



Family Medicine and Community Health

PPE 5: What's New, What's Not

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Disclosure Information

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Family Medicine and Community Health

UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

I have no financial relationships to disclose

- & -

I will not discuss off label use in my presentation

PPE

PREPARTICIPATION PHYSICAL EVALUATION

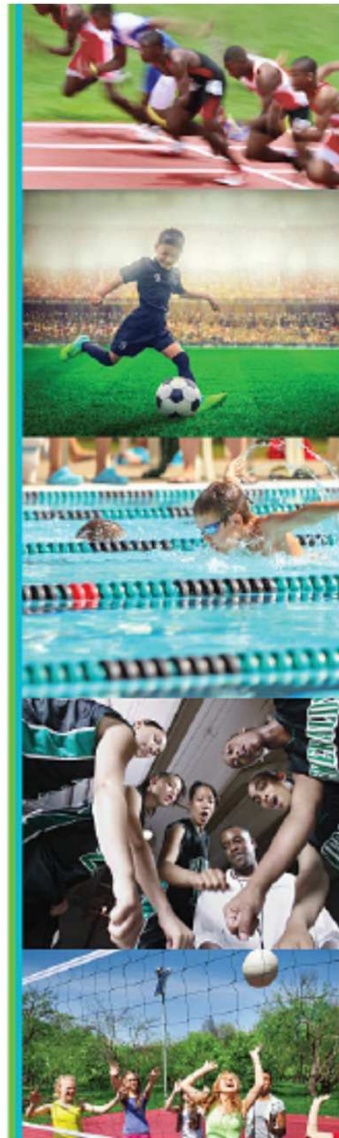
5th Edition

American Academy of Family Physicians
American Academy of Pediatrics
American College of Sports Medicine
American Medical Society for Sports Medicine
American Orthopaedic Society for Sports Medicine
American Osteopathic Academy of Sports Medicine

American Academy
of Pediatrics



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PPE 5

Evidence Based Exam?

“Expert opinion unless otherwise specified”

CHAPTER 10

Research

The evidence for the preparticipation physical evaluation (PPE) remains limited, and substantial work is needed to study the validity, content, and process. In an era of measuring quality and cost, we must consider the scientific basis and economic impact of our recommendations. The purpose of this chapter is to emphasize areas for which further investigation is needed and thoughtfully weigh alternatives to the present process.

■ WHETHER TO PERFORM A PPE AT ALL

Important questions remain as to whether PPE should be required for sports participation, and if required, should it be separated from or integrated into the standard health super-

New for PPE5

- Health Care Home
- Mental Health
- Transgender Athletes
- Expanded “Athletes with a Disability”

H: Mental Health

■ HISTORY FORM QUESTIONS

Patient Health Questionnaire 4¹⁻³

CHAPTER 8

**Athletes With
a Disability**

CHAPTER 9

**Transgender
Athletes**

PPE5 Emphasis...

- Incorporate the PPE into routine health supervision care visits for all children
 - Start at age 6
 - Every 2-3 years
- Integrating the PPE into the health care home may be more easily achieved
 - Address PPE every 2-3 years, rather than annually
 - Allows a different focus each year for evolving child risk

PPE Best Practice...

- The writing group opinion
 - Student-athletes should schedule in health care home with PCP
 - Integrated into routine health supervision exams
 - Access to medical records
 - Adjust treatment of chronic medical conditions
 - Promote physical activity as a health strategy

The PPE history...

- Not developed as an evidence-based process
- Lack of outcomes data to demonstrate effectiveness
 - Even after several decades of use among athletes
- Widely performed
 - Every state requires PPE for HS athletes
- Implies public health message
 - All children & adolescents should be active

■ PREPARTICIPATION PHYSICAL EVALUATION

HISTORY FORM

Note: Complete and sign this form (with your parents if younger than 18) before your appointment.

