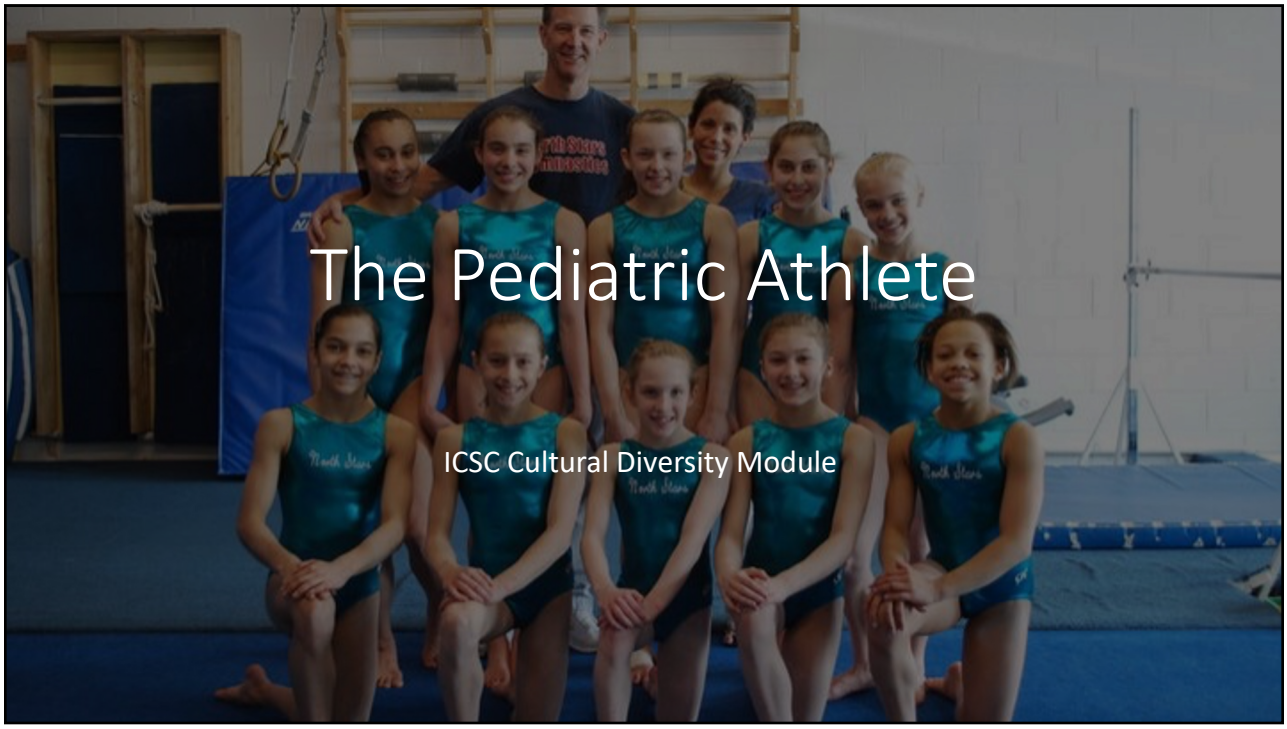

The Pediatric Athlete
ICSC Cultural Diversity Module

1


Course Objectives

2

Is the Age of the Athlete a Factor

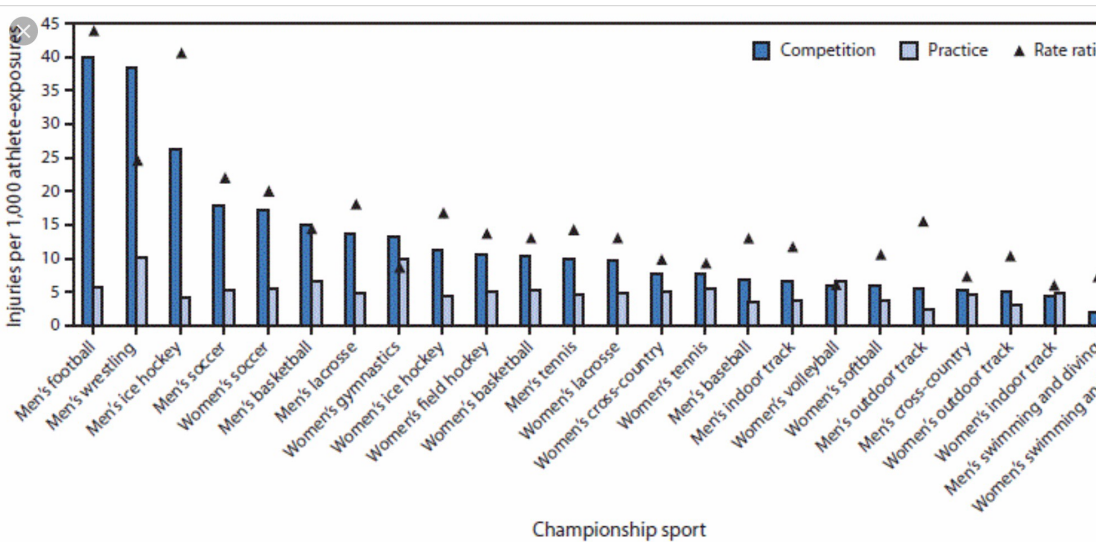
- The age of the patient is a very important factor.
- Some injuries are only seen in certain age groups
- Some diseases are not sports injuries although they may present as such
- The age is a determining factor in overall prognosis

3

Age of Athletes and Injury Predisposition

- Athletic performance in inversely proportional to age
- Athletic intensity and duration also decrease with age
- Different injuries with different age groups
- Growth centers and injuries

4



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Injury Statistics

- The largest number of injuries to athletes are of musculoskeletal origin particularly soft tissue (Hyde)
- Both intrinsic and extrinsic factors relate to sports injuries

6

Extrinsic Factors for Injury Predisposition

- Level of competition
- Skill Level
- Duration and intensity of competition
- Length of time in sport
- Weather
- Protective equipment
- Clothing
- Sport equipment/implement
- Shoes
- Competition Surface
- Position on field
- Unknown obstacles
- Tape/bracing

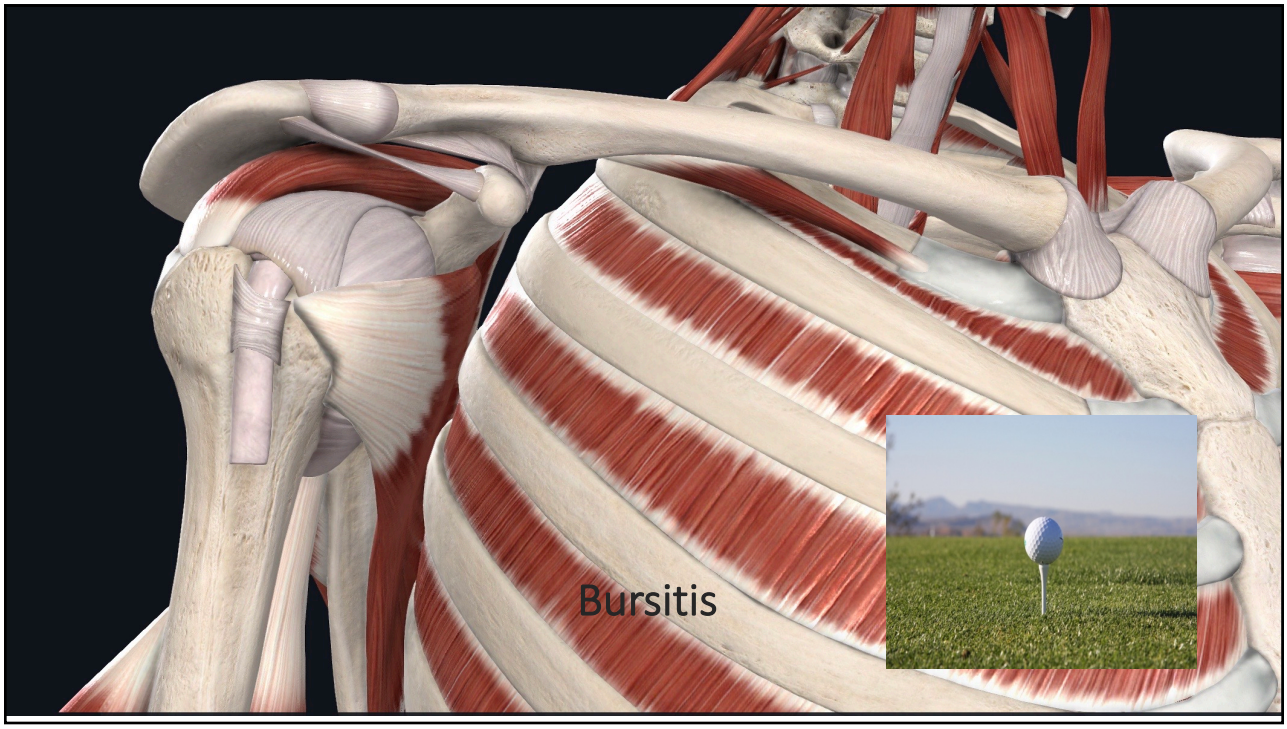
Intrinsic Factors for Injury Predisposition

- Age
- Gender
- Hormonal changes/menstrual disturbances
- Previous Injury
- Inadequate treatment/rehab
- State of mind/psych
- Fitness levels
- Body size/type
- Upper, lower limb dominance
- General/specific joint laxity
- Muscle imbalance/hyper or hypotonicity
- Joint dysfunction
- Abnormal neuromechanical fx.
- Asymmetrical limb measurements
- Anatomical morphology and alignment
- Posture
- Insufficient warm-up, cool down, recovery
- Poor technique
- Inadequate concentration
- Supramaximal workload or overstrain

