The Preparticipation Athletic Evaluation
History of PPE

• Initially suggested by Teddy Roosevelt in 1905 due to sudden deaths seen in football

• Created about 30 years ago, primarily to look at congenital heart disease

• American Heard Association first developed screening guidelines in 2007

• Most recent guidelines form the 2010 PPE 4th edition monograph
Why does it?

- دانش آموزان ابتدایی 1292000
- دانش آموزان راهنمایی 2192000
- دانش آموزان دبیرستان 3252000
- دانشجویان 44000000

به نقل از آقای نوری فناوری اطلاعات و ایران برای اطلاعات و ایرانیت آموزش و پرورش
Why does it?

1) Death rate

- Approximately 1:200,000/year in high school athletes
- Males at greater risk than females – 9:1 ratio
- 95% of these sudden deaths are due to structural cardiac problems
• Congenital cardiac anomalies account for most sudden deaths in these patients
  ✓ hypertrophic cardiomyopathy
  ✓ coronary artery anomalies
  ✓ Myocarditis
  ✓ rupture of the aorta
  ✓ arrhythmogenic right ventricular dysplasias
Why does it?

2) Musculoskeletal disability

• once in every 1,000 hours of walking, and fewer than 4 for every 1,000 hours of running

• The overall injury rate was 39.6% (number of recruits injured/population at risk)
Why does it?

• Goal of preparticipation examinations (PPE) is NOT to discourage or prevent participation in competitive sports

• Goal of sports physicals is to maintain the health and safety of the athlete/patient
Why does it?

1) Primary objectives of the PPE

- Screen for conditions that may be life-threatening or disabling
- Identify correctable problems that might impair athlete’s ability to perform
- Screen for conditions that may predispose to injury or illness (e.g., recurrent ankle/shoulder injury, obesity)
- Meet legal and insurance requirements

2) Secondary Objectives (taking advantage of a healthcare visit)

- Determine general health
- Serve as an entry point to the healthcare system for adolescents
- Provide opportunity to initiate discussion of health-related
Who does it?

- Preferably the primary MD/DO with review of previous medical records
When should you do it?

- Ideally at least 6 weeks prior to preseason practice
- Allows for strengthening/conditioning and identification of injury patterns and rehabilitation
- Periodicity is determined by state law
- AHA recommends q2 years with annual updates to include history, height, weight, BP and a problem focused exam
1) Individual exam/office setting
   - Allows for privacy and continuity of care
   - Physician should be familiar with PPE standards

• Often costly for patients/families
Where should you do it?

2) Station approach

- Can be done for the entire athletic team at once
- Time efficient
- Often utilizes primary care providers and specialists (orthopedics, cardiologists, etc)
- Inexpensive (often done by volunteer physicians)
How should you do it?

1) History

2) Physical exam
AHA Screening Recommendations 2007

- AHA 12 items for screening
  - 8 items for personal/family history
  - 4 items for physical examination

- Positive response/finding in 1 or more trigger cardiology referral
AHA Screening Recommendations

Personal Hx
- Exertional CP/discomfort
- Syncope/near syncope
- Excessive exertional/unexplained dyspnea or fatigue
- Heart murmur
- Elevated BP
AHA Screening Recommendations

• Family History
  – Premature sudden death (<50 yrs age)
  – Disability from CV disease (<50 yrs age)
  – HCM, dilated cardiomyopathy, long QT, Marfan, clinically significant arrhythmias
AHA Screening Recommendations

- Physical Exam
  - Heart murmur
  - Femoral vs radial pulses – exclude aortic coarctation
  - Physical stigmata of Marfan syndrome
  - Brachial artery BP (sitting)
PPE: The History

- History forms are very helpful:
  - athletes and parents should jointly complete a history form prior to the PPE
  - Review form: 75% of issues detected through Hx alone
- Web based history forms may be more convenient for the athletes (ePPE)
- Preparticipation form recommended by the AAFP, AAP, AMSSM, and AOSSM is available in the Preparticipation Physical Evaluation, 4th ed. 2010.
How should you do it?

History Wins!
- 88% of medical conditions identified by history alone
- 67% of musculoskeletal conditions identified
**Preparticipation Physical Evaluation**

**History Form**

<table>
<thead>
<tr>
<th>Patient's Name</th>
<th>Date of Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>01/01/2000</td>
</tr>
</tbody>
</table>

**The Athlete with Special Needs**

**Supplemental History Form**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes/No</th>
<th>Date of Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>Yes</td>
<td>01/01/1990</td>
</tr>
</tbody>
</table>

**Family History**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Father</th>
<th>Mother</th>
<th>Siblings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Medications**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>1 tablet/day</td>
</tr>
<tr>
<td>Metamucil</td>
<td>1 capsule/day</td>
</tr>
</tbody>
</table>

**Allergies**

<table>
<thead>
<tr>
<th>Allergen</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut</td>
<td>Yes</td>
</tr>
<tr>
<td>Penicillin</td>
<td>No</td>
</tr>
</tbody>
</table>

**Past Medical History**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes/No</th>
<th>Date of Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>Yes</td>
<td>01/02/1991</td>
</tr>
</tbody>
</table>

**Surgical History**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Yes/No</th>
<th>Date of Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendectomy</td>
<td>Yes</td>
<td>01/03/1992</td>
</tr>
</tbody>
</table>

**Current Medications**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin</td>
<td>2 tablets/day</td>
</tr>
</tbody>
</table>

**Medical Problems**

1. **Chest pain**
2. **Intolerance to gluten**
3. **Bronchitis**

**Emergency Contact**

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Smith</td>
<td>Father</td>
</tr>
</tbody>
</table>

