

PE, Recess and Sports... Ohh My!

A Brief Overview of Orthopedic Injuries for School Nurses

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Objectives

- Understand the most common injuries that occur from playground equipment and sports
- Learn the various initial assessment strategies for injuries
- Learn common precautions for when students return to school

Overview

- Common injuries from playground equipment and sports
- Common injuries based on body part
- Initial assessment of injuries
- What to do once they come back to school
- Other orthopedic considerations
- Resources

Common Injuries Playground and Sports

- Common injuries based on
 - PE
 - Recess
 - Sports

PE

- In one study of high school students ~6 in 100 students were sent to the school nurse for evaluation of PE related injuries
 - Most were minor injuries – i.e. bruises
 - Most common orthopedic injury were sprains
- What I see in my practice
 - "Jammed" fingers
 - Apophysis related injuries



Recess

- Good news – only 1% of kids get playground related injuries
- Bad news
 - ~250,000 ED visits are a result of playground injuries per year
 - About 1/3 of all playground injuries are fractures
 - Most fractures (almost 90%) are of the upper extremity



Recess

- Most injuries occur on swings, slides and climbing structures (monkey bars, big toys, etc)
 - Soft fall surfaces decrease risk of head injury but increase risk of fractures
- Monkey bars cause the most fractures
 - Most common fracture is supracondylar humerus fracture (elbow)
 - Wrist fractures are 2nd most common



Sports

- Each sport has “classic” related injuries
 - Injuries are all related to forces placed on the body during play
 - Overuse injuries are on the rise in student athletes
 - Particularly those that play a single sport
 - General rule of thumb is that training hours per week for sport should not exceed patients age in years



Sports

- Football

- Concussions

- Fractures

- Fingers – impact from ball, stuck in jersey

- Extremities – impact from other players

- ACL tears

- Can happen from posterior directed force on planted leg – impact from another player

- Can be non-impact pivot related mechanism

- SCFEs

- Persistent limping, walks/runs with foot externally rotated, complaints of pain in the hip/thigh or most commonly knee



Sports

- Soccer
 - Ankle fractures
 - Rolling mechanism
 - ACL tears
 - Impact related or non-impact pivot related injury



Sports

- Wrestling

- Shoulder injuries
 - Clavicle fractures
 - Shoulder dislocations
- Dislocations
 - Fingers, elbows, shoulders
 - Patella



Sports

- Volleyball
 - Ankle sprains/fractures
 - Finger fractures



Sports

- Basketball
 - Finger fractures
 - Ankle sprains/fractures
 - Jumping, landing
 - ACL tears
 - Most commonly jumping related, non-impact
 - Knee overuse injuries
 - Osgood-Schlatter



Sports

- Swimming
 - Shoulder injuries
 - Most are overuse injuries



Sports

- Baseball
 - Elbow injuries
 - Finger fractures
 - Sliding related injuries



Sports

- Track
 - Apophyseal injuries
 - Muscle strains/tears



Shoulders, Knees and Toes – Injuries Based on Body Part

- Shoulder/Clavicle
- Elbow
- Forearm
- Fingers
- Femur/Tibia
- Knee
- Ankle



Shoulder/Clavicle

- Shoulder dislocation



- Clavicle fracture



Elbow

- Supracondylar humerus fracture



- Elbow dislocation



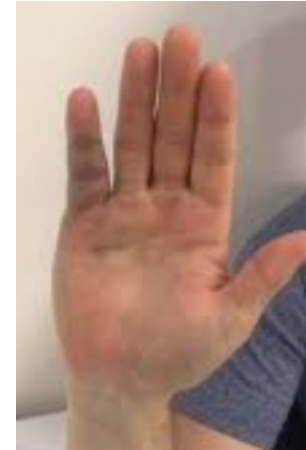
Forearm

- Fractures



Fingers

- Fractures



Femur/Tibia

- Fractures



Knee

- Patella dislocation



- ACL tear



Ankle

- Fractures



Are you *really* hurt? Initial Assessment of Injuries

- How to assess injuries
 - Inspection
 - Palpation
 - Movement
 - Blood supply



Assessing Injuries

- **Inspection**

- Does it look deformed
- Is it swelling, bruising
- Cut, scrapes
- Exposed muscle or bone

- Palpation

- Movement

- Blood supply



Assessing Injuries

- Inspection
- **Palpation**
 - Does it hurt when touched
 - Where does it hurt?
 - At the ends of bone
 - over area of deformity
 - Can you feel a defect/deformity
 - Can you feel crepitus
- Movement
- Blood supply



Assessing Injuries

- Inspection
- Palpation
- **Movement**
 - **Can they move the joints nearest the area that hurts**
 - **Can they move the fingers or toes**
- Blood supply



Assessing Injuries

- Inspection
- Palpation
- Movement
- **Blood supply/Sensation**
 - Pulse?
 - Can they feel you touching the fingers, toes?