7

FOOT LEVELERS

8



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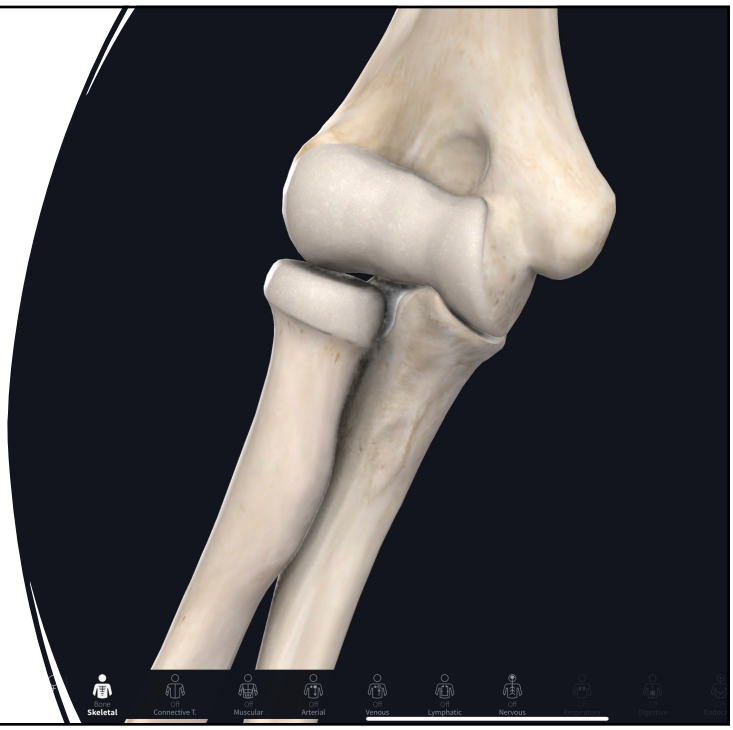
Common Sport Injuries of the Elbow

- Structural Anatomy of the elbow
- Three joint complex
- Actions of flexion, extension, supination, pronation…



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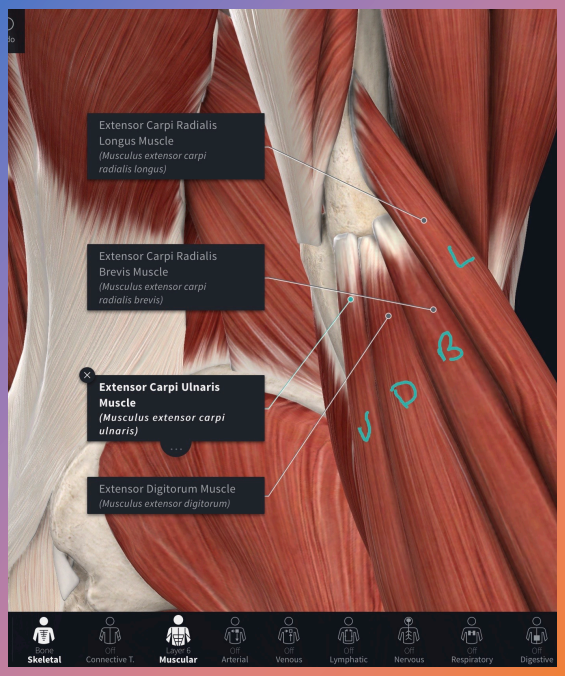


Elbow Injuries

- Understanding at which age an athlete will have or be susceptible to a particular injury
- Decrease errors in diagnosis of elbow injuries

11

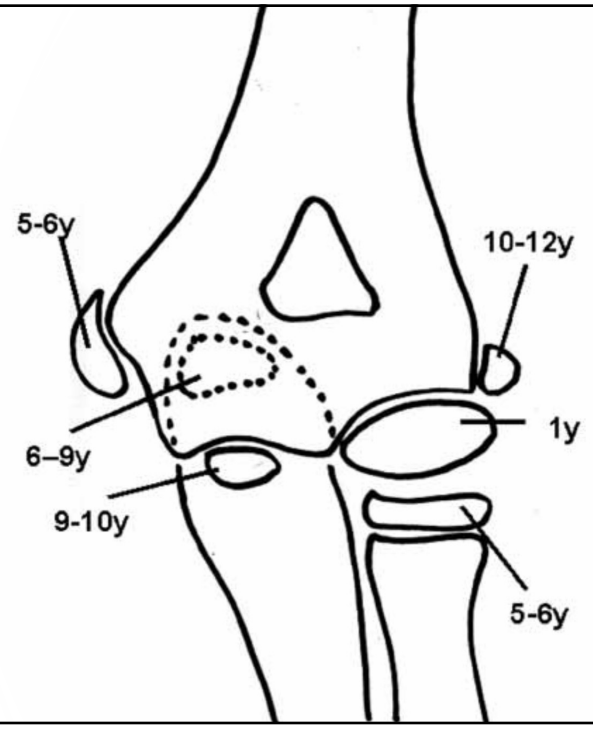
GROWTH CENTERS OF THE ELBOW

- Understanding the maturation of the athlete will help facilitate accuracy in diagnosis of sports injuries

12

Elbow Growth Center appearance ages

- C
- R
- I (M)
- T
- O
- E



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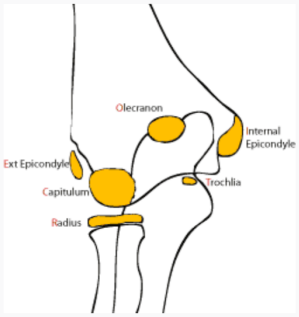
Using ossification centers to assess skeletal age and injury predisposition

- Appearance of ossification centers
- Regions of injury
- Demands of sport as it relates to age
- Predisposition to injury depending on sport and age of the athlete
- Need to Have I before T. If you do not have an I and there is a trochlea, look for an avulsed medial epicondyle.



Ossification centre	Age (yr.)
Capetellum	1
Radius	3
Internal (medial) epicondyle	5
Trochlea	7
Olecranon	9
External (latreral) Epicondyle	11

14

Closure of Elbow Ossification Centers

- Between 15-19 Fusion in the centers is taking place
- Females precede males in fusion of all growth centers in the elbow
- Order of fusion is :
- T C L M O R

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Radiological assessment of closure time of around elbow secondary ossification centers, in Khartoum hospital, Khartoum north hospital, Omdurman hospital, police hospital, and Umbadda hospital, in Khartoum, Sudan (December 2009-2010)

Sakher Alssayed Mohamedahmed Alwahbany, Tahir Osman Ahmed and Areeg Dawoud Hussien

DOI: http://dx.doi.org/10.22271/ortho.2017.v3.i2i.87

Abstract

Background: Elbow joint is characterized by 6 secondary ossification centers; in the capitulum, trochlea, lateral and medial epichondyles, olecranon and head of the radius. They are present on plane elbow radiograph at different time easily remembered by the mnemonic CRITOE: Capitulum 2years; Radial head 4 years; Internal (medial) Epicondyle 6 years; Trochlea 8 years; Olecranon 10 years; external (lateral) Epicondyle 12 years [1] A prospective cross sectional hospital based study is conducted in period from December 2009 to December 2010 in which data was collected from 5 hospitals which provide services for the majority of the Khartoum state residents. The study aim to To assess the time of closure of secondary ossification centers in Sudanese children.

Patient & methods: A prospective cross sectional hospital based study is conducted in period from December 2009 to December 2010 in which data was collected from 5 hospitals; Khartoum, Khartoum North, Omdurman, Police, and Um badda. These hospitals provide services for the majority of the Khartoum state residents. Fifty seven AP and Lateral plane elbow X- ray were taken for healthy Sudanese children (40 Males and 17 Females) aged 13 - 25 years, whom sought medical counseling for skeletal problems at those hospitals.

Results: In this study, the films of the 1st group (at average of 14 year) no one has closed RH, while only 20% of them show closed OC, ME, and LE, and 40% show closed T & C. In the 2nd group (at average of 17 year), 60% have closed RH physis, 63.3% Tr, while 66.7% show closed OC, 73.3% ME, and 90% for LE, and Cap. All children above 19Ys (3rd group) have closed physis (see table 4.1). The female physeal fusion precedes the male one in all the 6 centers

Conclusion: The study showed that all the 6 centers fuse to the shaft between 15 & 19 Ys, that all were ossified above 19Ys, but are still open at & below 14 Ys.Female's fusion precedes males in all 6 centers. Order of fusion starts at trochlea, then capitulum followed by lateral epicondyle, medial epicondyle, olecranon, and finally radial head.

Keywords: Radiological assessment, Elbow joint, capitulum, trochlea

1. Introduction

The elbow-joint is a synovial joint of hinge variety between distal humerus and proximal end of radius and ulna [1]. In it the trochlea of the humerus is received into the semilunar notch of the ulna, and the capitulum of the humerus articulates with the fovea on the head of the radius [2].