**Signature**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Doe</td>
<td>01/04/2023</td>
</tr>
</tbody>
</table>
New Jersey Department of Education
ANNUAL ATHLETIC PRE-PARTICIPATION PHYSICAL EXAMINATION FORM

Part A: HEALTH HISTORY QUESTIONNAIRE-Completed by the parent and student and reviewed by examining provider
Part B: PHYSICAL EVALUATION FORM-Completed by examining licensed provider with MD, DO, APN or PA

Part A: HEALTH HISTORY QUESTIONNAIRE

Today's Date: ___________________________  Date of Last Sports Physical: ___________________________

Student’s Name: ___________________________  Sex: M  F  (circle one)  Age: ______  Grade: ______

Date of Birth: ______/____/____  School: ___________________________  District: ___________________________

Sport(s): __________________________________  Home Phone: (_____) _____________

Provider Name (Medical Home): ___________________________  Phone: ___________________________

EMERGENCY CONTACT INFORMATION

Name of parent/guardian: ___________________________  Relationship to student: ___________________________

Phone (work): ___________________________  Phone (home): ___________________________  Phone (cell): ___________________________

Additional emergency contact: ___________________________  Relationship to student: ___________________________

Phone (work): ___________________________  Phone (home): ___________________________  Phone (cell): ___________________________

Directions: Please answer the following questions about the student’s medical history by circling the correct response. Explain all “yes” responses on the lines below the questions. Please respond to all questions.

1. Have you ever had, or do you currently have:

   a. A restriction from sports for a health-related problem? Y / N / Don’t Know
   b. An injury or illness since your last exam? Y / N / Don’t Know
   c. A chronic or ongoing illness (such as diabetes or asthma)? Y / N / Don’t Know
   d. Any prescribed or over the counter medications that you take on a regular basis? Y / N / Don’t Know
   e. Surgery, hospitalization or any emergency room visit(s)? Y / N / Don’t Know
   f. Any allergies to medications? Y / N / Don’t Know
   g. Any allergies to bee stings, pollens, latex or foods?
      (1.) If yes, check type of reaction:
      © Rash  © Hives © Breathing or other anaphylactic reaction
   h. Any anemia, blood disorders, sickle cell disease, trait, bleeding tendencies or clotting disorders? Y / N / Don’t Know
   i. A blood relative who died before age 50? Y / N / Don’t Know

   Explain all “yes” answers here (include relevant dates):

   ____________________________________________________
   ____________________________________________________
   ____________________________________________________

List all medications here (include relevant dates):

<table>
<thead>
<tr>
<th>Medication Name</th>
<th>Dosage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Part A Page 1 of 3

NJDDE/APPED Revised 3/10

Use of this form is required by N.J.A.C. 6A:16-Programs to Support Student Development
The Cardiovascular History

• Screening for conditions that predispose to Sudden Cardiac Death
• Most common cause of SCD in US athletes <30 is HCM
The Neurologic History

- At each PPE, athletes should be asked about previous neurologic problems:
  - Prior concussions
  - Previous neck injuries
  - Previous history of stingers/burners
  - Seizure history
  - Current neurologic symptoms (numbness, tingling, weakness, etc.)
  - Current learning/emotional problems
Neurologic History

• Consider baseline neurocognitive studies in athletes who have a history of:
  – Multiple concussions
  – School performance problems
The Musculoskeletal History

- Complete history of musculoskeletal injuries is important
  - Operations
  - time lost from play
  - Prior rehab
- Ongoing musculoskeletal complaints
  - require a more complete history
  - Deserve detailed evaluation
Screening for the Female Athlete Triad

- All female athletes should be screened for the Female Athlete Triad
  - Age of onset of menarche, frequency of menstrual periods, any missed periods, etc.
  - History of bony injury, especially stress fractures
  - Risk factors for osteopenia
  - History questions aimed at identifying distorted body image, pathologic eating behaviors, etc.
Other Important Historical Issues

- Respiratory: h/o asthma or allergic problems
- Infectious: h/o HBV, HCV, HIV, EBV
- Derm: Herpes gladiatorum, current rashes
- Hematologic: Sickle Cell, bleeding disorders
- Endo: diabetes
- Other: prior heat-related illness, sickle trait
The Physical

- Each PPE should include vitals, examination of HEENT, CV, RESP, ABD, GU (males only), MSK, DERM, and NEURO systems.
- Forms, such as the one published in the *Preparticipation Physical Evaluation, 4th ed.*, 2010, may be helpful.
The Physical

- **General:** Attention for excessive height, Marfanoid appearance
- **Vitals:** especially important to check BP. Also Ht, Wt, BMI.
- **HEENT:** Visual acuity, pupils, conjunctivae, lenses, ear exam, oropharyngeal exam
- **RESP:** resp effort, wheezes, crackles, etc.
- **ABD:** masses, splenomegaly
The Physical

- **CV**: Auscultation, Femoral/Radial pulses, BP, provocative maneuvers for HCM
  - Systolic Murmur that increases in volume/intensity with Valsalva or with going from supine → seated
  - Murmur of HCM will diminish with squatting or other maneuvers to increase venous return to the heart
The Physical

• The Musculoskeletal Exam:
  – Asymptomatic pts: General Screening Exam only
  – Pts with specific complaints: Gen. Screening Exam PLUS a joint specific exam
  – Sport Specific Exam: consider doing a more complete joint exam for commonly injured joints (Shoulders in swimmers and throwers, Knees in athletes who do cutting maneuvers, etc.)
The End

• Questions?