



dayton  
children's

# preparticipation physical examination

orthopedics symposium

october 13, 2023

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# Financial disclosures



# other disclosures

I did these slides while sipping wine on a patio in France with this view  
(not my picture)



# history of sports medicine

**2008**

I started fellowship

**Mid-1990s**

PCSM becomes ACGME-accredited fellowship.  
Year of first fellowship program varies, depending  
on primary specialty (Peds, FM, IM, EM, PMR)

**2023**

Today

# history of sports medicine

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**I AM OLD**

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# Brief FYI

Top 3 causes of sudden death in sports

1. Heart

2. Head (and neck)

3. Heat

# History of sports physicals

- 490 B.C.
  - **First recorded sports-related death.** Philippides dies after running 25 miles from Marathon to Athens to report news of the Greek victory over the Persians at the battle of Marathon
- 1991
  - American Medical Society for Sports Medicine founded
- 1998-1999
  - 16% of states (8 states) had no standardized PPE
  - 24% of states (12 states) had a standardized PPE which omitted cardiac questions
  - Only 17% of high school athletes nationally completed PPE forms with questions about exercise-induced cardiac symptoms and family history of cardiac problems
- 2010
  - 6 medical societies endorse a single PPE form in an effort to standardize screening
- 2014
  - 23 state high school athletic associations used a state-mandated PPE form
  - Only 8 used the form recommended by AMSSM et al.

# today

- All states and DC require PPE except Vermont
- Standardized PPE form, 5th monograph, published 2019
  - Combined approval from AAFP, AAP, ACSM, AMSSM, AOSSM, AOASM, NATA, NFHS
  - Not all states use this form



# state-to-state variation

Out of the states using the form, there is still no standardization for the following:

- **Frequency** – annually? Annually plus 1 sports season? Every 2 years?
- **Who performs the eval** – physicians? Mid-levels? Chiropractors?
- **Ages for eval** – start in middle school? High school?
- **Levels of competition** – school sports? Club sports? Rec leagues?
- **What is a sport?** – funding and classification issues around things like marching band, drill team, etc → downstream results

# PPE vs WCC

- PPE

- Detailed injury history
- Detailed personal and family cardiac history
- Detailed questions about weight and dietary practices
- Thorough eval of medical conditions which affect sports

- WCC

- Growth and development
- Routine immunizations
- Anticipatory guidance
- Mental health
- Management of *all* medical conditions, regardless of effect on sports performance (example – the chronic abdominal pain patient)

**Take-home: You can *combine* the visit types, but one can NOT replace the other**

# purpose

- Exclude those with medical conditions which are contradictory to sports participation (temporary or permanent)
- Include those who were previously disqualified
- Ensure optimal management of medical conditions which affect sports

# Ideal situation

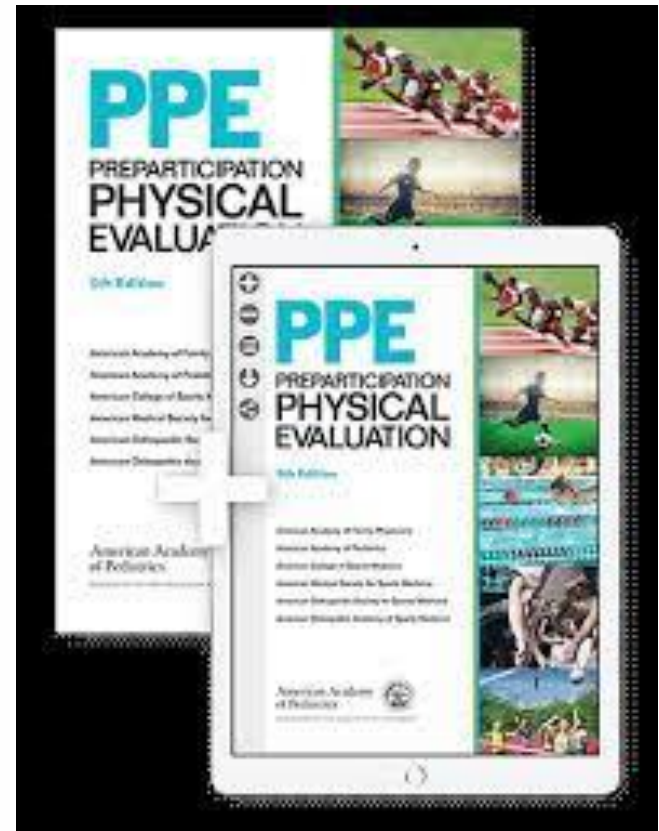
- Frequency: Every 1-2 years (depends on age)
- Provider:
  - 1<sup>st</sup> choice: PCP
  - Other acceptable: team physician, sports med physician (not team physician)
- Setting
  - 1<sup>st</sup> choice: physician's office
  - Other acceptable: stations exam at the school, with the school's sports medicine team (athletic trainers, PCSM, ortho)