Elbow joint is characterized by 6 secondary ossification centers; in the capitulum, trochlea, lateral and medial epichondyles, olecranon and head of the radius. They are present on plane elbow radiograph at different time easily remembered by the mnemonic CRITOE: Capitulum 2years; Radial head 4 years; Internal (medial) Epicondyle 6 years; Trochlea 8 years; Olecranon 10 years; external (lateral) Epicondyle 12 years [3]. The Capitulum, Trochlea & Lateral epichondyle fuse in a single epiphysis with epiphyseal plate separating each from the shaft. The epiphyseal plate represents the site of bone lengthening [2]. The secondary ossification centers play an important role in bone age & assessment of skeletal maturation as explained by

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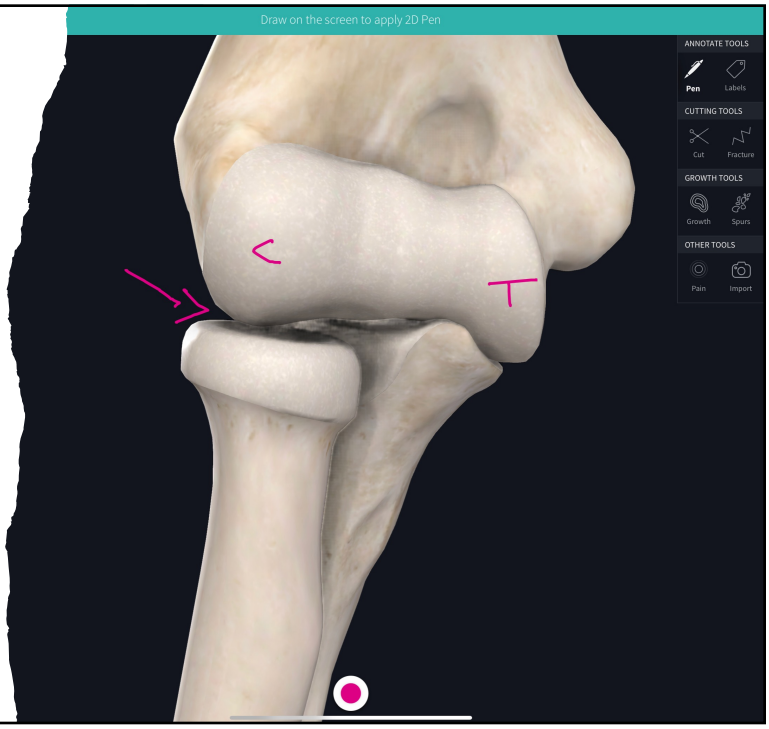
OCD of the Capitellum

- Panners vs. OCD
- Indications
- Physical Findings
- Reoccurrence



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Acute Elbow Injury

- Considerations of age
- Training Regime
- Kinetic Chain

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Avulsion Fracture of the Medial Epicondyle

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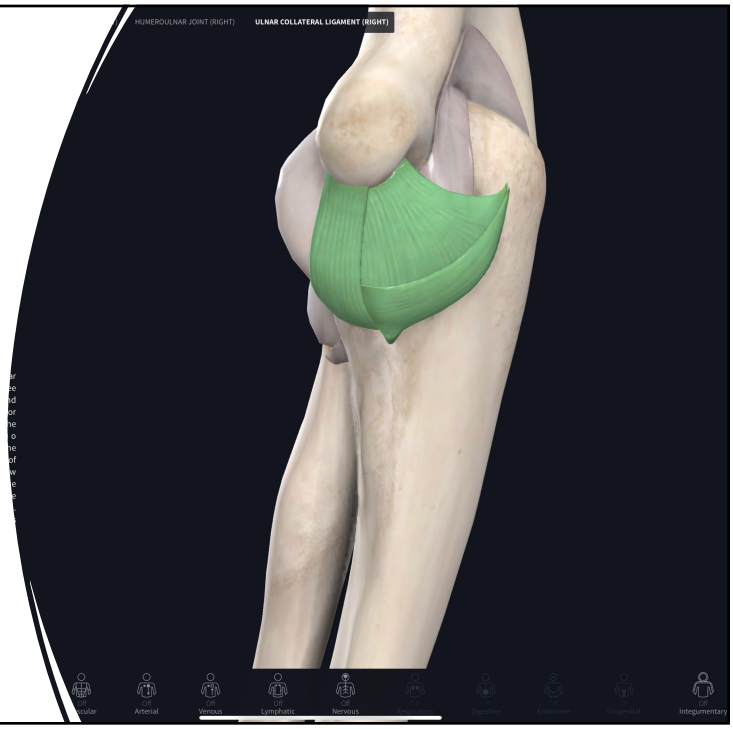
Ulnar Collateral Ligament Tear

- Grade 1
- Grade 2
- Grade 3



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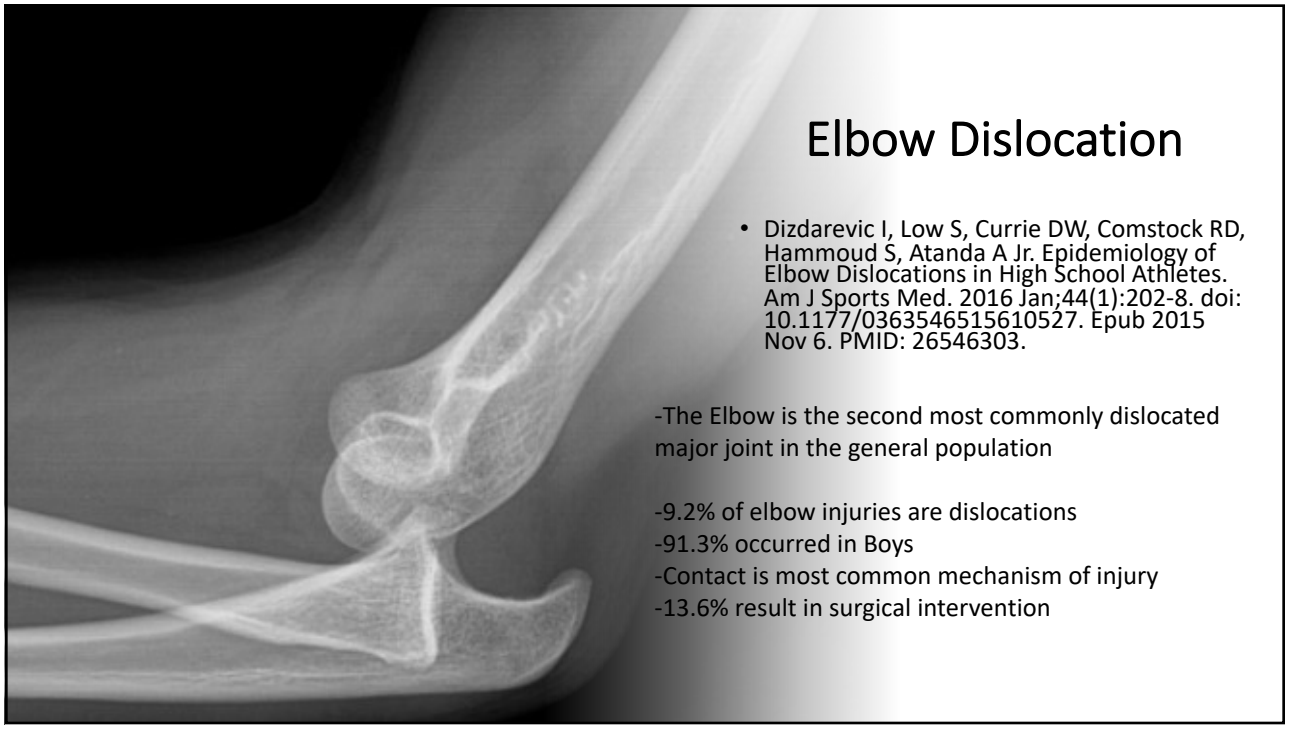

Elbow Dislocation

- Dizdarevic I, Low S, Currie DW, Comstock RD, Hammoud S, Atanda A Jr. Epidemiology of Elbow Dislocations in High School Athletes. Am J Sports Med. 2016 Jan;44(1):202-8. doi: 10.1177/0363546515610527. Epub 2015 Nov 6. PMID: 26546303.

-The Elbow is the second most commonly dislocated major joint in the general population

-9.2% of elbow injuries are dislocations
-91.3% occurred in Boys
-Contact is most common mechanism of injury
-13.6% result in surgical intervention

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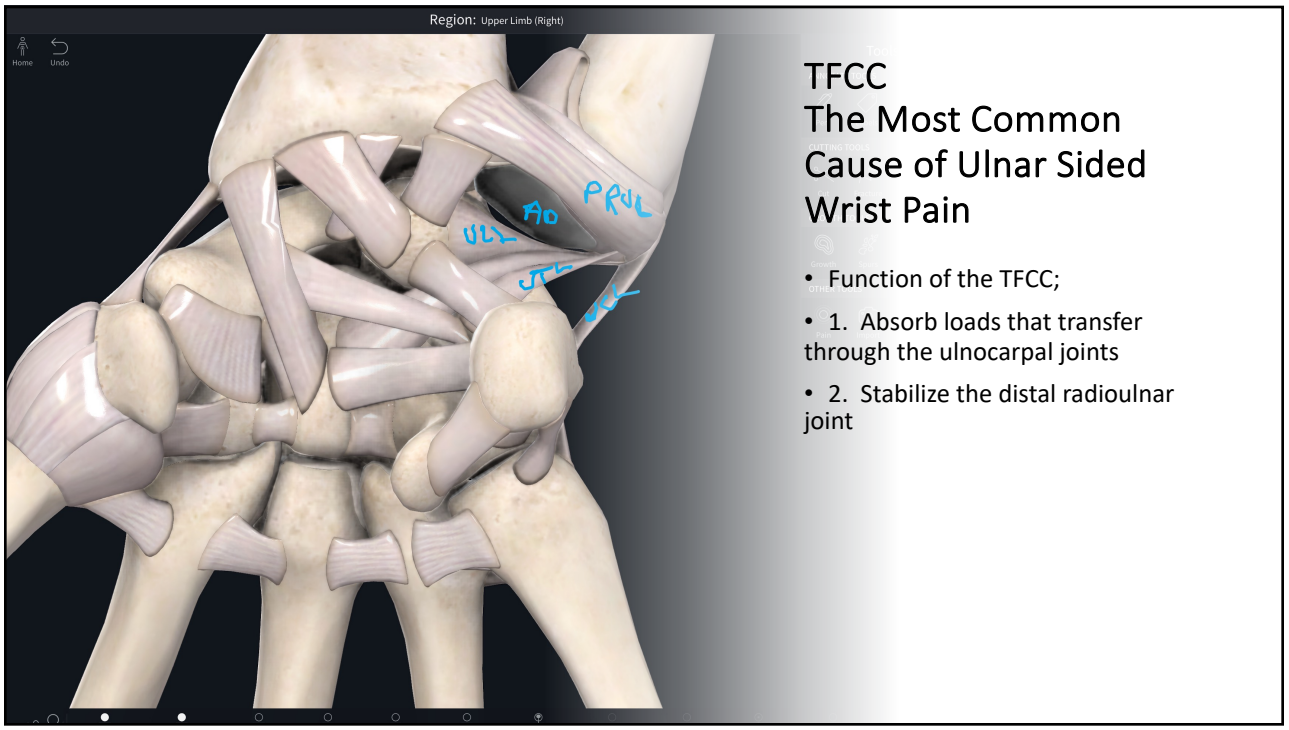