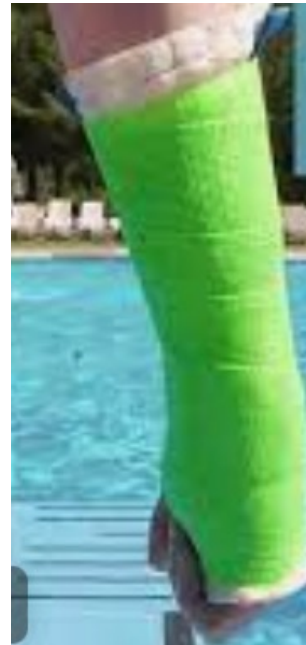
Returning to school

- General types of immobilization and assistive devices
- General considerations when students return

Returning to school

- General types of immobilization

- Splints
- Casts
- Braces



Returning to school

- Assistive Devices

- Slings
- Crutches
- Wheelchair



Returning to school

- General rules for casts, splints and braces
 - Should stay on all the time
 - Limited participation in PE and recess
 - 2 feet on the ground all the time!
 - May need to elevate the extremity
 - Don't stick anything inside the cast or splint!
 - If anything gets stuck inside the cast or splint family should call doctor's office or bring to the emergency room
 - If fingers or toes look swollen with a cast, splint or brace - elevate the extremity
 - If complains of true numbness to fingers or toes or extreme pain that does not improve with medications - family should call doctor's office or bring to emergency room



Returning to school

- General rules for assistive devices
 - Slings
 - most often are for comfort, if patient removes just replace
 - Crutches
 - If positioned too tall can cause numbness into the arms from compression of the nerves in the axilla
 - Careful on slippery floors
 - Should be allowed elevator access, extra time between classes, have help carrying backpack, etc
 - Knee Scooters
 - Can be used instead of crutches in some leg injuries
 - Need elevator access, extra time between classes
 - May still need to use crutches for shorter distances or getting into bathroom stalls, etc
 - Wheelchairs
 - Post-injury are short term rentals and are not intended for self propelling
 - Will need elevator access, extra time between classes, bathroom access/help

Returning to school

- Special considerations
 - Younger children with leg cast
 - Don't have coordination to use crutches until between 7-9 years old
 - Often rental wheelchairs for this age group are difficult to find
 - Okay for child to use stroller or wagon to get around but need help from adults
 - Need help getting to bathroom



Other orthopedic considerations

- Weight lifting
- Female athlete triad
- Backpack safety
- Heat related illness

Weightlifting Safety

- Lower weight, higher repetition
- 10-15 minutes of stretching/warm up and cool down for each session
- Sessions should be limited to 2-3 times per week and should vary muscle groups
- Focus on good mechanics, proper technique



Female Athlete Triad

- Menstrual changes
- Inadequate caloric intake
- Decreased bone density
- Increases risks for fractures
- Treatment is multispecialty with focus on improved caloric density to match energy expenditure



Backpack Safety

- No more than 15% bodyweight
- Distribute weight between backpack and carrying in arms
- Tips: wear backpack with both straps, use waist strap if possible, carry weight evenly over back
- Complaints: neck and low back pain
- Concerning signs: numbness or tingling



Heat Related Illness

- Hydration is key
 - 16 ounces of water or sports drink one hour prior to activity
 - 4-6 ounces for every 15 minutes of strenuous activity

Early signs of heat related illness

Headache
Thirst
Dizziness
Dry mouth
Chills

Severe signs of heat related illness

Muscle cramps
Increased heart rate
Difficulty breathing
Nausea
Tingling to arms/legs
Increased body temperature

- Get to shade, cooling drinks and towels, emergency care if not improving
- CDC has a learning module for athletes, coaches
- https://www.cdc.gov/nceh/hsb/extreme/Heat_Illness/index.html



Resources

- Orthokids.org
 - Website from the Pediatric Orthopaedic Society of North America which includes topics on pediatric related orthopaedic conditions and injury specific resources
- Stopsportsinjuries.org
 - Jointly created from American Orthopaedic Society for Sports Medicine and National Council of Youth Sports which includes expansive resources for patients, parents and coaches on sport specific and injury specific prevention