Name: _____ Date of birth: _____

Date of examination: _____ Sport(s): _____

Sex assigned at birth (F, M, or intersex): _____ How do you identify your gender? (F, M, or other): _____

Past and current medical conditions:

Have you ever had surgery? If yes, list all past surgeries: _____

Medicines and supplements: List all current prescriptions, over-the-counter medicines, and supplements (herbal and nutritional): _____

Do you have any allergies? If yes, please list all your allergies (ie, medicines, pollens, food, stinging insects): _____

Patient Health Questionnaire Version 4 (PHQ-4)

Over the past 2 weeks, how often have you been bothered by any of the following problems? (Circle response.)

	Not at all	Several days	Over half the days	Nearly every day
Feeling nervous, anxious, or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3

(If sum of responses ≥ 3 , evaluate.)

GENERAL QUESTIONS	Yes	No
Begin the "Yes" answers at the end of the form. Circle questions if you don't know the answer.		

HEART HEALTH QUESTIONS ABOUT YOU	Yes	No
8. Has a doctor ever requested a test for your heart? (For example, electrocardiogram (ECG) or echocardiogram.)		

The PPE...

- Provides medical background for shared decision-making
 - History
 - Physical exam
 - Case finding studies
- To determine
 - Medical eligibility
 - Potential physical activity limitations

214

■ PREPARTICIPATION PHYSICAL EVALUATION

MEDICAL ELIGIBILITY FORM

Name: _____ Date of birth: _____

☐ Medically eligible for all sports without restriction

☐ Medically eligible for all sports without restriction with recommendations for further evaluation or treatment of _____

☐ Medically eligible for certain sports:

☐ Not medically eligible pending further evaluation

☐ Not medically eligible for any sports

Recommendations: _____

Purpose of PPE...

- Facilitate & encourage safe participation
 - Not to exclude athletes from participation
- Systematic review of >20,000 examinations
 - Identified only 3 athletes excluded
- Most individual PPE studies report
 - 0.3% - 1.3% of athletes denied medical eligibility to participate
 - 3.2% - 13.9% require further evaluation before allowing participation

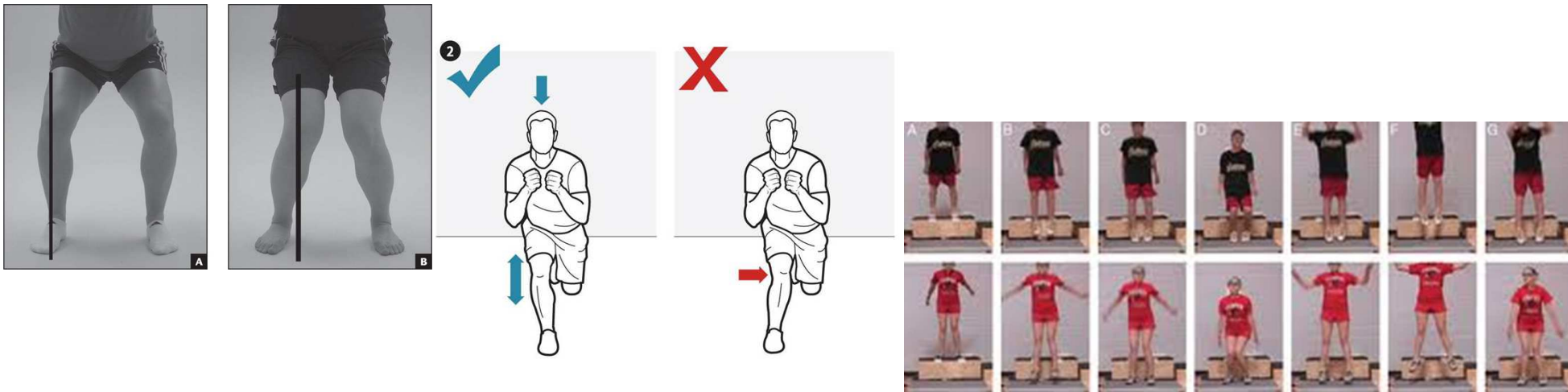
PPE Goals...