TFCC
The Most Common Cause of Ulnar Sided Wrist Pain

- Function of the TFCC;
- 1. Absorb loads that transfer through the ulnocarpal joints
- 2. Stabilize the distal radioulnar joint

22

23

Incidence of Pelvic Avulsion Fracture

- Rossi F, Dragoni S. Acute avulsion fractures of the pelvis in adolescent competitive athletes: prevalence, location and sports distribution of 203 cases collected. Skeletal Radiol. 2001 Mar;30(3):127-31. doi: 10.1007/s002560000319. PMID: 11357449

- Soccer and Gymnastics have the highest rate of pelvic avulsion injury
- Ischial Tuberosity- most common
- AIIS -
- ASIS
- Pubic symphysis
- Iliac crest

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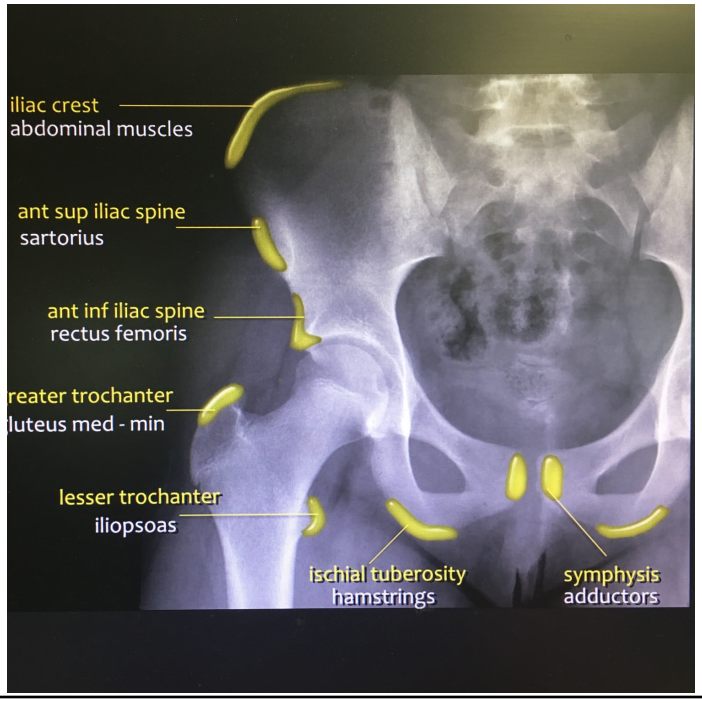

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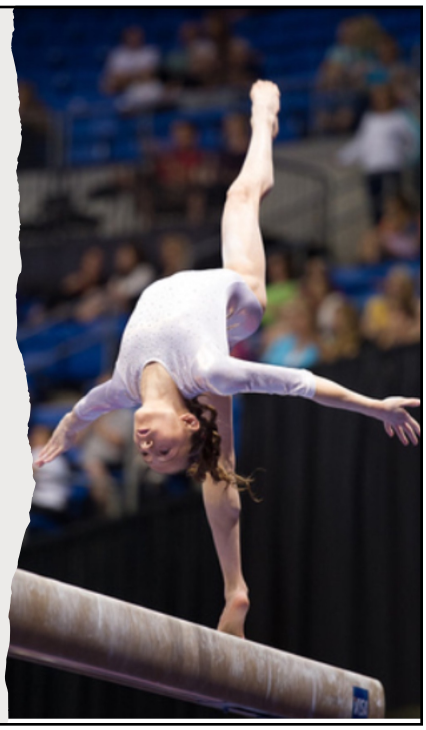
THE GENDER OF THE ATHLETE

- Injury rates among women are statistically not different then males.
- There is a difference in the rate of injury for different body parts
- Boys have a higher rate of injury due to increased participation in higher risk sports.



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ACL Rupture and the Adolescent Athlete

- VanZile AW, Reineke DM, Snyder MJ, Jones DD, Dade RL, Almonroeder TG. Establishing Normative Values for Inter-Limb Kinetic Symmetry During Landing in Uninjured Adolescent Athletes. *Int J Sports Phys Ther*. 2021;16(4):1067-1075. Published 2021 Aug 1. doi:10.26603/001c.25366

- 25% of athletes will sustain a second ACL rupture in the first year of return to sport
- Athletes who have undergone ACL reconstruction often demonstrate marked inter-limb asymmetries in impact forces during landing, even after they have returned to sport

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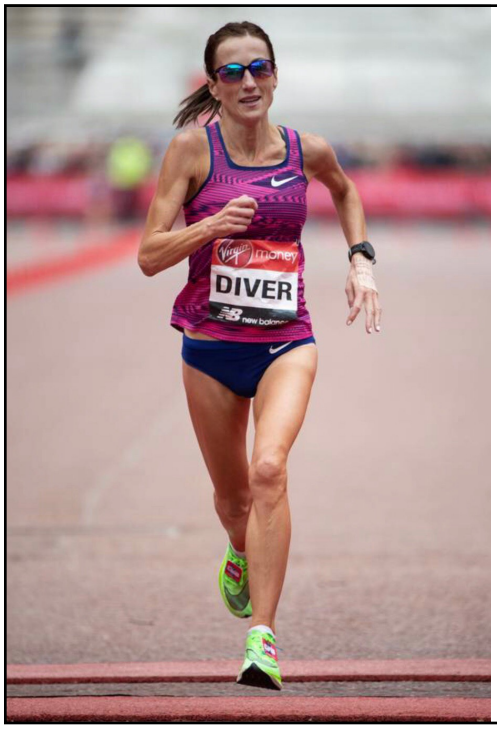

Stats on Injury Female vs Male

- Predisposition to injury
- Decreased stroke volume due to decreases size of heart
- Women have a 30% decreased maximal cardiac output.
- Women have a higher respiratory rate and less total lung capacity than men.
- However, for some reason women have a greater fatigue resistance then equally trained men
- Women outperform men in cold water endurance challenges (needs more research for explanation)

29

Cardiac Differences with Training in the Adolescent Athlete

Adolescent Athlete Cardiac Changes	Comparison to Adult Athlete
Resting Heart Rate Falls	Resting heart rate still higher than adult
Dilation of left Atrium	Similar
Left Ventricle Dilates with mild LV hypertrophy	Less Chamber dilation and more hypertrophy
Raised VO2 max	Lower VO2 max in comparison to body size (Lower stroke volume as comparted to adults)

30

Femoroacetabular Impingement Syndrome

- Hale RF, Melugin HP, Zhou J, LaPrade MD, Bernard C, Leland D, Levy BA, Krych AJ. Incidence of Femoroacetabular Impingement and Surgical Management Trends Over Time. Am J Sports Med. 2021 Jan;49(1):35-41. doi: 10.1177/0363546520970914. Epub 2020 Nov 23. PMID: 33226833; PMCID: PMC8025987
- 1893 Patients studied, 813 were diagnosed with FAI
- Female have a greater predisposition 67%
- The incidence of FAI continues to increase annually

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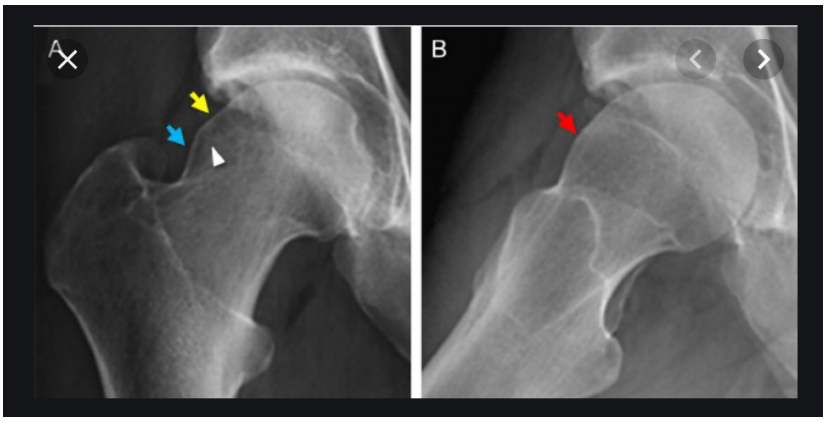
Femoral Acetabular Impingement Testing

- Cam
- Pincer
- Mixed

- Flex and watch
- Bilateral comparison



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The Importance of a Pre-Participation Physical Exam

- **Injury prevention**
- Looking for predisposing factors to injury
- Trying to minimize the incidence of injury during the season
- In some instances, prevent catastrophic injury
- **The best practice to obtain and synthesize the athlete health history and physical examination to formulate a clearance to participate in sport decision.**

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The Components of the PPE

The screening exam should include:

1. **A comprehensive personal and family history is the cornerstone of the PPE.**
2. Vital Signs
3. General Inspection (skin, posture, etc.)
4. Eyes, ears, nose throat
5. Cardiovascular and pulmonary screening
6. Abdominal Examination
7. Neurological Examination
8. Genitourinary (as clinically indicated)
9. Musculoskeletal examination (static and functional evaluation)
10. General medical examination

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The Personal and Family History

- The history is a more sensitive tool than the physical examination for detecting conditions that could prohibit or alter sport participation

