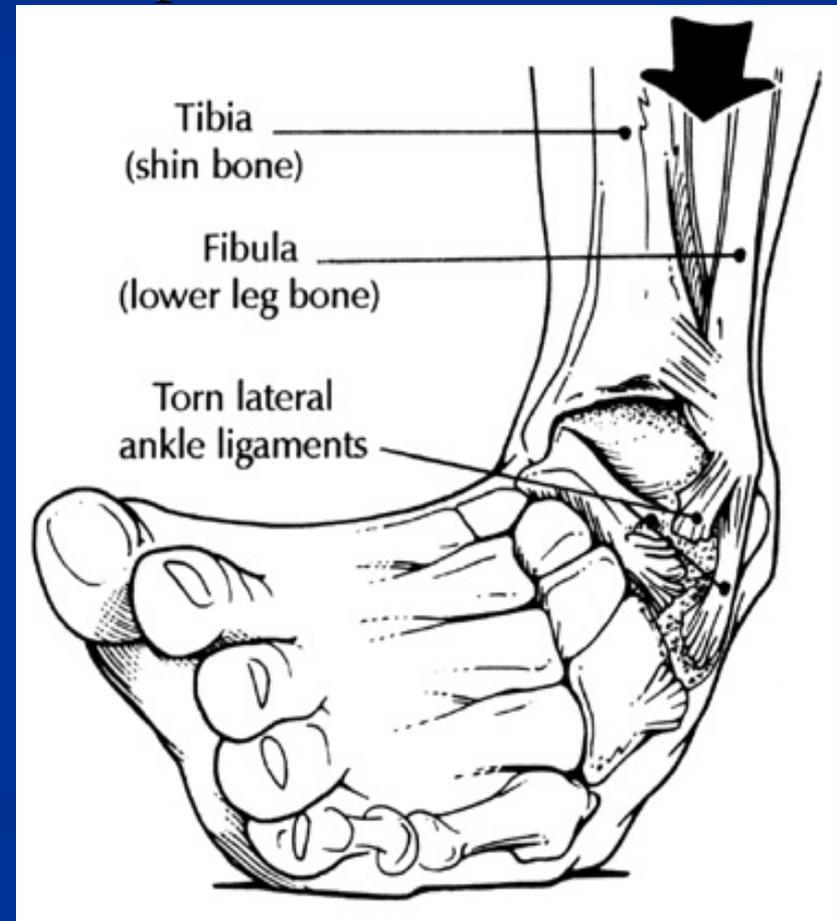
# Traumatic and Overuse Injuries

- Traumatic: Ankle Sprain, ACL tear, Concussion
- Overuse: Tennis elbow, Achilles tendonitis