- Determine general physical & psychological health
- Evaluate for conditions predisposing to injury or illness
- Evaluate for life-threatening or disabling conditions
- Opportunity for discussion of health & lifestyle issues
- Entry point into a health care home



Conditions that may predispose to injury or illness

- PPE may identify medical or MSK conditions that may predispose an athlete to injury or illness
- No outcomes-based data to support the ability of the PPE to reduce injury or illness



Life-threatening or Disabling Conditions

- Opportunity to investigate potentially life-threatening or disabling medical or MSK conditions
- Personal & family history to search for red flags
- No evidence that screening will reliably identify all clinically silent conditions
 - Cardiac conditions associated with SCD
- No outcomes based evidence

From: **Mass Shootings and the Numbing of America**

JAMA Intern Med. Published online April 01, 2019. doi:10.1001/jamainternmed.2019.0578

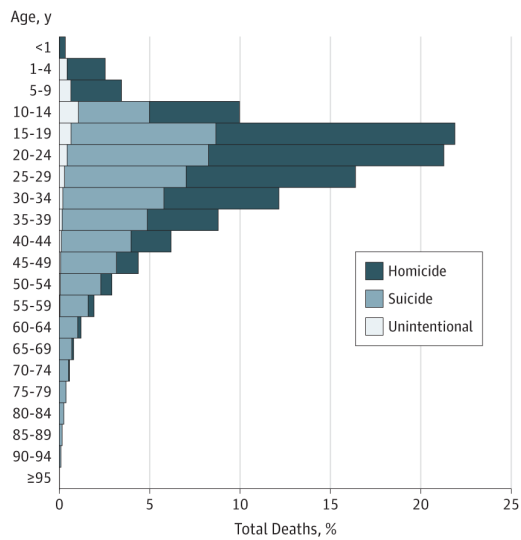


Figure Legend:

Percentage of Total Deaths in the United States Due to Firearms

SCD & PPE Screening

- SCD prevalence/incidence baseline
 - All children
 - All child athletes
- “Detectable” conditions potentially linked to SCD (0.3%)
- Discrepancy between detected conditions & outcomes
- No outcomes data
 - Need large RCT
- Patient centered medical decision making
- AMSSM Statement (CSMR 2016, CJSM 2016, BJSM 2017)

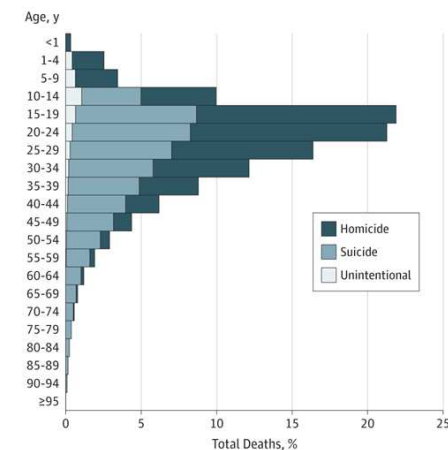
A: Cardiovascular Problems

HISTORY FORM QUESTIONS

Heart Health Questions About You

1. Have you ever passed out or nearly passed out ~~during~~ ^{during or after} exercise?
2. Have you ever had discomfort, pain, tightness, or pressure in your chest during exercise?
3. Does your heart ever race, flutter in your chest, or skip beats (irregular beats) during exercise?
4. Has a doctor ever told you that you have any heart problems?
5. Has a doctor ever requested a test for your heart? For example, electrocardiography (ECG) or echocardiography.
6. Do you get light-headed or feel shorter of breath than expected during exercise?
7. Have you ever had a seizure?

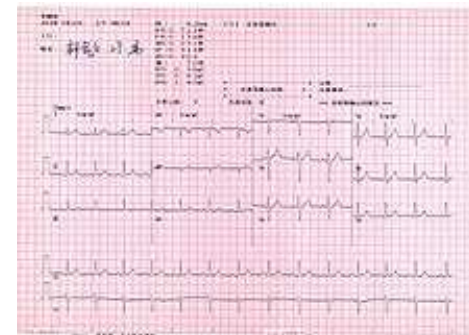
Heart Health Questions About Your Family



JAMA 2019

Life-threatening or Disabling Conditions

- Author group consensus
 - Comprehensive, uniformly applied approach offers best opportunity to meet this objective
 - Natural experiments
 - Different protocols allow comparison
- Controversy related to augmenting Hx & PE with EKG's for general population
 - Selective use for higher risk populations



The PPE most likely to find...