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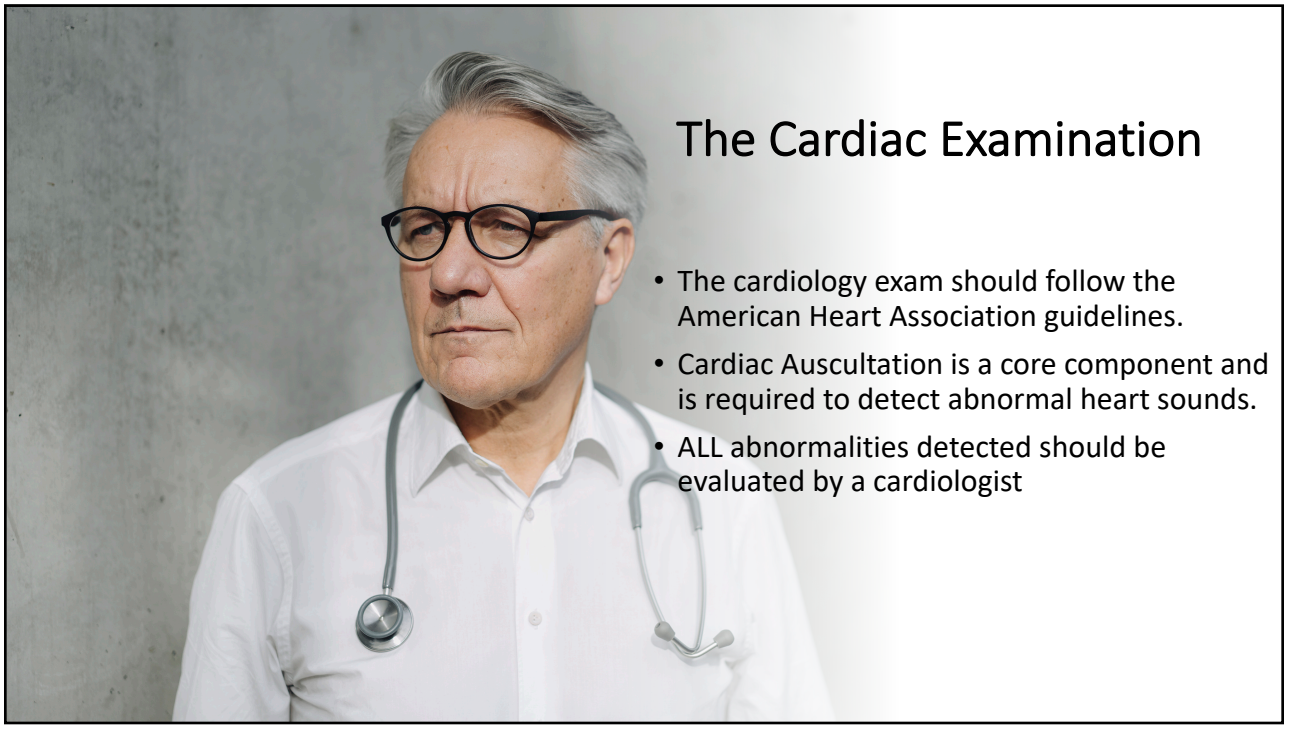

The Cardiac Examination

- The cardiology exam should follow the American Heart Association guidelines.
- Cardiac Auscultation is a core component and is required to detect abnormal heart sounds.
- ALL abnormalities detected should be evaluated by a cardiologist

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PSYCHOLOGICAL CONSIDERATIONS OF INJURY

- THE ADVICE YOU GIVE TO AN INJURED ATHLETE IS CONSIDERED ACTIVE CARE.
- THIS CAN ALSO BE DEEMED THE PATIENT INVOLVEMENT PHASE OF TREATMENT MANAGEMENT PLAN.

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Peds and mental health research

- Journal of Athletic Training 2019;54(10):1021–1029 doi: 10.4085/1062-6050-394-18 by the National Athletic Trainers' Association, Inc www.natajournals.org Narrative Review The **Psychosocial Implications of Sport Specialization in Pediatric Athletes** Joel S. Brenner, MD, MPH*†‡; Michele LaBotz, MD§||; Dai Sugimoto, PhD, ATC¶#**; Andrea Stracciolini, MD, FAAP, FACSM¶#**†† *Sports Medicine Program, Children's Hospital of The King's Daughters, Norfolk, VA; †Department of Pediatrics, Eastern Virginia Medical School, Norfolk; ‡Division of Sports Medicine, Children's Specialty Group, PLLC, Norfolk, VA; §InterMed P.A., Portland, ME; ||Tufts University School of Medicine, Boston, MA; ¶Division of Sports Medicine, Department of Orthopedics, Boston Children's Hospital, MA; #The Micheli Center for Sports Injury Prevention, Waltham, MA; **Harvard Medical School, Boston, MA; ††Department of Medicine, Division of Emergency Medicine, Boston Children's Hospital, MA Data on the psychosocial implications of sport specialization in pediatric athletes are lacking.
- Sport specialization often requires increased training hours and may predispose young athletes to social isolation, poor academic performance, increased anxiety, greater stress, inadequate sleep, decreased family time, and burnout. Sport specialization frequently introduces multiple stressors that could be expected to adversely affect mental health and function in young athletes and may increase the risk for burnout. This may be confounded by altered sleep duration and quality, increased drive for elite status, and perfectionistic personality types. The signs and symptoms of burnout in young athletes can be difficult to detect. It is important to be aware of the possible diagnosis of burnout in young athletes who display vague symptoms and a decrease in academic performance. The purpose of this review was to survey the available literature on sport specialization in young athletes and its association with mental health, sleep, the drive for success in sport, and burnout. Key Words: sport psychology, youth athletes, mental health, burnout

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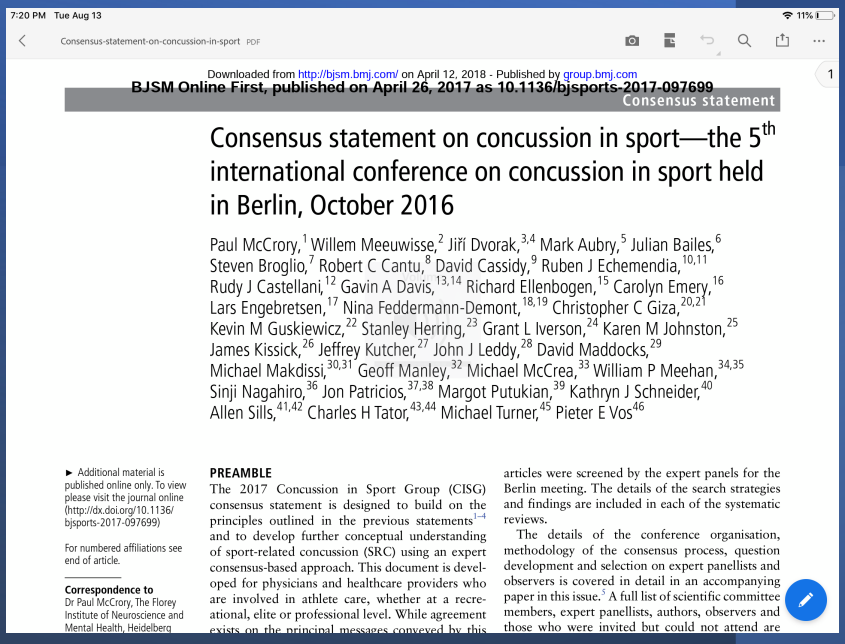

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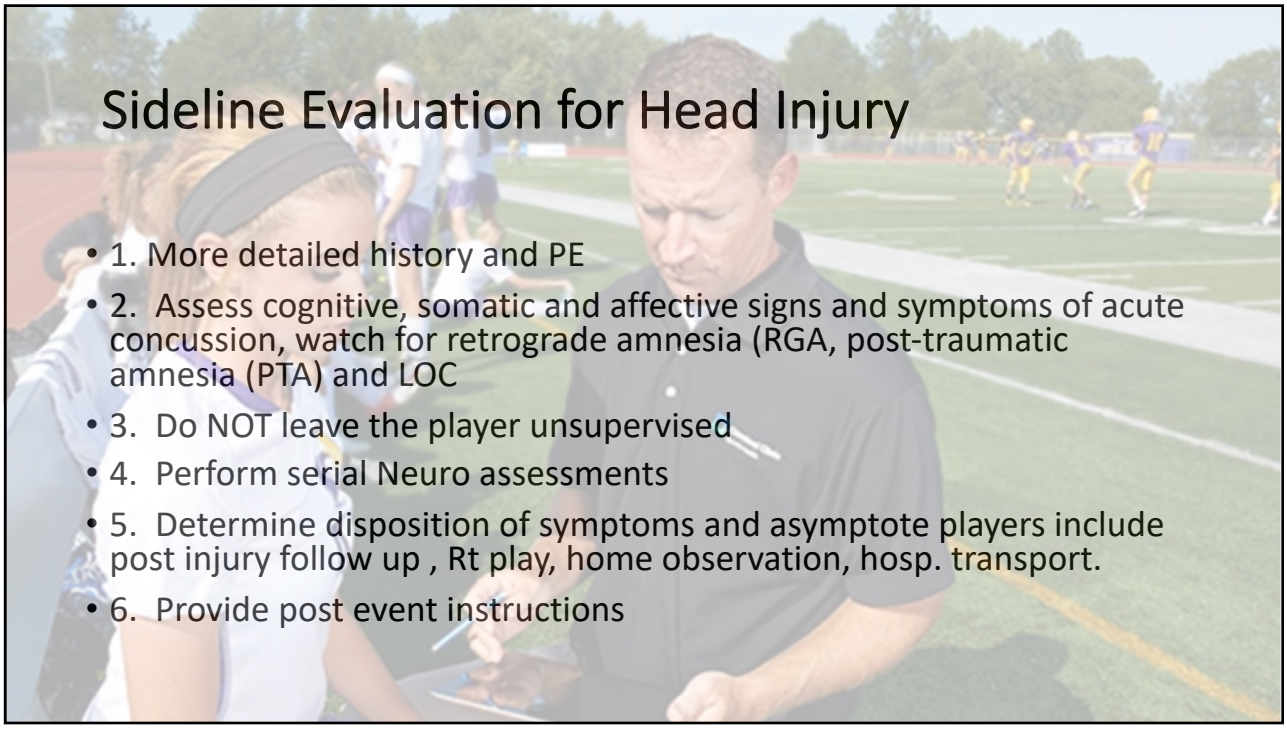

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RETURN TO PLAY PROTOCOL

Consensus statement

Table 1 Graduated return-to-sport (RTS) strategy

Stage	Aim	Activity	Goal of each step
1	Symptom-limited activity	Daily activities that do not provoke symptoms	Gradual reintroduction of work/school activities
2	Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate
3	Sport-specific exercise	Running or skating drills. No head impact activities	Add movement
4	Non-contact training drills	Harder training drills, eg, passing drills. May start progressive resistance training	Exercise, coordination and increased thinking
5	Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal game play	

NOTE: An initial period of 24–48 hours of both relative physical rest and cognitive rest is recommended before beginning the RTS progression.
There should be at least 24 hours (or longer) for each step of the progression. If any symptoms worsen during exercise, the athlete should go back to the previous step.
Resistance training should be added only in the later stages (stage 3 or 4 at the earliest). If symptoms are persistent (eg, more than 10–14 days in adults or more than 1 month in children), the athlete should be referred to a healthcare professional who is an expert in the management of concussion.