# Ankle Sprains

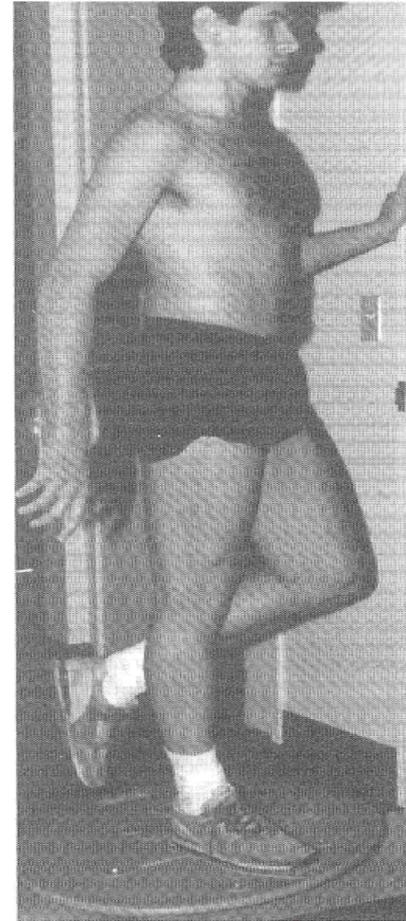


85% of ankle injuries are sprains



# Functional Rehabilitation

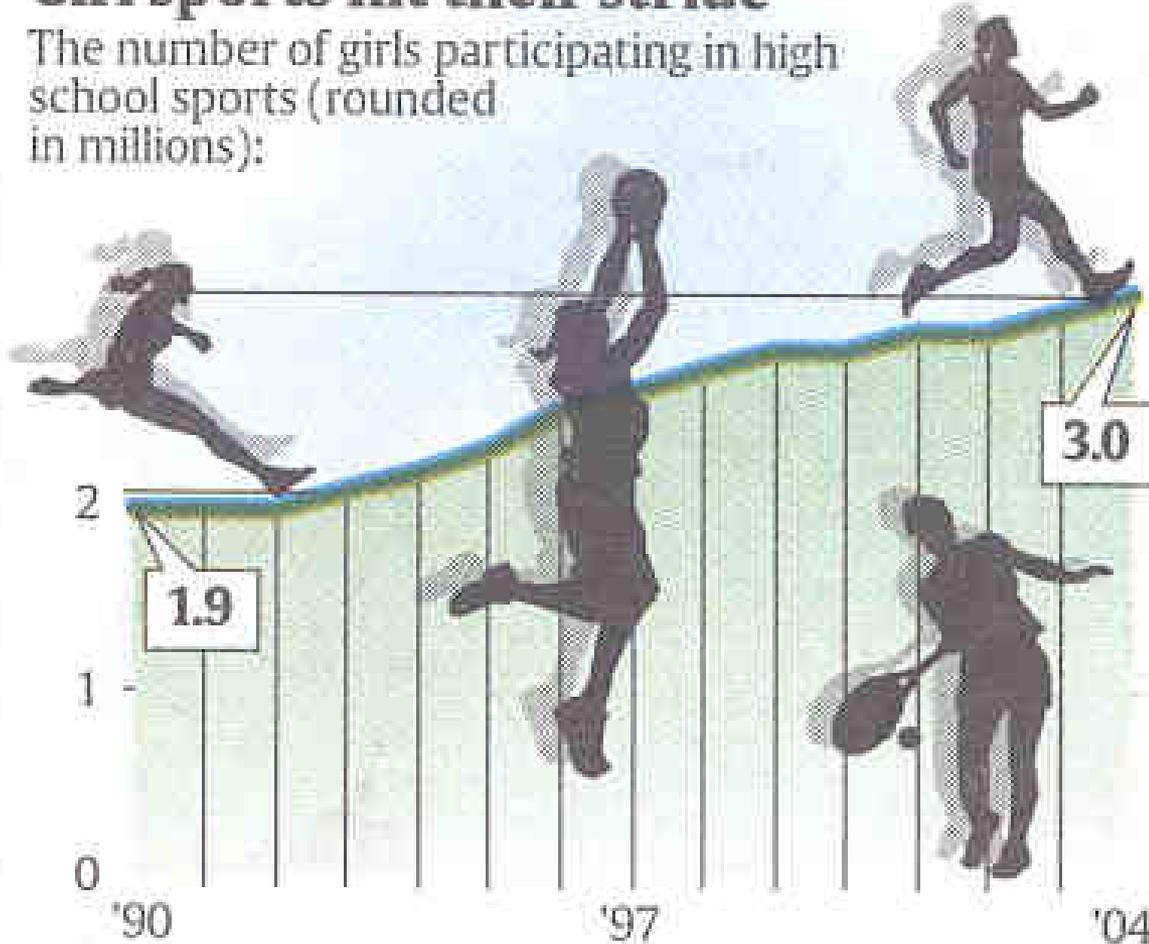
- RICE: Control pain and swelling and protect the joint
- Early movement
- Maintain fitness level (stationary bike, aqua Rx)
- Gradual increase in strengthening
- Progressive weight bearing activities
- Balancing exercises
- Functional activities
- Preseason and off season conditioning