- Acute, recurrent, chronic, or untreated injuries or illnesses
- Inadequate neuromuscular control predisposing to injury
- Inadequately rehabilitated prior injuries
- Congenital or developmental problems

G: Musculoskeletal Concerns

■ HISTORY FORM QUESTIONS

1. Have you ever had a stress fracture or an injury to a bone, muscle, ligament, joint, or tendon that caused you to miss a practice or game?
2. Do you have a bone, muscle, ligament, or joint injury that bothers you?

Qualifications of Examiners...

- MD, DO, or advanced practice providers (NP & PA)
- Essential to have clinical training
 - Knowledge & expertise to conduct the evaluation
 - Address the broad range of problems
 - Determine medical eligibility
- Clinical training for problems encountered during PPE
- Individual state laws vary (NP, PA, DC)
- Seek consultation when appropriate

State regulations determine who can perform PPEs for public schools

- 2017 NHSF survey (W Heinz)
 - All states allow MD/DO
 - All states but 1 allow PA or NP signature
 - 22 states allow DC to sign
 - 1 state requires certification



Timing of Evaluation...

- Health supervision care during birth month
- Well in advance of season
 - Time to evaluate & rehabilitate identified problems
 - 6 weeks prior to season

CHAPTER 3

**Timing, Setting,
and Structure**

Frequency of Evaluation...

- No outcomes-based data to guide the recommendations
- AHA recommends every 2 years for cardiac evaluation
 - Arbitrary recommendation
 - Assumes cardiac changes detectable at 2-year intervals
- Little evidence to support any interval recommendations between 1 & 4 years

Roberts WO, Löllgen H, Matheson GO, et al. ACSM & FIMS joint consensus statement. Clin J Sport Med. 2014.

2017 NFHS Associations Survey (W Heinz)

Required evaluation intervals

- 39 states every 12 to 13 months
 - 4 states 13 month interval for insurance requirements
- 1 state every 18 months
- 7 states every-other-year (interim questionnaire)
- 2 states every 3 years (interim questionnaires)
- 1 state frequency up to individual school districts
- 1 state at entry to HS sports (annual questionnaires)
- 17 states use PPE4 form

PPE Writing Group Consensus

- A comprehensive PPE every 2 to 3 years
 - Grade school, middle school, & high school
 - Integrate into HCH health supervision examinations
- Annual questionnaire
 - Heart, head, heat injury, & mental health issues
 - Problem-focused examination if concerns

■ FREQUENCY OF THE EVALUATION

There are no outcomes-based data to guide the recommendations for frequency of the PPE,

Group-based Examinations

- College settings with formal medical teams
 - Group exams may be preferred when full access to PMH available
- Last resort for HS & younger athletes

Table 3-1. Elements of a Coordinated Medical Evaluation

Stage	Purpose
Waiting area	Sign-in, registration, and review, including careful instruction about completing required forms.
Vitals station (private setting)	Height, weight, body mass index,* blood pressure, heart rate, and visual acuity may be performed by qualified personnel such as medical assistants, student athletic trainers, and medical students.
General medical examination station	History review and physical examination performed by a single physician for a given student-athlete. Clearance status or referral plan determined.
Specialty examination stations	Orthopedic assessment, cardiological evaluation, pulmonary function testing, or other systems-based examination.
Optional stations	Education and immunization areas.