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Return to School Protocol

Consensus statement

Table 2 Graduated return-to-school strategy

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (eg, reading, texting, screen time). Start with 5–15 min at a time and gradually build up	Gradual return to typical activities
2	School activities	Homework, reading or other cognitive activities outside of the classroom	Increase tolerance to cognitive work
3	Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day	Increase academic activities
4	Return to school full time	Gradually progress school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

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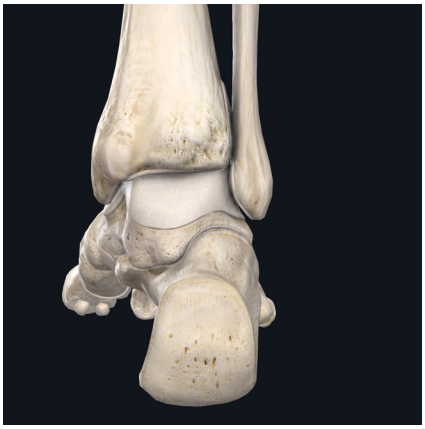
THE STRUCTURE IS AFFECTED BY FUNCTION
the function is affected by the structure



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Introducing Sport Specific Drills

- Do this as early as you can, safely.
- Build on the foundational movement with sport specific drills
- Timing, reaction, anticipation
- Cross train to gain core control of needed movements

45

Look at the Footwear that is USED for Sport AND Daily Wear

- Look at quality of the shoe
- Look at wear patterns
- Ask about orthotic use
- Ask about taping or strapping for practice
- Ask about past injuries
- Ask about pain in the feet, ankles, hips low back after practice
- Pull the Picture together and RETEST your theory

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Shoe Wear Patterns

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Footwear Inspection

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When Does the Return to Sport Plan Begin

- What is your measure of readiness?
- How will you progress and return the athlete to play
- What is your timeline
- What is the level of play
- Measure injury with demand of the sport for that region

49

What is Normal for YOUR patient

- Shades of grey of normal ROM
- What does this athlete need from the hip
- What ROM
- What type of strength
  - Fast twitch
  - Slow Twitch

50

Stretching

- Static vs dynamic stretching
- When to stretch
- How long to stretch

51

Acute Care

- Phase 1
- Rice
- ROM
- Reduce edema
- Safety in ADLs- bracing , crutches etc

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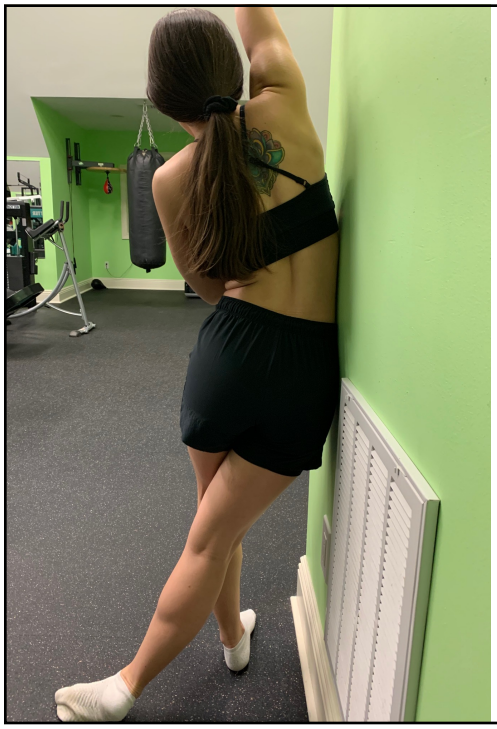


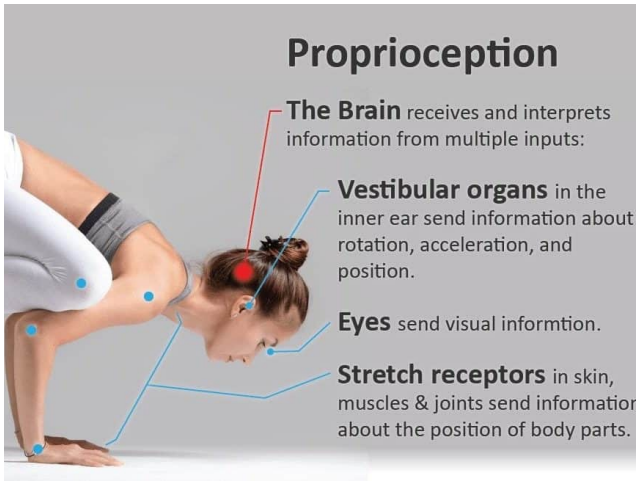
Progressions and Variations

- Stretching the same muscle group in different positions
- Mobility vs Stability
- Stretching all 4 quadrants of the hip. Is this necessary

53

Subacute phase of care

- Muscle synergy, contraction
- Proprioception
- Continue with edema reduction
- Continue with ROM
- No progression into jog without full ROM of LE injury
- No progression of activity in return to sport without full ROM of affected region



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Late Subacute Phase of Care

- Full ROM
- Strength
- Proprioception
- Stability
- Safety
- Progression off crutches or out of sling

55

Steps in Assessing the Kinetic Chain

- 1. AN ACCURATE DIAGNOSIS OF THE PRIMARY COMPLAINT
- 2. ASSESS THE FUNCTIONAL DEFICITS/COMPENSATIONS THAT COULD HAVE CONTRIBUTED TO THAT COMPLAINT
- 3. FIX THE PRIMARY COMPLAINT
- 4. FIX THE KINETIC CHAIN

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Efficiency of the Kinetic Chains

Efficient kinetic chains demonstrate decreased joint loads, maximum velocity, and maximal force production during throwing.

Dysfunction of kinetic chain during throwing increases stress placed on distal segments and can result in shoulder and elbow pathologies.

57

Dugan, Sheila A., and Krishna P. Bhat. "Biomechanics and analysis of running gait." *Physical Medicine and Rehabilitation Clinics* 16.3 (2005): 603-621.

The Effects of Prontion on the Kinetic Chain

Region	Saggital Plane	Frontal Plane	Transverse Plane
Lumbosacral	Extension	Lateral Flex to same side	Protraction
Pelvis	Anterior Rotation	Translation & ipsilat elevation	Forward rotation ipsilat
Mid tarsal Joints	Dorsiflexion	Inversion	Abduction
Mid tarsal Joints	Dorsiflexion	Inversion	Abduction
Mid tarsal Joints	Dorsiflexion	Inversion	Abduction
Mid tarsal Joints	Dorsiflexion	Inversion	Abduction
Mid tarsal Joints	Dorsiflexion	Inversion	Abduction

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Functional Anatomy

- Bony Structure
- Connective Tissue (cartilage/ligaments)
- Deep Muscle Layer
- Intermediate Muscle Layer
- Superficial Muscle Layer
- Fascia

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Gait Dissection

- The anterior hip compartment eccentrically contracts with heel strike. This slowly lowers the leg to the ground.
- Coupled with knee flexion, this creates a smooth transition during contact of the foot.
- Flexion of the hip and knee during swing phase allows for ground clearance of the foot despite the pelvis lowering on that side.
- *Loss of hip and knee ROM here produces a circumduction gait.

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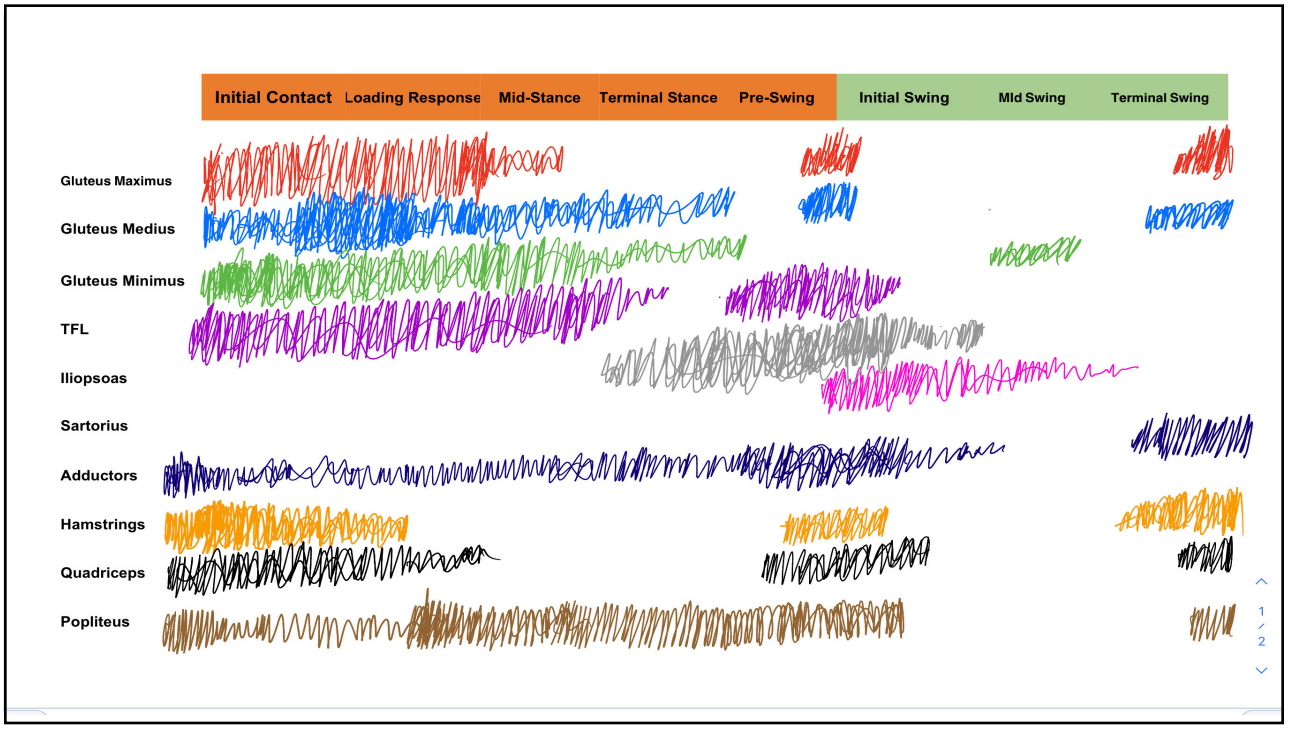
Initial Contact
Loading Response
Mid-Stance
Terminal Stance
Pre-Swing
Initial Swing
Mid Swing
Terminal Swing
Gluteus Maximus
Gluteus Medius
Gluteus Minimus
TFL
Iliopsoas
Sartorius
Adductors
Hamstrings
Quadriceps
Popliteus