**Figure 11-11.** Athlete using BAPS board.

## Girl sports hit their stride

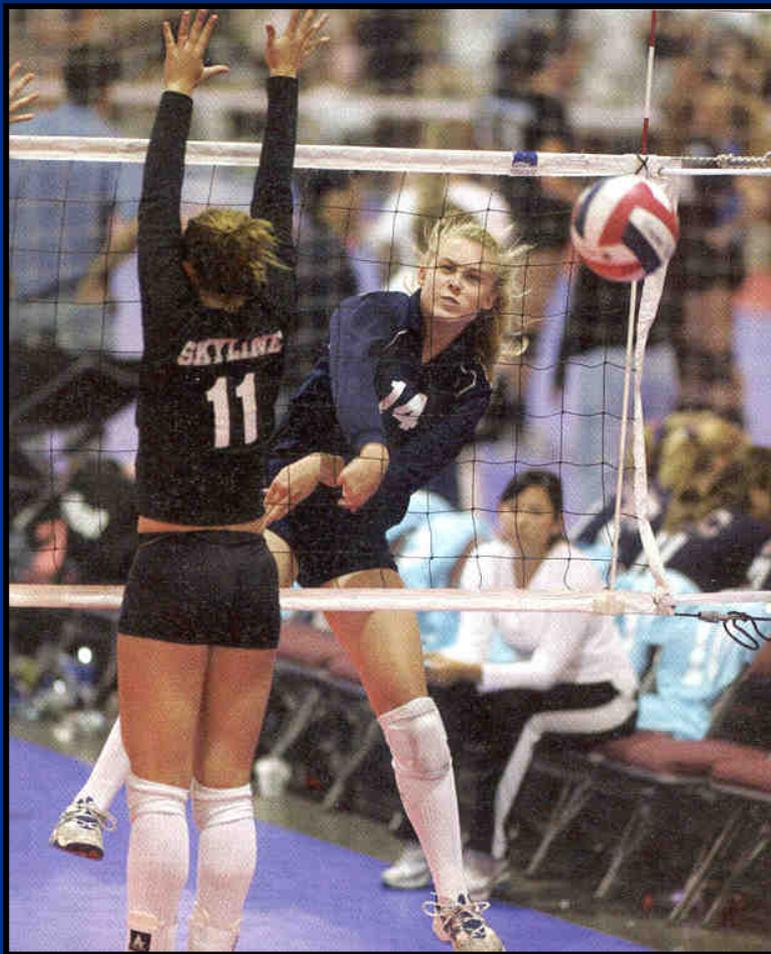
The number of girls participating in high school sports (rounded in millions):



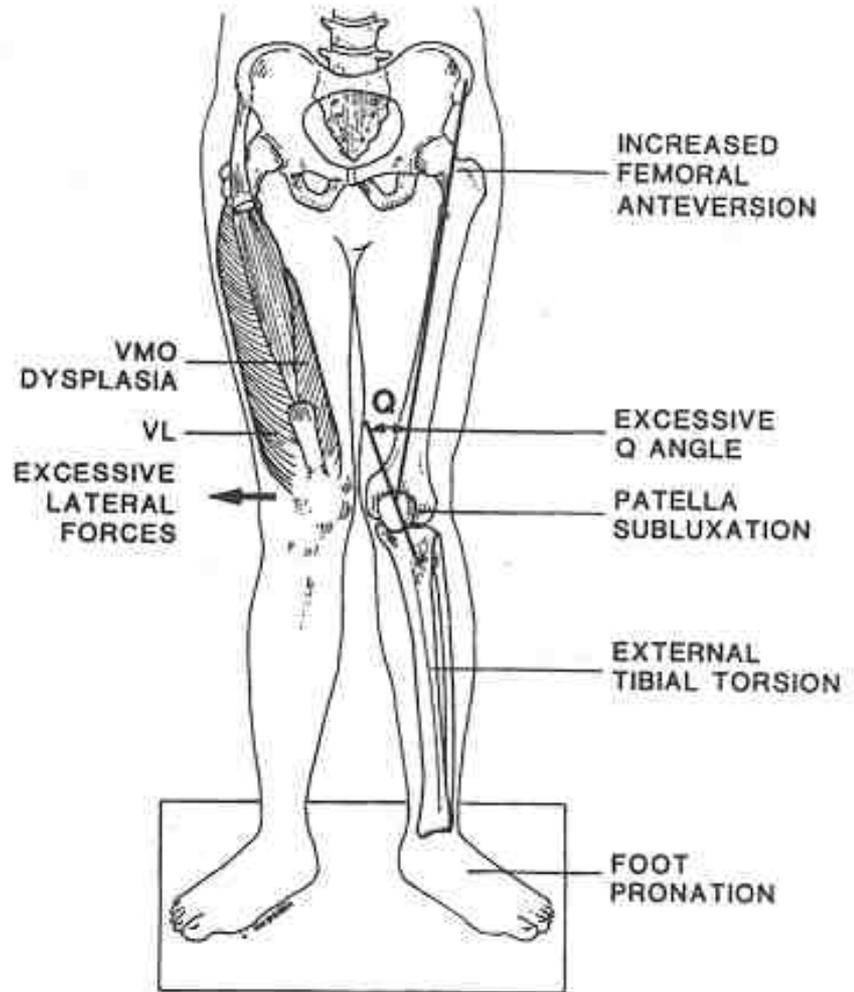
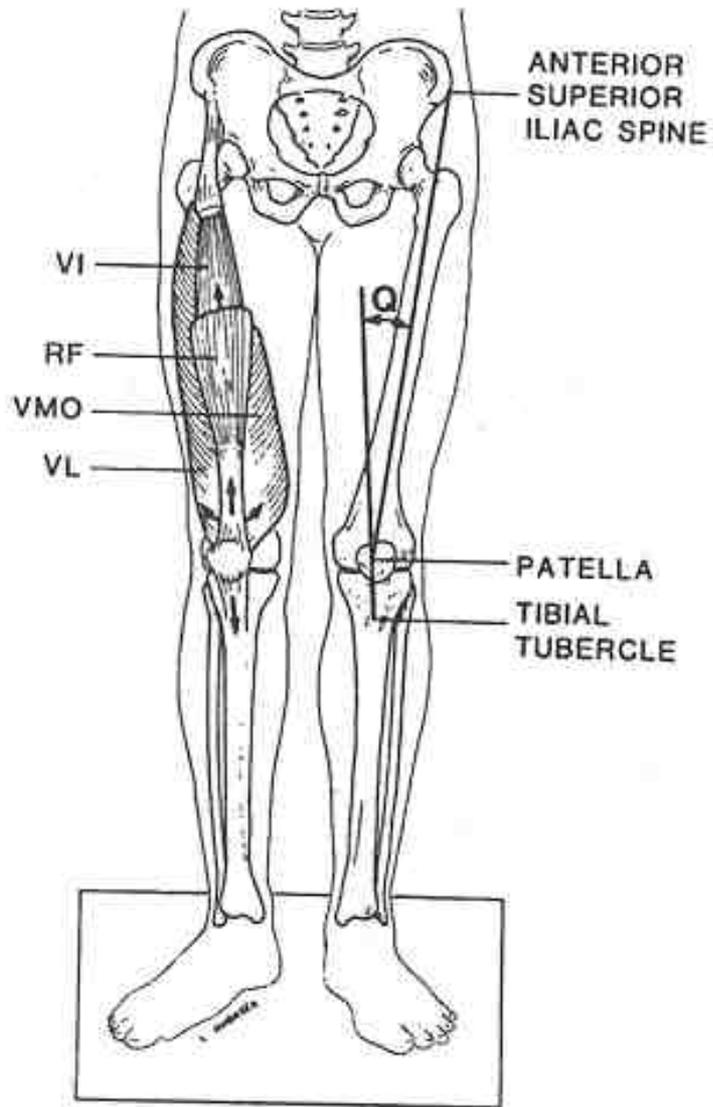
Source: National Federation of State High School Associations

