

The Preparticipation Physical Evaluation

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CHAPTER

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A preparticipation physical evaluation (PPE) should take place for competitive athletes of all ages, genders and levels of organized sports competition. The primary objectives of a PPE are to provide a structured environment in which to identify and maintain the health and safety of an athlete and to identify illnesses, injuries or chronic medical conditions that may endanger an individual athlete's health and safety, or the health and safety of those with whom they practice and compete.¹ The PPE can also be used as a guide to help competitive athletes with chronic medical conditions participate to their fullest extent and provide an access point for general healthcare.

A PPE is often a mandatory administrative requirement of an athletic association for organized sports participation. There is a wide variation throughout the world in how these examinations are performed, including questions asked, physical examination components performed, and the level of training of practitioners conducting these examinations.

This chapter will discuss the objectives of the PPE as well as presenting a format for conducting a thorough evaluation. Participation clearance will also be discussed. The reader is referred to Chapters 40–43 for details regarding special populations such as the older and younger athlete, the female athlete and the disabled athlete.

Objectives

Detection of life-threatening or disabling conditions is a daily challenge for healthcare practitioners, and a primary objective of the PPE. Many medical conditions that are life-threatening are difficult to detect and are dependent on the level of experience of the practitioner performing the examination, as well as the

conditions under which the examination is performed. Developing worldwide uniformity in the approach to a comprehensive PPE may help define and improve the ability to achieve this goal in a typically younger and 'healthier' population.^{1–7}

Another primary objective of the PPE is to screen for conditions that may predispose a competitive athlete to injury or illness. There is no literature to support the concept that performance of a PPE predicts who will develop an orthopedic injury, or prevents or reduces the severity of an orthopedic injury in an athlete.⁸ Furthermore, in a case series of 158 athletes with sudden death, the cardiovascular abnormality responsible for death was prospectively identified in only one athlete.⁹ Despite the lack of evidence that the PPE as currently conducted is able to prevent injury or illness, early recognition and treatment of such may minimize time lost from training and competition, an important goal of a competitive athlete.

The PPE can also serve as a vehicle to meet administrative requirements of an athletic association or governing body for eligibility to participate in competitive athletics. In the United States, a PPE is a required condition to participate in organized sports at the high school and collegiate levels. Italy requires compulsory annual medical clearance to compete in organized sports at many levels,⁵ and the PPE requirements are different in Australia.² In addition, there are numerous country-specific legal statutes that govern the rights of athletes to participate, as well as the confidentiality of medical records obtained during performance of a PPE.

For many athletes the PPE serves as an entry point into a healthcare system, especially for adolescents, allowing an opportunity to provide quality and cost-effective healthcare, determine general health, and

initiate discussion on health-related topics. At higher levels of competition it may also provide an opportunity to assess psychological, social and nutritional factors that may affect performance, gather baseline data related to performance such as muscle strength and flexibility, and develop a rehabilitation plan for any pre-existing injury to maximize performance. The PPE also affords the opportunity for the sports medicine team and athletes to meet and develop a working relationship and to initiate counseling and education regarding injury and illness prevention, high-risk behaviors, nutrition and hydration, environmental issues, as well as other aspects of training and performance. Lastly, the PPE can provide a forum for clinicians to advise participants on appropriate sports in which to participate, especially for those athletes with disabilities.¹⁰

Who should undergo the PPE

The PPE was developed for competitive athletes at the high school, college and elite amateur and professional levels. Recently Maron et al.¹¹ have proposed recommendations for preparticipation screening and assessment of cardiovascular disease at the masters athlete level. In the broader context, however, all persons who begin a new activity program should have a 'PPE' tailored to their age, ability and anticipated 'athletic' endeavor. This chapter, however, will focus on the competitive athlete and the reader is referred to Chapter 55 on how to develop an exercise prescription for all 'athletes'.

Who should perform the PPE

The Team Physician Consensus Statement from the American College of Sports Medicine makes recommendations at the collegiate level for which practitioners should perform the PPE.¹² Skills in both musculoskeletal evaluation, as well as cardiac auscultation, may require that more than one clinician perform components of the examination. In the United States, laws vary from state to state as to the educational and experiential skills that a practitioner needs to perform a PPE. International and professional athletes are governed by their athletic organizations as to who is considered qualified to perform a PPE.

When to perform the PPE

Timing of the PPE ideally should occur at least six to eight weeks prior to the beginning of the practise

season to allow time for appropriate rehabilitation of injuries or to evaluate and treat medical conditions.

The required frequency of the PPE varies according to the governing bodies of various athletic organizations and the age of the athlete.^{2,4,6} Generally it is recommended that a comprehensive PPE be performed at entry to middle school, high school and college, any time an athlete transfers to a new school, and at least every two years in younger athletes.¹ An interim comprehensive history that includes the integral components of the American Heart Association screening guidelines,¹³ height, weight, blood pressure, and a problem-focused examination is also recommended. The optimal frequency for elite amateur, professional and masters athletes has yet to be determined.

Where to conduct the PPE

Office-based examinations are more costly but provide privacy and the opportunity for continuity of care, especially if there is a previously established provider-patient relationship. If the provider, however, has not had adequate training in components of the PPE, particularly in musculoskeletal and cardiac examination, the visit may end up focusing more on health maintenance and developmental concerns than on the particular athletic endeavor.

A station-based examination is inexpensive and designed to have a sports focus, but lacks continuity of care and often does not allow an athlete an opportunity to explore developmental issues or risk-taking behaviors. The PPE working group has developed tips to improve the coordinated medical team approach to a PPE, including having the team physician coordinate the process, as well as having clinicians with various expertise available.¹

What to include in the PPE

History

A thorough medical history is crucial to the preparticipation evaluation of competitive athletes. Various questionnaires have been developed for athletes of all ages and levels of competition. Controversy exists as to whether the PPE should cover a broad range of topics, including health promotion and risk behaviors, or be limited to orthopedic and cardiac conditions. The Preparticipation Evaluation Working Group has developed an evaluation form that includes most conditions that could affect the health and safety of athletes.¹ This form also includes follow-up questions on substance use, mental health, and general safety