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Strength
• When to start strengthening
• What are the limiting factors
• When is it appropriate to progress the strengthening program

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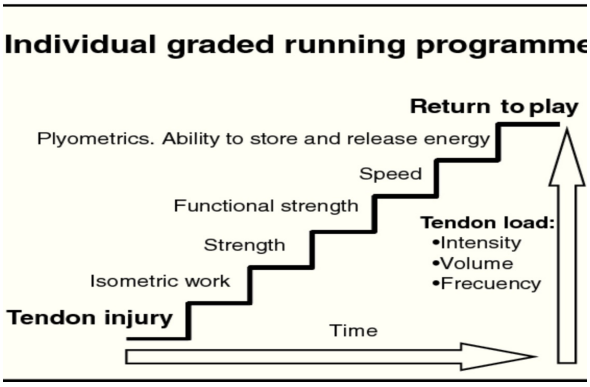
Introducing Sport Specific Drills

- Do this as early as you can, safely.
- Build on the foundational movement with sport specific drills
- Timing, reaction, anticipation
- Cross train to gain core control of needed movements
- Graphic from Jill Cook



63

Uncorrected Hyper-Pronation

- Excessive pronation is the most common problem that is observed on running analysis.
- Hyper pronation causes increased ground reaction forces in the medial aspect of the lower limb kinetic chain, including such structures as the medial tibia.
- Increased demand on muscles causes them to work harder to control the excessive pronation, this may lead to tendonitis.
- With excessive pronation also promotes excessive internal rotation of the tibia and femur. This is a precursor to patellofemoral maltracking.
- Dugan, Sheila A., and Krishna P. Bhat. "Biomechanics and analysis of running gait." *Physical Medicine and Rehabilitation Clinics* 16.3 (2005): 603-621.

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The "Controlled Fall" of Gait

Foot	Tibia	Talus	Foot
Dorsiflexion	Internally Rotates	Everts	Pronation
D	IR	E	P
Plantar flexion	Externally Rotates	Inverts	Supination
P	ER	I	S

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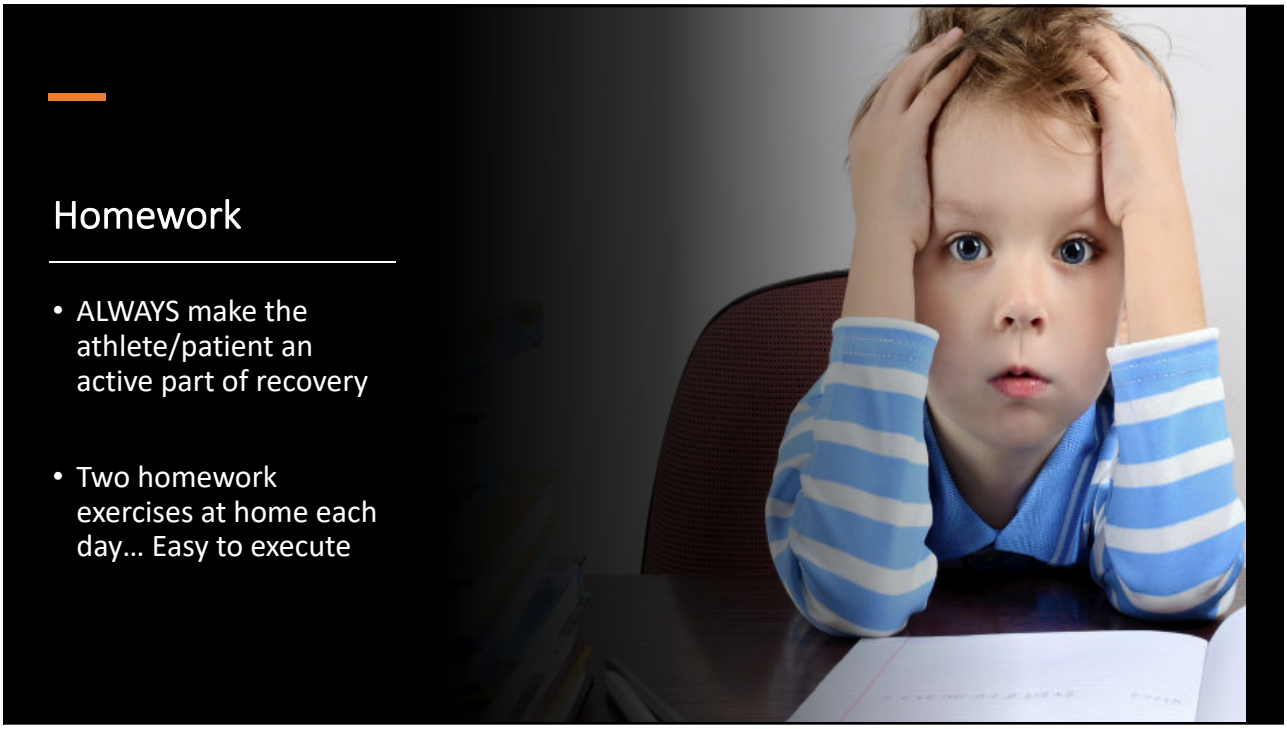
Homework

- ALWAYS make the athlete/patient an active part of recovery
- Two homework exercises at home each day… Easy to execute



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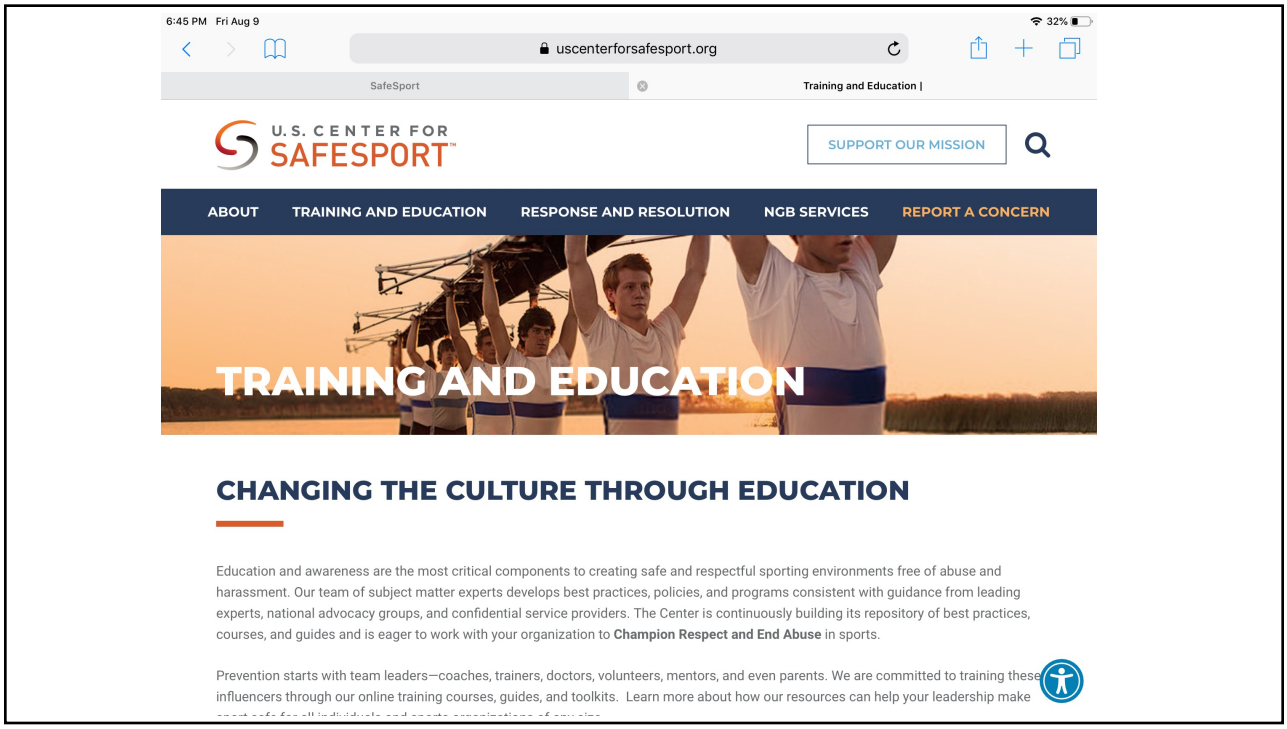
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SUPPORT OUR MISSION
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RESPONSE AND RESOLUTION
NGB SERVICES
REPORT A CONCERN
TRAINING AND EDUCATION
CHANGING THE CULTURE THROUGH EDUCATION
Education and awareness are the most critical components to creating safe and respectful sporting environments free of abuse and harassment. Our team of subject matter experts develops best practices, policies, and programs consistent with guidance from leading experts, national advocacy groups, and confidential service providers. The Center is continuously building its repository of best practices, courses, and guides and is eager to work with your organization to Champion Respect and End Abuse in sports.
Prevention starts with team leaders—coaches, trainers, doctors, volunteers, mentors, and even parents. We are committed to training these influencers through our online training courses, guides, and toolkits. Learn more about how our resources can help your leadership make