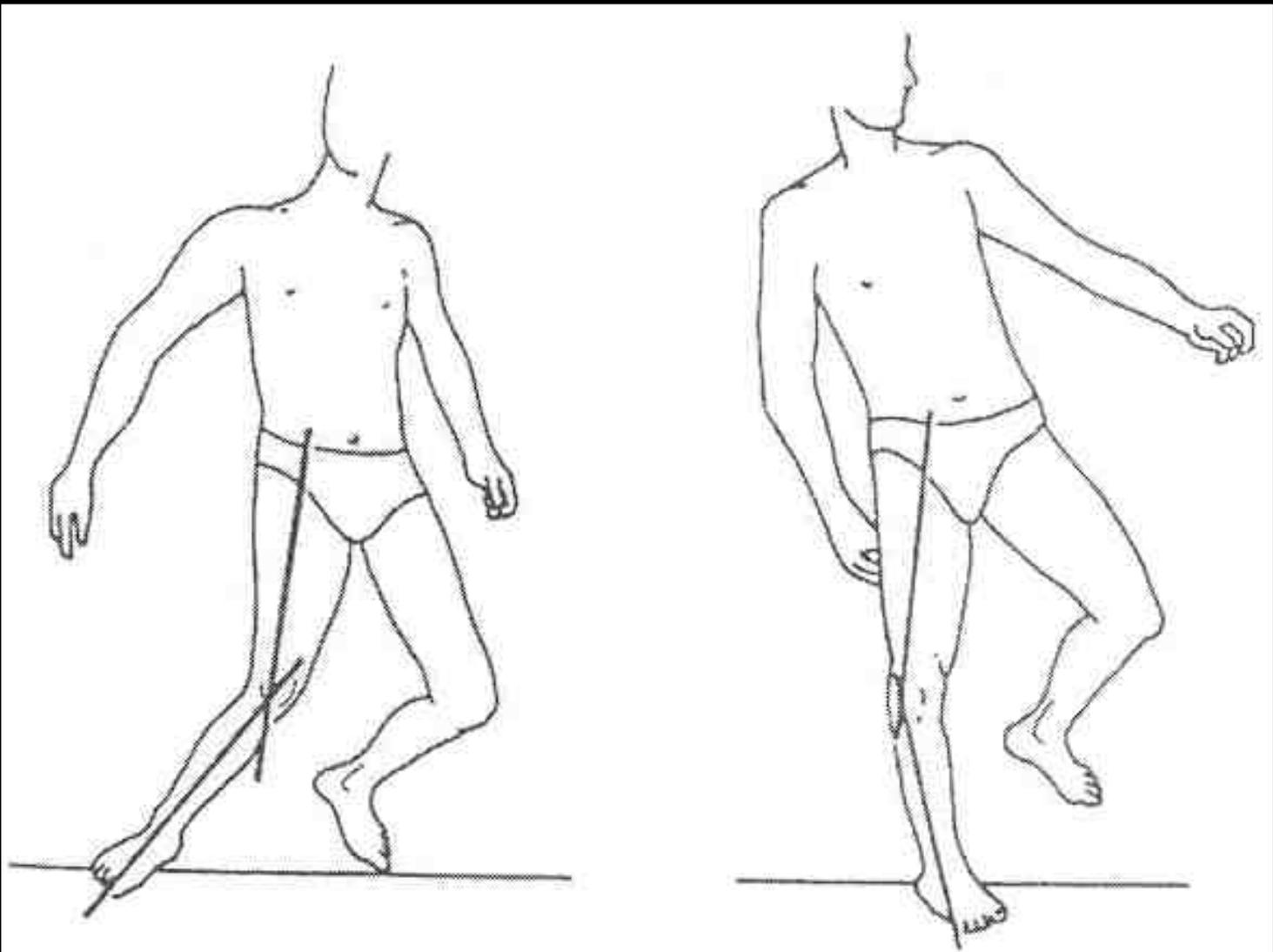
By Shannon Bellis and Julie Solder, USA TODAY

