Pre Participation Evaluation: An Update

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Happy Athletic Training Month!

- Thank you NATA
- AMSSM
  - Resounding positive
- Best allied health professionals to work with for a sports medicine physician

Spectrum of Pre-Participation Evaluations

- 7th grade inner city school (physicals on those wooden benches)
- NFL combines

PPE

- Purpose: Just to fill out the form to get the physician's signature?

- Should we take these more seriously?

Objectives

- What is the value of a pre-participation?
- How should a PPE be performed?
- What specific testing or screening should be considered in a PPE?

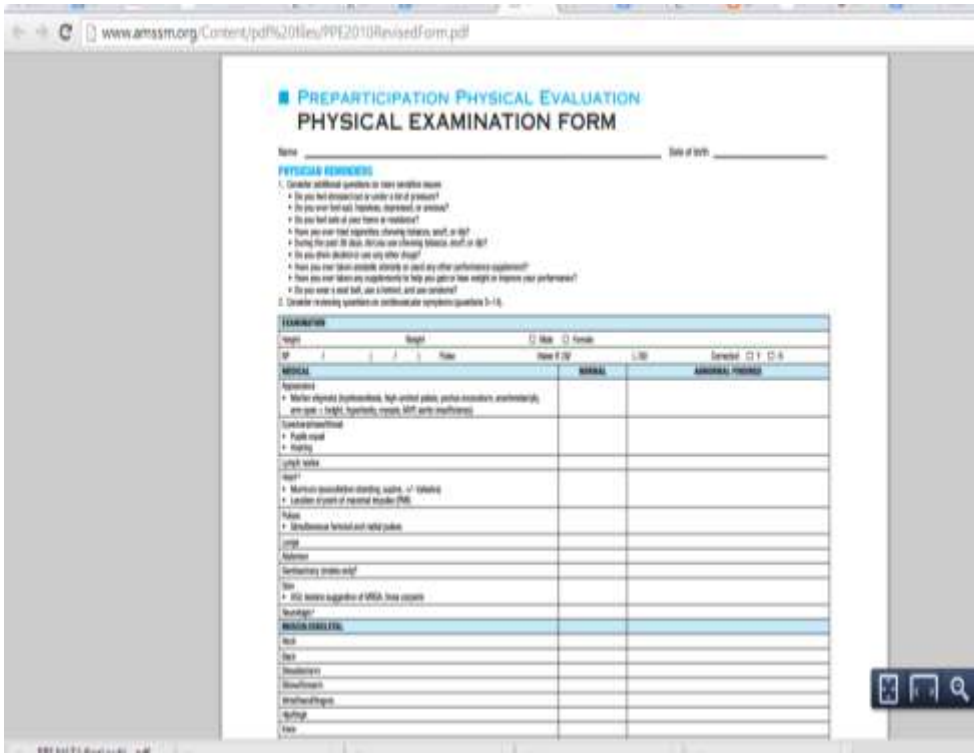
Preparticipation evaluation: an evidence-based review

- Group from Stanford in 2004 did meta-analysis on original studies that evaluated strength of PPE
  - 5 studies that evaluated the effectiveness of PPE concluded that is was inadequate
  - Format is not nationally standardized
  - Too few states address AHA CV screening questions
  - A variety of health care professionals, some with inadequate training, administer PPE

Wingfield K, Matheson GO, Meeuwisse WH. **Preparticipation evaluation: an evidence-based review.** Clin J Sport Med. 2004 May;14(3):109-22

PPE Monograph

- 4th edition (AMSSM, AAP, AAFP, AOSSM, AOASM)



Components

- Evaluate for risk of injury, catastrophic injury, or sudden cardiac death
- Evaluate status of medical or musculoskeletal issues prior to season
- Counsel on high risk behavior as well as determine any additional testing or screening
- Meet legal/insurance requirements

Case # 1

- 18 y/o high school senior basketball player questions whether he needs another PPE this year one month before the season, since he had one last year.
  - What do you tell him regarding PPE frequency?