HIPAA, FERPA, & Athlete Privacy

- Age 18 most common legal age of majority
 - Some states age 19 or 21
- State laws vary greatly regarding
 - Emancipation
 - Mature minor determination
 - Consent & privacy for the treatment of certain medical conditions
 - Pregnancy
 - STD
 - Mental health

CHAPTER 4

**Health Privacy,
Ethical Issues,
and Legal
Concerns**

Determining Medical Eligibility

5 categories:

1. All activities without restriction
2. All activities with recommendations for further evaluation or treatment (eg, “Check BP in one month”)
3. Not for any activities until additional evaluation, treatment, or rehabilitation is completed
4. Not in specific activities
5. Not in any sports or physical activities

PPE Medical Eligibility Form

- Check box
 - “Not medically qualified for certain sports”
 - “Not medically qualified for any sports”
- Communicate medical eligibility to school without breaking confidentiality rules

21.4

■ PREPARTICIPATION PHYSICAL EVALUATION

MEDICAL ELIGIBILITY FORM

Name: _____ Date of birth: _____

☐ Medically eligible for all sports without restriction

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☐ Medically eligible for certain sports: _____ ☐ Not medically eligible pending further evaluation

☐ Not medically eligible for any sports

Recommendations: _____

Coding & PPE Outcomes

- ICD-10-CM code for sport PPE is Z02.5
- Coding the PPE (1° or 2° position) allows EMR tracking
- Diligent coding
 - Research into short- & long-term PPE outcomes
- Large systems - “big data” in relatively short time
- Help determine PPE outcomes & address gaps
 - Utility of the current exam
 - Predictive value of the exams
 - Reasonable exam frequency
 - Shape the future PPE

PPE6
PREPARTICIPATION
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Top Research Gaps

- Do PPEs change the mortality rate of target population?
- Are individuals excluded from sports participation necessarily “lives saved” by screening?
- Are abnormalities found at PPEs... for target population
 - different than found at health supervision visits?
 - clinically meaningful?
 - are outcomes modifiable?

Box 10-2. Top Research Gaps

Do PPEs change the mortality rate of the target population? That is, are individuals excluded from sports participation necessarily “lives saved” by screening?
Are abnormalities found at PPEs different than those found at routine health supervision visits, are they clinically meaningful, and are outcomes modifiable for the target population?
Do PPE requirements adversely affect sports participation rates, and are those participation rates disproportionately affecting individuals at a socioeconomic or medical disadvantage?
Do requirements for follow-up testing for abnormalities discovered at the PPE lead to harm, reduce

Top Research Gaps

- Do PPE requirements adversely affect sports participation rates, and are those participation rates disproportionately affecting individuals at a socioeconomic or medical disadvantage?
- Do requirements for follow-up testing for abnormalities discovered at the PPE lead to harm, reduce participation, or disproportionately affect individuals on the basis of race, socioeconomic factors, or availability of medical resources?
- What is the relative importance of each of the questions in the questionnaire in preventing or modifying morbidity or mortality from sports participation?

Top Research Gaps

- Are the adolescents who have their PPE performed somewhere other than their primary medical home otherwise receiving routine comprehensive or preventive care?
- What is the accuracy of a PPE, for detecting known or suspected conditions that may affect risk or participation status, performed in another setting compared with that obtained in the individual's medical home?
- Are there any physical examination or functional movement tests that predict or prevent injury to warrant inclusion in universal screening?

Top Research Gaps

- What findings from screening tests performed as part of the PPE are discovered in truly asymptomatic individuals at no apparent increased risk?
- Does regional capture & storage of electronic PPE findings reduce fragmentation of the medical record, improve follow-up on abnormal results, reduce errors, or reduce legal risk?

Box 10-2. Top Research Gaps

Do PPEs change the mortality rate of the target population? That is, are individuals excluded from sports participation necessarily “lives saved” by screening?
Are abnormalities found at PPEs different than those found at routine health supervision visits, are they clinically meaningful, and are outcomes modifiable for the target population?
Do PPE requirements adversely affect sports participation rates, and are those participation rates disproportionately affecting individuals at a socioeconomic or medical disadvantage?
Do requirements for follow-up testing for abnormalities discovered at the PPE lead to harm, reduce

Sports Medicine Take Home Points

- The PPE is not an evidence based exam
- Incorporating PPE into health prevention visits within the HCH is best practice
- History & PE should drive case finding studies
- Universal ECG screening is not recommended
- Use shared decision making to determine medical eligibility
- There are many knowledge gaps in the PPE
- Coding the PPE may allow big data to inform PPE

Thank you!