# Increased Risk of ACL Tears in Females



- 3 to 5 times higher in women than men
- Non-contact injury
- Anatomic differences
- Posture when landing
- Soccer, basketball, volleyball,
- Increased risk for early osteoarthritis





**FIGURE 4**

Mechanism of injury in capsule and ligament tears of the knee.

# Prevention of ACL injuries

- Good post surgical rehabilitation
- Preseason conditioning
  - Balance
  - Strengthening
    - especially the hamstring muscles
    - Plyometric jump training program
- Coaching techniques

# Sports-Related Concussions

- 20% of the estimated 1.54 million head injuries in the United States per year
- 4.5% of all high school and college sports injuries
- An estimated 250,000 concussions/year in American football



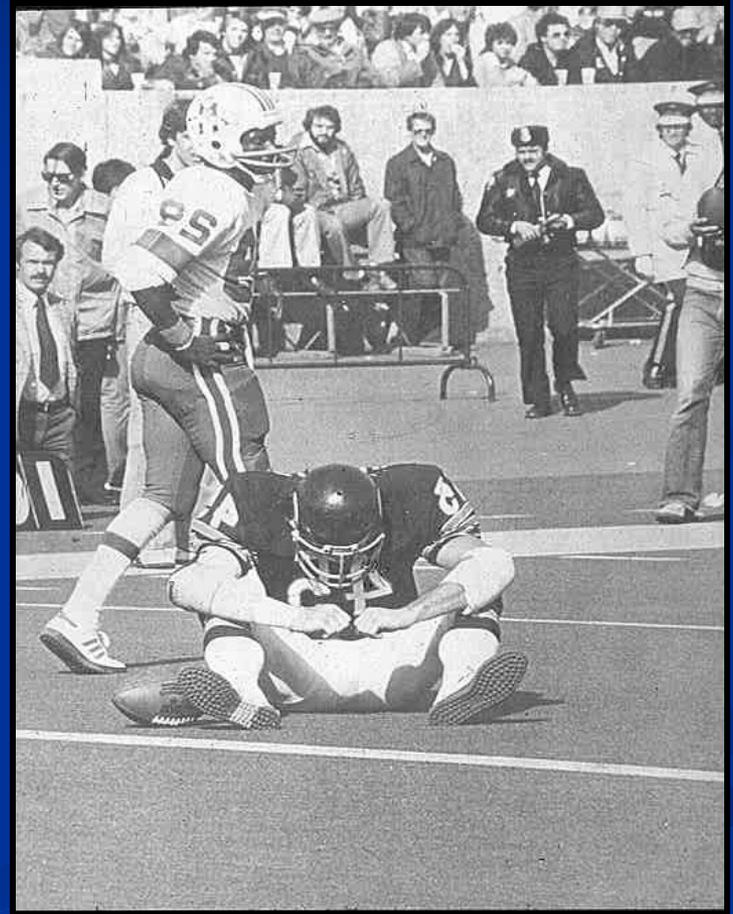
# Sports-Related Concussions in High School Sports (injuries from concussion/all injuries)



