

The Preparticipation Physical Exam and Special Groups

The Female Athlete, The Asthmatic Athlete, The Diabetic Athlete & The Disabled Athlete

The PPE-Primary Goals

- Detect conditions that may predispose to injury/illness.
- Detect conditions that may be life-threatening or disabling.
- Meet legal and insurance requirements.

PPE – Secondary Goals

- Determine general health.
- Counsel on health related issues.
- Assess fitness level for certain sports.

THE FEMALE ATHLETE

Female vs. Male Athletes

- Physiology
 - Increase body fat.
 - Decreased muscle strength.
 - Lower maximal level of aerobic capacity.
 - Endurance is 6-15% lower.
 - Menstrual cycles.
- Anatomy
 - Wider pelvis.
 - Increased Q angle.
 - VMO hypoplasia.
 - Femoral anteversion.
 - Narrow femoral notch.
 - Breast development.

The Female Athlete Triad

The PPE & The Female Athlete

- Use as a screening tool to address more serious issues.

- Explore body image issues.
- Screen for unsafe practices, i.e. drugs/alcohol use, unsafe sexual practices, laxative abuse/purging.

The Female Athlete: Medical History

- Ask about abnormal weight gain/loss and if athlete is comfortable with current weight.
- Ask about dietary practices.
- Ask about prior stress fractures.
- Obtain a menstrual history including:
 - Age of menarche.
 - Date of last menses.
 - How many menstrual cycles in last year?
 - If using contraceptives, why?

The Female Athlete: Physical Exam

- Measure height, weight & BMI.
- Signs of Anorexia
 - Oral ulcers
 - Decreased tooth enamel
 - Hypotension
 - Bradycardia
 - Hypothermia
- Skin Changes
 - Hirsutism
 - Alopecia
 - Dry, coarse skin
- Musculoskeletal
 - Malalignment
 - Laxity/Instability

The Asthmatic Athlete

ASTHMA

- Affects approximately 10 million persons in the USA.
- Chronic lung disorder with three characteristic features:

- Airway obstruction
- Airway inflammation
- Airway hyperresponsiveness

Exercised Induced Asthma

- Typically occurs 5-10 minutes post exercise.
- Attacks resolve spontaneously.
- Attacks usually NOT life-threatening.
- Occurs in 40% of people with allergic rhinitis; 90% of people with asthma.
- 20% prevalence in high school athletes.

PPE and Asthma

- Physical exam usually normal
 - Look for signs of chronic allergies
- History is vital
- USOC screening:
 - Prior history asthma
 - Bronchodilator use
 - Formal request to USOC
 - History cough, wheeze or chest tightness post exercise
- Laboratory Tests
 - Spirometry
 - FEV1 decreased
 - FEV1/FVC decreased
 - Peak Flow
 - Challenge Testing
 - Free running
 - Treadmill running
 - Methacholine

PPE and Asthma

- Identify those athletes with asthma or suspected exercise induced asthma.
- Refer for further testing if warranted.
- Review medications & proper use.
- Have athlete bring inhalers to ALL practices and games.
- Educate coaches, trainers and other staff as to signs and symptoms of an asthma attack and have an action plan in place.

The Athlete with Diabetes

Diabetes

- Chronic condition characterized by relative or absolute insulin deficiency.
- Incidence is 1-2% in general population.
- Type 1 vs. Type 2
- Regular exercise is key to glycemic control but insulin management in athletes requires special attention.

Diabetes and Exercise

- Potential Risks include:
 - Hypoglycemia during or immediately after exercise.
 - Delayed-onset hypoglycemia (>30 h) due to increased insulin sensitivity & glycogen depletion.
 - Hyperglycemia & ketosis may occur if blood glucose levels >250 mg/dl prior to exercise.

Insulin and Exercise

- Should be administered within 1 hour of activity.
- Should not be given in muscle that will be exercised.
- If glucose <120 mg/dl prior to activity give 30g CHO & 14g protein.
- If glucose 120-180 mg/dl prior to activity give 15g CHO & 7-8g protein.
- If glucose 180-240 mg/dl prior to activity give 15g CHO.

Diabetes: History

- History
 - Medication review
 - Prior complications
 - Hypo/hyperglycemic events
 - Retinopathy
 - Neuropathy
 - Nephropathy
 - Family history & other risk factors

Diabetes: Physical Exam

- Physical Exam

- Fundoscopic.
- Cardiac exam including blood pressure & peripheral pulses.
- Neurological exam including vibratory sensation and monofilament exam.
- Skin condition & foot exam.
- Hemoglobin A1C & urine dipstick for protein.

The PPE in Diabetes

- EDUCATION
 - Discuss & select proper athletic activities.
 - Encourage & instruct athlete on proper glucose monitoring.
 - Discuss nutrition & dietary goals.
 - Discuss medications & insulin regimen.
 - Discuss warning signs of hypoglycemia with athlete, parents, team members, coaching staff and ATC and have a plan of action in place.

The Disabled Athlete

A person with a “disability” is any individual who has a physical or mental impairment that substantially limits one or more of his or her major life activities.

▪ **American with Disabilities Act, 1990**

World Health Organization

- **Impairment:**
Any loss or abnormality of psychological, physiologic or anatomic structure or function.
- **Disability:**
Any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being.

The Disabled Athlete

- More than 3 million athletes with physical & mental disabilities involved in organized programs annually.

- Approximately 8% of Americans, age 16-64, have some type of mobility limitation.

Types of Disabilities

- Cerebral Palsy
- Blindness
- Deafness
- Paralysis
- Amputation
- Mental Retardation
- Locomotor dysfunction
 - Muscular dystrophy
 - Multiple sclerosis

PPE in Disabled Athletes

- Educate Yourself First !!
- Should be performed by PCP
- Team concept
 - PCP, PMR, PT, Orthotist, ATC
- Consider event & special equipment
- Review other medical conditions

Physical Exam

- EENT
 - Vision
 - Hearing
 - Tracheostomy
- Pulmonary
 - Auscultation
 - Excursion
 - PFT's for some
- Cardiovascular
 - Congenital heart problems
 - Careful auscultation
- GI & GU
 - Bowel & bladder control & equipment needed by athlete
 - Event strategies

Physical Exam

- Neurological
 - Spinal cord level
 - Degree of involvement
 - Increased motor tone
- Musculoskeletal
 - Active/passive ROM
 - Structural deformities
 - Atlanto-axial instability
 - Strength & balance of muscle groups
 - Sitting posture in wheelchair/ pressure ulcers

Final Points

- Educate yourself.
- Educate others.
- Adapt the PPE to the needs of the athlete.
- “Where there’s a will, there is a way”.

Thank You !