PPE frequency

- About 6 weeks before the season (time to address deficiencies)
- PPE every 2 years (AHA) or often every year as required by states prior to participation
  - Most states require annual PPE for high school
- NCAA with initial PPE and then reevaluation annually unless otherwise directed.

Who can do a PPE

- Advanced health care providers with Physicians with appropriate training in cardiovascular screening.
  - Nurse practitioners or physician assistant?
  - Chiropractors?
  - Naturopathic doctors?

  NATA: Recommends an MD or DO perform PPE evaluations.

SPECIAL COMMUNICATIONS

Team Physician Consensus Statement

Team Physician Consensus Statement: 2013 Update

DEFINITION

Team physicians have the leadership role in the organization, management, and provision of care of athletes in individual, team, and mass participation sporting events. This document describes the definition, qualifications, education, duties, and responsibilities of the team physician fulfilling this role.

GOAL

Since the publication of this statement in 2000, the roles and responsibilities of the team physician have evolved. The goal of this update is to outline the duties of the team physician to best serve athletes. To accomplish this goal, the team physician should possess, be responsible for, and/or understand

- medical qualifications and education,
- medical and administrative duties and responsibilities,
- ethical issues, and
- medicolegal issues

and experience uniquely qualifies him or
best medical care for the athlete.

This document is not intended as a st
should not be interpreted as such. It is only
is of a general nature, consistent with the r
practice of the healthcare profession.
should be in place to help protect the ph
and the sponsoring organization. This d
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sus series, representing an ongoing proje
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sports medicine issues. The organization
Academy of Family Physicians, the Am
Orthopedic Surgeons, the American Coll
cine, the American Medical Society for S
American Orthopedic Society for Sports
American Osteopathic Academy of Sport

PRIMARY AUTHORS

ACSM: MD or DO who has leadership of medical organization including PPE's

What conditions disqualify an athlete?

- Cardiovascular
  - HCM
- Orthopaedic
  - Cervical spine instability
- Medical
  - Fever
  - Uncontrolled seizures or asthma

National Athletic Trainers' Association Position Statement: Preparticipation Physical Examinations and Disqualifying Conditions

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Objective: To present athletic trainers with recommendations for the content and administration of the preparticipation physical examination (PPE) as well as considerations for determining safe participation in sports and identifying disqualifying conditions.

Background: Preparticipation physical examinations have been used routinely for nearly 40 years. However, considerable debate exists as to their efficacy due to the lack of standardization in the process and the lack of conformity in the information that is gathered. With the continuing rise in sports participation at all levels and the growing number of reported cases of sudden death in organized athletics, the sports medicine community should consider adopting a standardized process for conducting the PPE to protect all parties.

Recommendations: Recommendations are provided to equip the sports medicine community with the tools necessary to conduct the PPE as effectively and efficiently as possible using available scientific evidence and best practices. In addition, the recommendations will help clinicians identify those conditions that may threaten the health and safety of participants in organized sports, may require further evaluation and intervention, or may result in potential disqualification.

Key Words: medical history, family history, sudden cardiac death, concussion, sickle cell trait, diabetes, heat illness, hydration

NATA position statement

- **Purpose of PPE**
- 1. Identify those at risk for SCD and possible injury, and administer treatment prior to participation.
- 2. To not disqualify those who should not be disqualified without sound medical reason
  - AMA

Components of PPE

- Medical History
  - ROS
  - Family History
- Physical Examination
  - Vital Signs (bp, weight)
  - Medical
  - Orthopaedic
  - Neurologic
- Testing

Value of Medical History

- 75% of medical issues and injuries can be identified on a PPE
    - Kurowski, et al.

Blood Pressure

- Around 5% have elevated BP at time of PPE
  - May retake in 5 minutes
- Assure appropriately sized cuff
- Most may continue to participate
  - 5mm Hg >99th percentile for age gender and height should avoid high static component
  - >95th percentile should have evaluation

Where to do PPE?

Station Based

- Efficient and cost effective for use with many athletes
- Specialists at each station
- Noisy environment
- May compromise continuity and communication
- Parents are often not around

Office based

- Private
- Some athletes have no access to physician
- Greater cost
- Physician's limited interest/familiarity
- Lack of communication between physician and school athletic staff

Where to do a PPE?