- Football (7.3%)
- Wrestling (4.4%)
- Girls Soccer (4.3%)
- Boys Soccer (3.9%)
- Girls Basketball (3.6%)
- Girls Softball (2.7%)
- Boys Basketball (2.6%)

# Sideline Assessment

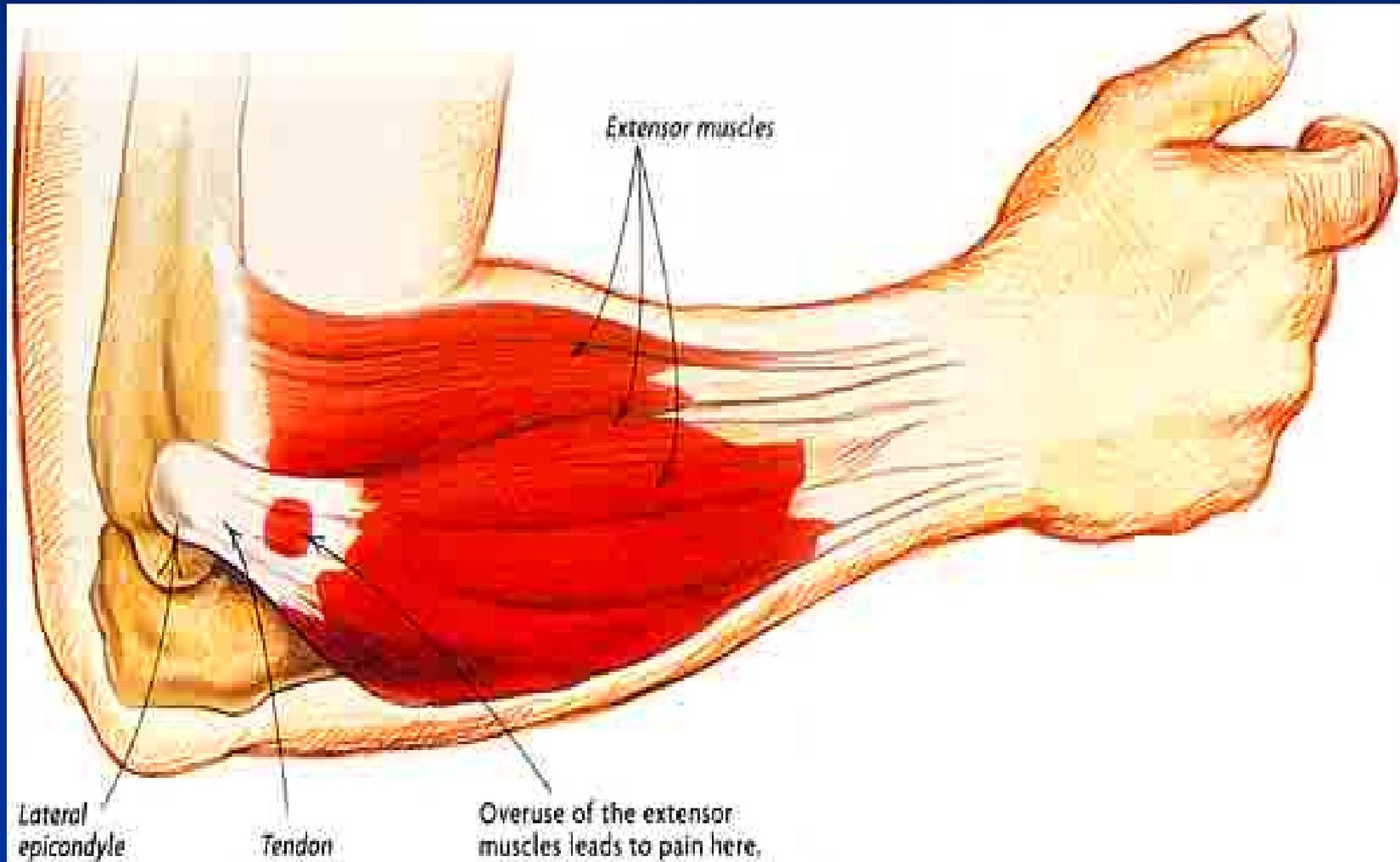
- First check for serious injury- ABC's
- Neurological exam
- 90% are mild
- Common symptoms: memory loss, headache, vision changes, inability to concentrate, poor balance, lethargy.



