Main Goal – Help the Athlete Participate Safely

- Identify problems that may hinder or be worsened by sports
- Prevent injuries, sudden death
- Assess general health
- Participation (legal) requirement
Identifying Athletes at Risk

- Sudden death
- Musculoskeletal injury
- Respiratory compromise
- Neurological injury
- Heat illness

- Athlete with single paired organ
- Abnormal weight loss practices
- Substance abuse
- Decreased bone mineral density

10 Year Old Wants to Play Soccer

- Seen 6 mo ago for well-child visit
- Signed camp physical form
- Wants to drop off sports pre-participation form for you to sign
The Medical History

• The history is the most important part of the PPE
• Most significant medical problems will be identified by the history
• Most significant problems in CV & MS systems

Other PPE History Findings

• Recent hospitalization, surgery
• Recent or multiple concussions
• Shortness of breath with exercise
• Skin problems
• Eye problems
• Depression
Preventing Sudden Death

- Extremely rare event
- Much more likely to identify potentially fatal cardiac lesion by taking a careful history than by doing a careful exam
- Optimal screening is controversial

Universal ECG Screening

“The absence of definitive outcome-based evidence at this time precludes AMSSM from endorsing any single or universal cardiovascular screening strategy, including legislative mandates.”

Drezner. BJSM 2018.
Complex Issues, Recent Developments

- Vision screening
- Genitourinary examination
- Musculoskeletal screening

16 yo Goalie

- No history of surgery or hospitalization
- VA:
  - 20/40 OS,
  - 20/200 OD
Vision Screening

- History of vision problems
- Extra-ocular movements
- Visual acuity
- Legal blindness – best-corrected VA ≤ 20/50

High Eye-Injury Risk Sports

- Martial arts
- Basketball
- Baseball
- Tennis
- Rugby
The Athlete with One Good Eye

- Discuss risks/benefits of continuing in eye-injury risk sport
- Document understanding of risks in parents own words
- Prescribe polycarbonate goggles

Genitourinary Exam

- Not necessary to establish sexual maturity
- Asymptomatic hernias usually do not exclude from sport
Single Normal Testicle

- Testicular loss < common than eye loss in sports
- Young man with single normal testicle should be identified
- Continue GU screening for 2 normal testicles

Athletes at Risk for MS Injury – Prevention Strategies

- Hx of prev injury
- Identify deficits (ROM, strength) from prev injuries
- Identify biomech factors that may predispose to injury
Orthopedic Screening Exam

- Designed to be brief, focused on high yield areas
- Easy to learn & administer, not requiring sophisticated orthopedic exam techniques or equipment
- Looks for deficits (asymmetry) in ROM, strength, muscle bulk

1. Observe: posture, gait, range of motion, symmetry
2. Neck: range of motion, tenderness
3. Shoulder: range of motion, tenderness
4. Elbow: range of motion, tenderness
5. Wrist: range of motion, tenderness
6. Hand: range of motion, tenderness
7. Spine: range of motion, tenderness
8. Pelvis: range of motion, tenderness
9. Hip: range of motion, tenderness
10. Knee: range of motion, tenderness
11. Ankle: range of motion, tenderness
12. Foot: range of motion, tenderness
13. Upper extremities: sensory function, strength
14. Lower extremities: sensory function, strength
15. Core: posture, balance
16. General: overall appearance, skin, hair

Modified OSE – Supraspinatus

Modified OSE – Shoulder IR
Modified OSE – Squat

Modified OSE – Single Leg Hop
Identify Biomechanical Factors that May Predispose to Injury

- Should involve dynamic testing
- May require sophisticated equipment, techniques, advanced training

Prevention of Ankle Injuries

- Dynamic testing of high school male & female athletes prior to season
- Used force pad to quantify “sway”
- High “sway” ankles more likely to be sprained
- Subsequent study – pre-season stability training prevents sprains

McGuine, et al., CJSM, 2004
Functional Movement Screen

- Dynamic stability is a strongly related to injury risk
- Assessing stability movements can allow deficits that can be corrected in order to decreased injury risk

The Functional Movement Screen

1. Squatting  
2. Stepping  
3. Lunging  
4. Reaching  
5. Leg Raising  
6. Push-up  
7. Rotary Stability
Y-Balance Test & Star Excursion Balance Test

Functional Screening

- Positive findings from functional screening likely to be predictive of future injury
- Functional screening may require some provider training
- What to do with abnormal findings from functional screening?
Injury Prevention Through the PPE

• Current data indicates marginal effect on injury prevention
• Screening techniques (history, PE) must be refined to include more functional testing

Key Points

• Visual screening looking for legal blindness (best corrected VA ≤ 20/50)
• Continue GU screening in young men to establish 2 normal testicles
• Include functional testing in PPE to identify factors that may predispose to future musculoskeletal injury
References


• [www.functionalmovement.com](http://www.functionalmovement.com)

• [www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org)