- NCAA/professional setting, may be best for group-based PPE with team physician and athletic training staff
- High school, depends on the access and environment
- Middle school age should probably be done by primary care physician.

Touchy topics

- Cardiovascular
- Concussion
- Female athlete triad

Cardiovascular screening

- History
  - 8 question AHA screening
- Family History
  - Marfan's, Long QT, SCD
- Physical Examination
  - HSM, DSM, 3/6 murmur
  - Increases valsalva, squat to stand
- Non-invasive testing?
  - EKG
  - ECHO

Is the PPE too sensitive?

- 68% of a series of >1300 athletes screened had positive on PPE questionnaire.
  - 54% of these symptoms were found to be non-cardiac on follow up
  - Sensitivity was 33% prior to EKG
  - Augmented by EKG (using Seattle criteria), sensitivity approaches 100%
    - Fudge, Drezner, et al.

Screening Electrocardiography

- Italy has screened all competitive athletes 12-35 for the last 25 years with ECG
  - SCD 89% RRR[1]
  - HCM 90% RRR
  - 2% disqualification rate
- IOC, FIFA, European Society of Cardiology all recommend/require ECG prescreen
- Multiple professional sports teams also utilize ECG or echocardiography

1. Corrado D, Basso C, Pavei A, *et al.* Trends in sudden cardiovascular death in young competitive athletes after implementation of a preparticipation screening program. *JAMA 2006; 296:1593-1601*

Can widespread EKG screening program be initiated?

- EKG in some studies was poor at diagnosing HCM (most common cause in America)
- Only 4 sports typically involved in SCD
  - Basketball, football, soccer, track and field
  - Mostly African American males
- Incidence is too low to detect for good PPV
  - Many instances of SCDD are non-athletic related
  - Other studies have suggested poor sensitivity of EKG with old criteria (not adjusted for Athletic Heart)

Cardiovascular Screening

AMSSM Monograph

- Widespread EKG screening is not recommended
- May be individual or community decision

NATA position statement

- Widespread EKG screening is not recommended
- Not a cost-effective option

Neurologic screening

- Concussion
  - Consider Neuropsychological or Baseline testing
    - Multiple concussions
    - Prolonged symptoms
    - Inconsistent history

Orthopaedic screening

- Most common reason for exclusion was the knee
- 90 second screen was 51% sensitive and 97% specific for orthopaedic issues.

Musculoskeletal Exam

- History is STILL most important
  - 92% sensitivity in detecting significant MSK injury
- Only aspect of PPE that has significant research support
- 14-point screening exam for well athletes
- Complete joint specific exam if history of injury or signs during screening exam
- Clearance requires:
  - Completion of sport-specific functional tasks
  - Full ROM and symmetric strength of unaffected side
  - Ligamentous stability

- 20 y/o female cross country athlete is told by coach to get a CBC and ferritin level before starting intense training.
  - What do you advise her?

Laboratory Testing

- CBC, Ferritin
  - Estimates of about 20% anemia and 33% iron deficient in non-professional female athletes (Di Santo et al.)
  - About 75% female athletes were non-anemic, ferritin deficient, (ferritin <30)
    - (Jayanthi, et al., unpublished)
  - May consider in Female Endurance athlete
    - 4th edition monograph
    - NATA

Sickle Cell Trait

- NATA recommends confirming Sickle Cell status (including from New born screen)
- NCAA is requirement (unless waived)

Case

- You are doing NCAA PPE on incoming freshman 18 y/o basketball player.
  - He has h/o syncope with CPR/Resuscitation, and given implantable defibrillator
  - Do you clear him to participate?

Clearance

- Clearance without limitations
- Clearance with limitations
- Not cleared

Knapp vs Northwestern

- “A team MD and institution have a legal right to restrict an athlete based on individual decisions…based on competent medical evidence”

Alternative ways to do PPE

- How do we reconcile the lack of continuity in the health record of student athletes at PPE's
  - EMR
- PrivIT
  - Electronic health questionnaire for PPE
  - Continuity, Privacy (HIPAA)
  - National Council of Youth Sports

Thank You!