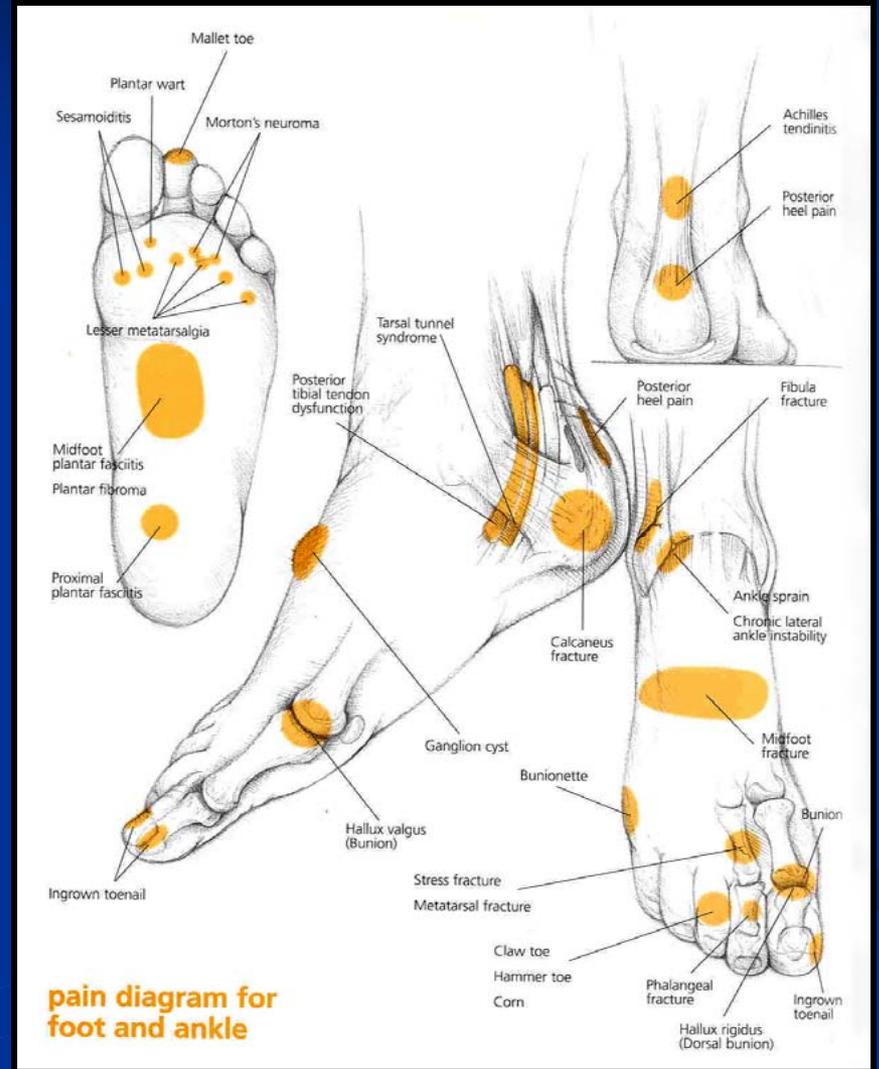
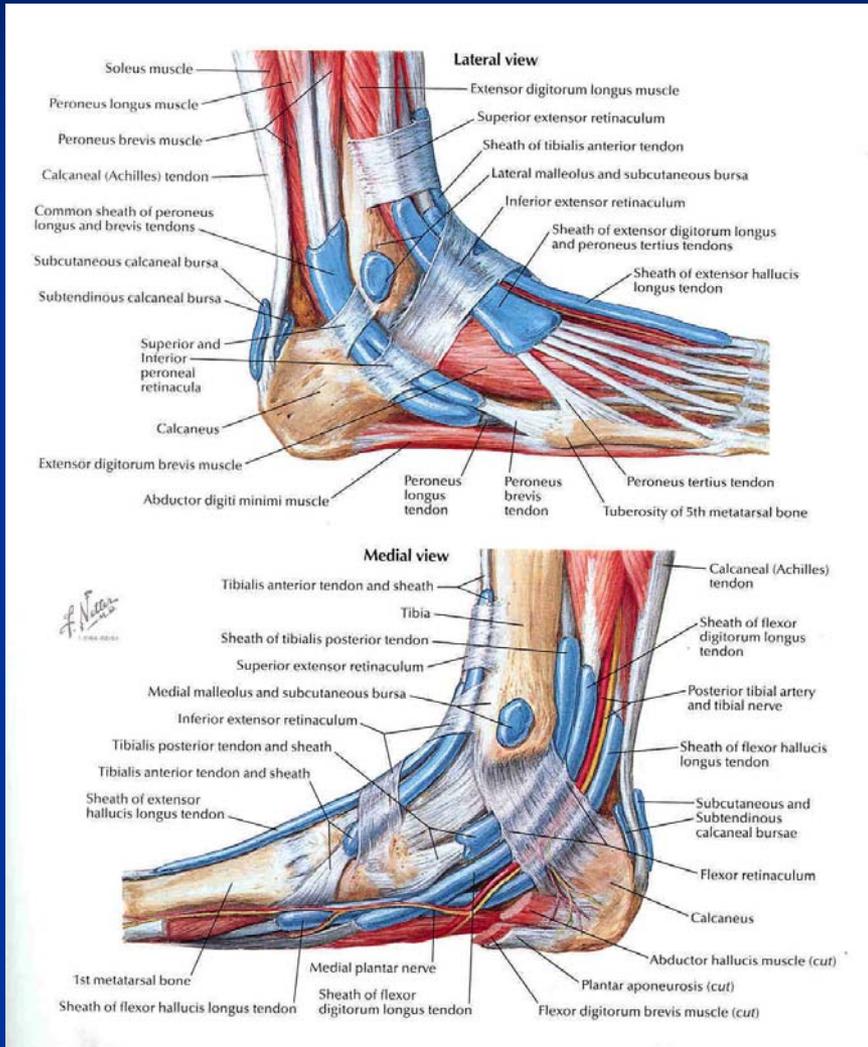
# WHEN IS IT SAFE TO ALLOW A PLAYER BACK INTO THE GAME?