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FOOTBALL HELMET
FITTING GUIDE
Riddell
PROTECT. PERFORM.
1. CHECKING HEAD SIZE
Wrap a cloth measuring tape around the circumference of head
Measure with tape approximately 1" above the player's eyebrows
Record measurement
Use the Riddell® circumference chart below to select proper helmet size
If measurement falls between helmet sizes, choose the smaller size
2. PUTTING ON / TAKING OFF HELMET
Putting on helmet:
Hold helmet with thumbs over bottom of jaw pads
Place index fingers into ear holes
Pull helmet down into position
Taking off helmet:
Unbuckle chin strap from bottom snaps
Place index fingers into ear holes
Press thumbs into bottom of jaw pads
Lift helmet up and off the head
3. ADJUSTING HELMET HEIGHT
Adjust inflatable pads using a Riddell inflation bulb and a well-lubricated Riddell inflation needle
Insert needle
Pump Riddell inflation bulb to achieve proper fit
Remove needle
Front of helmet should be approximately 1" above the player's eyebrows
HELMET POSITION
Too Low
Correct
Too High
4. ADJUSTING BACK/SIDE LINER
Inflate for snug, comfortable fit front-to-back and side-to-side
5. ADJUSTING JAW PADS
Jaw pads should feel firm against the face
Insert needle into valve at exterior jaw flap
Inflate jaw pad
If non-inflatable jaw pads feel loose, change to a thicker size
If non-inflatable jaw pads feel tight, change to a thinner size
6. CHECKING FOR PROPER FIT
The skin of the forehead should move with the front pad
There should be no room for twisting
If helmet slides easily over the forehead, inflate helmet liners or try a smaller helmet
Ensure a proper fit:
Interlock hands on top of helmet and press down
Player should feel pressure on crown of head, not brow
Pressure on brow indicates improper fit
Front of helmet should be approximately 1" above the eyebrows
To avoid injury or discomfort, never wear a helmet positioned too high or too low
7. ADJUSTING CHIN STRAP
To adjust soft or hard cup chin straps:
Buckle top and bottom of chin strap into the snaps above and below ear holes
Cup should be centered and snug over chin
Adjust chin strap until cup is firmly pressed against chin
When buckled, helmet should feel comfortable and snug
Chin straps are available in multiple sizes
VARSITY & YOUTH:
YOUTH: Revolution® Edge, Revolution® Attack
YOUTH: Revolution® Attack-i
For further helmet fitting guidelines, videos and in-depth details go to:
RIDDELL.COM

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DOI: 10.7860/JCDR/2014/6470.3872

Review Article

Dentistry Section

Intra-oral Mouth-Guard In Sport Related Oro-Facial Injuries: Prevention is Better Than Cure!

SNEHA S. MANTRI[1], SHIVKUMAR P. MANTRI[2], SURYAKANT DEOGADE[3], ABHILASHA S. BHASIN[4]

ABSTRACT

India is rapidly assuming a more health-conscious posture. Olympic competition and professional sports have turned from mere dreams into goals. Many major professional sports leagues are expanding. Sports dentistry is a composite of skills for treatment, prevention, education and research in which dentistry and sports come together. Custom athletic mouth guards present additional health-care opportunities. They are designed to reduce the impact force of a direct blow to the jaw and create a gap between the condyle and skull thereby reducing the transference of the impact to the brain. The prevalence and severity of injuries to the teeth, jaws and intra-oral and peri-oral soft tissues, concussions and neck injuries are reduced when mouth guards are used. The dentist can play a proactive role in helping to deliver important expanded health care services.

Journal of Clinical and Diagnostic Research. 2014 Jan, Vol-8(1): 299-302

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effect of Mouth guards on Performance

- The effects of performance oral appliances are related to neurophysiologic feedback mechanisms; the release of cortisol – the so-called stress hormone – and lactate levels have been found to play a role. It has also been found that non-functional biting (such as with an oral appliance) can impede this feedback mechanism [17]. It is further hypothesized that by repositioning the mandible, the patency of nerves and arteries in the TMJ is improved, increasing blood flow and the perfusion of oxygen to the tissues, which in turn may improve function and strength [18].

- Some research suggested that mouthpieces might enhance performance. The professional football players exhibited greater arm strength with properly fitted mouth guards that resulted in changes in bite patterns [19]. More recently, research has suggested mandibular position and oral appliances positively affect not only upper-body strength, but also endurance, recovery after athletic competition, concentration, and stress response [20].

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Protective Eyewear

- What is the criteria
- When is it appropriate
- Limitations…

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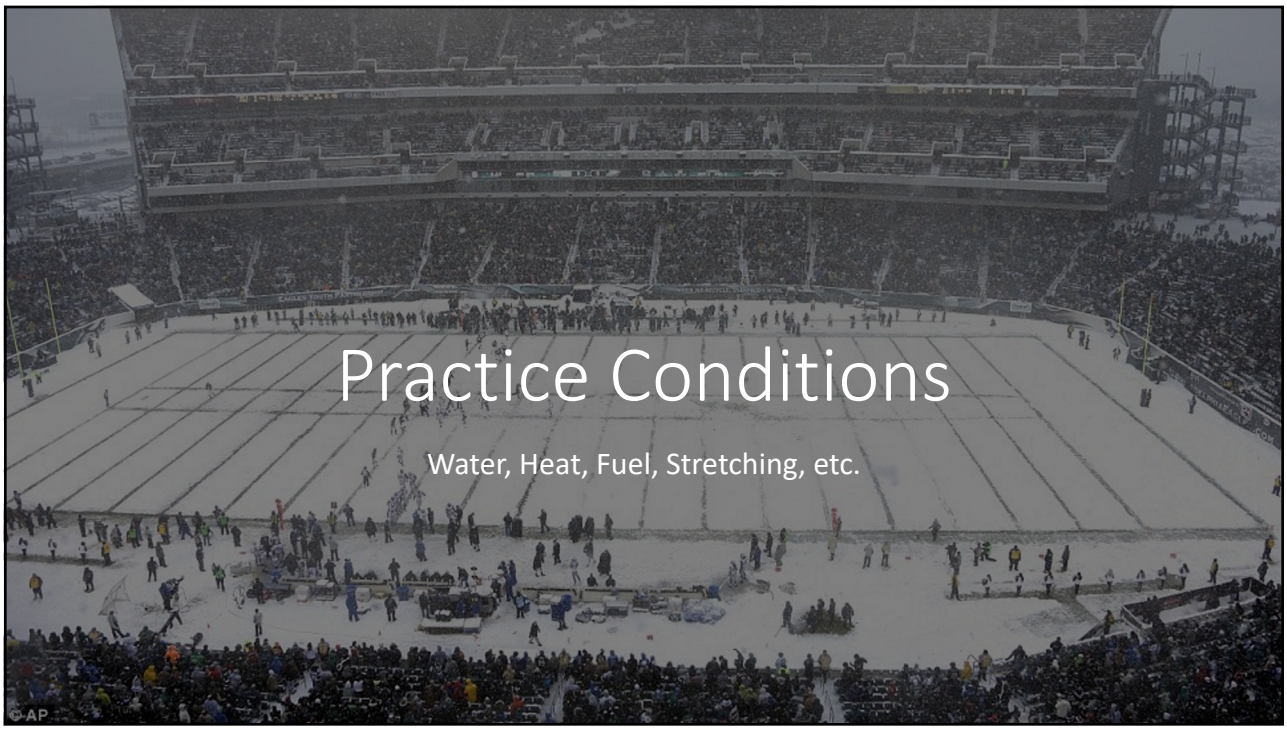

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Hydration

Males vs. Females

Evidence statement.

Women generally have lower sweating rates than men. *Evidence Category A.* Sex differences in renal water and electrolyte retention are subtle and probably not of consequence. *Evidence Category B.* Women are at greater risk than men to develop exercise-associated symptomatic hyponatremia. *Evidence Category C.*

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Hydration and Adolescent Athletes

- Suppiah HT, Ng EL, Wee J, Taim BC, Huynh M, Gastin PB, Chia M, Low CY, Lee JKW. Hydration Status and Fluid Replacement Strategies of High-Performance Adolescent Athletes: An Application of Machine Learning to Distinguish Hydration Characteristics. *Nutrients*. 2021; 13(11):4073. https://doi.org/10.3390/nu13114073

- The results showed **that 20–44% of athletes were identified as hypohydrated, with 21–44% and 15–34% of athletes commencing low- and high-intensity training in a hypohydrated state,** respectively.

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RELATIVE REST

- THE TERM RELATIVE REST –THIS IS THE CONCEPT THAT YOU ALLOW THE HEALING OF THE INJURED AREA WHILE THEY CROSS TRAIN THE OTHER REGIONS.
- This is the real art of working with athletes

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THE ART OF RELATIVE REST

- DECREASE DURATION, INTENSITY, TYPE OF EXERCISES, NUMBER OF REPETITIONS ETC
- SWITCH TO NON-WEIGHT BEARING THEREX
- CROSS TRAIN
- VISUALIZATION/IMAGERY
- SOME TYPE OF SPORT PARTICIPATION WATCHING PRACTICE ETC

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The Pediatric Athlete

- Preseason screening considerations
- Assessment for injury
- Injury predispositions
- Parents/Guardian communication
- Education to the athlete
- Safety of the Athlete
- Guidance for the health care team

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