Other models, while not encouraged, are still better than no PPE

# “The form”

## General questions

- Name, DOB, DOV, sport(s)
- Covid-19 infection / vaccine
- Medical / surgical history
- Medications and supplements
- Allergies
- PHQ-4
- Any specific questions the athlete has
- Prior history of sports restrictions
- Current medical conditions / illness



# Next

## AHA cardiac-screening questionnaire

- 7 questions - Personal cardiac (1 “seizure” question)
- 3 questions - Family cardiac

## Other

- 2 questions – bone and joint
- 13 questions – medical
  - 9 which cover respiratory, missing organ, hernia, skin rashes, concussion, paresthesias after injury, heat illness, sickle cell, eyesight
  - 4 which cover weight / disordered eating
- 4 questions – menstrual (more weight / disordered eating)

# Physical Exam

- Vitals (ht, wt, BP, vision)
- Medical
  - Appearance - note any Marfan's stigmata
  - EENT – note any pupil asymmetry or hearing deficits
  - Lymph nodes
  - Heart – auscultate for murmurs while standing, supine, and Valsalva
  - Lungs
  - Abdomen
  - Skin – note infectious rashes
  - Neurological
- MSK
  - ROM / strength of neck, back, UE joints, LE joints
  - Functional (double-leg squat, single-leg squat, box drop or step drop)

# clearance options

- Medically eligible for all sports without restrictions
- Medically eligible for all sports without restrictions BUT recommend further evaluation and treatment of \_\_\_\_\_
  - Example = untreated myopia, ankle instability, mild HTN
- Medically eligible for certain sports
  - Example = seizure disorder, concerning concussion history, pre-existing cardiac conditions
- NOT medically eligible pending further eval
  - Example = ACL tear, heart murmur, current infectious disease
- Not medically eligible for any sports
  - Example = active eating disorder

Trivia question: which sports consider untreated myopia as a disqualifier for participation?





# Special considerations

- Parasports, special Olympics (additional forms)
  - Atlanto-axial instability in Trisomy 21, dwarfism
  - Prosthetic limbs
  - Spinal cord lesions and associated risks during exercise
- Chronic medical conditions which permanently limit some sports
  - Known cardiac conditions and Bethesda criteria
  - Seizure disorder (controlled vs uncontrolled)
- Chronic medical conditions which require sideline EAPs
  - Asthma, diabetes, seizures, anaphylaxis, sickle trait

# Current controversies

- Cardiac screening all athletes
- Sickle cell screening all athletes
- Cardiac screening after covid-19 illness / vaccine
- Recurrent concussions and long-term effects
- Transgender athletes
  - ACSM was going to publish a statement in spring 2022.
  - Still waiting.....
- Red-shirting (holding an athlete back a grade to give them a size advantage)
- Structuring teams by height / weight %ile for age rather than DOB or grade level

# References

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# Questions?