- The Second Impact Syndrome (SIS). Nearly always fatal swelling in the brain that occurs even after a mild second injury when an athlete returns to competition while still having residual symptoms of a concussion.
- *A player should not begin playing until he or she is symptom-free both at rest and with exertion*

# Tennis Elbow



# Achilles tendonitis/tear



# Who treats athletic injuries?

- Athletic trainers (ATC): 4-8
- Physicians (MD), physiatry, family practice, orthopedic surgery, pediatrics: 11-16
- Physical therapists (PT): 4-8
- Physical therapy assistants (PTA): 2
- Occupational therapists (OT): 4-8
- Nurses, medical assistants (RN, LPN, MA): 2 to 8
- Psychologists (PhD): 7-10
- Dietitians (RD): 4-6
- Podiatrists (DPM): 8
- Chiropractors (DC): 8

# How does one prepare for a career in sports medicine?

- Strong background in science
- Enjoy working closely with others a member of a team while striving for a common goal
- Be able to communicate well
- Enjoy participating in physical activity
- Enjoy watching sporting events
- Not be afraid of hard work, including covering sporting events

# Online Resources

- Clinical: <http://www.mayoclinic.com/>
- Sports Medicine professional organizations:  
primary care. <http://www.amssm.org/>  
orthopedics. <http://www.aaos.org/home.asp>
- Health care professional organizations:  
physicians <http://www.ama-assn.org/>  
athletic trainers <http://www.nata.org/>  
physical therapists <http://www.apta.org/>
- Training programs: see local university and community college websites.

# Summary

- Encourage participation in physical activity
- Have a better understanding of sports medicine
- Understand the basics of evaluating and treating an injury
- Discuss ways in which to prevent injuries
- Describe a few of the common/severe injuries
- List health care providers who commonly work with athletes
- Identify if you might be interested in a career in Sports Medicine



# King Drew Magnet High School of Medicine and Science

