Goals of the pre-participation sports evaluation

1. Screen for conditions that may be life-threatening or disabling
2. Screen for conditions that may predispose to injury or illness
3. Take advantage of a potentially rare health care opportunity for adolescents

Requirements

- California law requires an annual pre-participation physical exam.
- Must include family health history
- Specific details/requirements set by school district

Sample PPE forms

Elements of the Pre-participation Evaluation

1. General Screening
   - AHA 14-element screening
   - Family history of drowning or near-drowning, single car accidents, SIDS (these can be associated with inherited channelopathies)
   - Ongoing medical conditions
   - Use of prescription or non-prescription drugs or supplements

2. When clearing an athlete, consider the nature of the planned activity
   - Contact
   - Dynamic/Strenuous
   - Static

3. Assess history or risk of specific conditions relevant to sports participation:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac history</td>
<td>See AHA 14-element screening below. &gt; 1 positive response/finding on 12-item screen may warrant referral for CV evaluation. Cardiac abnormalities may warrant exclusion from sports. (See Bethesda Conference Recommendations for details)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Stage 2: (BP &gt; 99th %ile + 5 mmHg) restricted from power lifting, gymnastics (high static sports) until evaluation by nephrology</td>
</tr>
<tr>
<td>Problems with visual acuity</td>
<td>AAP: Eye protection recommended for all sports with risk of eye injury. High risk – sports that use a ball, puck, bat, racquet</td>
</tr>
<tr>
<td>Condition</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Eye protection</td>
<td>Should be mandatory:</td>
</tr>
<tr>
<td></td>
<td>• If best corrected vision in 1 eye is worse than 20/40 (= functionally one-eyed)</td>
</tr>
<tr>
<td></td>
<td>• Following eye surgery per ophthalmologist</td>
</tr>
<tr>
<td>Asthma</td>
<td>Personal history, family history, h/o cough with exercise or improvement with Albuterol</td>
</tr>
<tr>
<td>Allergies, anaphylaxis</td>
<td>Carry Epi-pen, as needed</td>
</tr>
<tr>
<td>Recent mononucleosis</td>
<td>Splenic rupture usually occurs within 3 weeks of onset of symptoms</td>
</tr>
<tr>
<td>Absence of non-functional paired organ (e.g. eye, kidney, testicle)</td>
<td>May warrant modification of activity or extra precaution</td>
</tr>
<tr>
<td>Orthopedic concerns</td>
<td>History of significant or recurrent injury</td>
</tr>
<tr>
<td></td>
<td>Contour, ROM, stability and symmetry</td>
</tr>
<tr>
<td></td>
<td><a href="#">2-Minute Musculoskeletal Exam</a></td>
</tr>
<tr>
<td>Rashes</td>
<td>If contagious - risk of spread during contact sports</td>
</tr>
<tr>
<td>History of concussion</td>
<td>See below</td>
</tr>
<tr>
<td>Female Athlete Triad</td>
<td>• Low energy availability (disordered eating)</td>
</tr>
<tr>
<td></td>
<td>• Menstrual dysfunction (amenorrhea)</td>
</tr>
<tr>
<td></td>
<td>• Low bone mineral density for chronologic age (osteoporosis)</td>
</tr>
<tr>
<td>Seizures</td>
<td>Not a contraindication to sports participation unless poorly controlled. May need to avoid swimming archery, riflery, weight lifting/training, sports involving heights</td>
</tr>
<tr>
<td>Heat illness</td>
<td>History of heat related illness warrants extra precautions (acclimatization, hydration, avoidance of stimulants, antihistamines (increase risk)</td>
</tr>
<tr>
<td>History of:</td>
<td>May warrant additional protective gear/precautions.</td>
</tr>
<tr>
<td>• Dental problems</td>
<td></td>
</tr>
<tr>
<td>• Bleeding disorders</td>
<td></td>
</tr>
</tbody>
</table>
Cardiac evaluation

American Heart Association 14-Element Screening (Maron BJ Circulation Sept 2014)

Medical history (Parental verification recommended for high school and middle school athletes)

Personal History
1. Exertional chest pain/discomfort
2. Exertional syncope or near-syncope
3. Excessive exertional and unexplained fatigue/fatigue associated with exercise
4. Prior recognition of a heart murmur
5. Elevated systemic blood pressure
6. Prior restriction from participation in sports
7. Prior testing for the heart ordered by a physician

Family history
8. Premature death-sudden and unexpected before age 50 yr due to heart disease, in one or more relatives
9. Disability from heart disease in a close relative < 50 yo
10. Specific knowledge of certain cardiac conditions in fm members: hypertrophic or dilated cardiomyopathy, long-QT syndrome or other ion channelopathies, Marfan syndrome, or clinically important arrhythmias

Physical exam

11. Heart Murmur-exam supine and standing or with valsalva, specifically to identify murmurs of dynamic L ventricular outflow tract obstruction
12. Femoral pulses to exclude aortic stenosis
13. Physical stigmata of Marfan syndrome
14. Brachial artery blood pressure (sitting, preferrably taken in both arms)

○ AHA does NOT currently recommend routine 12-lead ECG (Potential for Rapid Change in recommendations)
2-minute musculoskeletal screening exam

**Concussions**

Children or adolescents who sustain a concussion should always be evaluated by a physician and receive medical clearance before returning to play.

- After a concussion, all athletes should be restricted from physical activity until they are asymptomatic at rest and with exertion. Physical and cognitive exertion, such as homework, playing video games, using a computer or watching TV may worsen symptoms.
- Symptoms of a concussion usually resolve in 7 to 10 days, but some athletes may take weeks or months to fully recover.
- Neuropsychological testing can provide objective data to athletes and their families, but testing is just one step in the complete management of a sport-related concussion.
- There is no evidence proving the safety or efficacy of any medication in the treatment of a concussion.
- Retirement from contact sports should be considered for an athlete who has sustained multiple concussions, or who has suffered post-concussive symptoms for more than three months.

*Pediatrics* 2010; 126:597-615

**Exercise-induced bronchospasm (EIB)**

2007 National Asthma Education and Prevention Program (NAEPP) Guidelines
- Exercise induced bronchospasm (EIB) should not limit an athlete
- Inhaled beta2-agonists before exercise prevents EIB in 80% of patients
- Short-acting Beta2-agonists (SABA) are helpful for 2-3hrs
- Leukotriene Receptor Agonists (LTRAs) can attenuate EIB treatment in up tp 50% of patients*
- Long-acting B-agonists (LABA) can be protective up to 12 hours,
- Frequent or chronic use of LABA as pretreatment for EIB is discouraged, as it may disguise poorly controlled persistent asthma.
- Long-term control therapy, if appropriate

**References**


Endorsed by:
- American Academy of Pediatrics
- American Academy of Family Physicians
- American College of Sports Medicine
- American Medical Society for Sports Medicine
- American Orthopedic Society for Sports Medicine
- American Osteopathic Academy of Sports Medicine

**AHA screening recommendations**: updated in 2014 Maron BJ *Circulation* Sept 2014

**36th Bethesda Conference Eligibility Recommendations for Competitive Athletes with Cardiovascular Abnormalities**, *JACC* 45(8), 2005


Carrie Loutit MD, Preparticipation sports evaluation. 2011