

THE PRESENT AND FUTURE

COUNCIL PERSPECTIVES

Interassociation Consensus Statement on Cardiovascular Care of College Student-Athletes



Brian Hainline, MD,^a Jonathan A. Drezner, MD,^b Aaron Baggish, MD,^c Kimberly G. Harmon, MD,^b Michael S. Emery, MD,^d Robert J. Myerburg, MD,^e Eduardo Sanchez, MD, MPH,^f Silvana Molossi, MD, PhD,^g John T. Parsons, PhD, ATC,^a Paul D. Thompson, MD^h

ABSTRACT

Cardiovascular evaluation and care of college student-athletes is gaining increasing attention from both the public and medical communities. Emerging strategies include screening of the general athlete population, recommendations of permissible levels of participation by athletes with identified cardiovascular conditions, and preparation for responding to unanticipated cardiac events in athletic venues. The primary focus has been sudden cardiac death and the utility of screening with or without advanced cardiac screening. The National Collegiate Athletic Association convened a multi-disciplinary task force to address cardiovascular concerns in collegiate student-athletes and to develop consensus for an interassociation statement. This document summarizes the task force deliberations and follow-up discussions, and includes available evidence on cardiovascular risk, pre-participation evaluation, and the recognition of and response to cardiac arrest. Future recommendations for cardiac research initiatives, education, and collaboration are also provided. (J Am Coll Cardiol 2016;67:2981-95) © 2016 by the American College of Cardiology Foundation.

The National Collegiate Athletic Association (NCAA) convened a multidisciplinary task force at its headquarters in Indianapolis, Indiana, from September 23 to 24, 2014, to address cardiovascular care in the collegiate student-athlete (see the [Online Appendix](#) for a list of participants). The purpose of the task force was to discuss and evaluate cardiovascular concerns in collegiate student-athletes and to develop an interassociation consensus statement and recommendations for the future. The primary focus was sudden cardiac death and the utility of screening with or without electrocardiogram (not including echocardiogram). Other, more general cardiovascular issues were discussed in breakout groups. This Executive Summary summarizes key

points of the task force and follow-up discussions with task force members during the review process.

EXECUTIVE SUMMARY: INTERASSOCIATION CONSENSUS STATEMENT ON CARDIOVASCULAR CARE OF COLLEGE STUDENT-ATHLETES

THE PRE-PARTICIPATION EVALUATION.

1. The purpose of the pre-participation evaluation is to identify conditions that may put the student-athlete at unreasonable risk of death or catastrophic injury, with the potential to modify and reduce risk through individualized management. In addition, the pre-participation evaluation provides the following opportunities:



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From the ^aSport Science Institute, National Collegiate Athletic Association, Indianapolis, Indiana; ^bDepartment of Family Medicine, University of Washington, Seattle, Washington; ^cCardiovascular Performance Program, Massachusetts General Hospital, Boston, Massachusetts; ^dKrannert Institute of Cardiology, Indiana University School of Medicine, Indianapolis, Indiana; ^eDivision of Cardiology, University of Miami Miller School of Medicine, Miami, Florida; ^fAmerican Heart Association, Dallas, Texas; ^gDivision of Pediatric Cardiology, Department of Pediatrics, Baylor College of Medicine, Houston, Texas; and the ^hDivision of Cardiology, Hartford Hospital, Hartford, Connecticut. Funding for the multidisciplinary task force, held at the National Collegiate Athletic

ABBREVIATIONS AND ACRONYMS

AED = automated external defibrillator

AHA = American Heart Association

CPR = cardiopulmonary resuscitation

EAP = emergency action plan

ECG = electrocardiogram

EMS = emergency medical services

IOM = Institute of Medicine

NCAA = National Collegiate Athletic Association

PPE-4 = Pre-Participation Physical Evaluation Monograph, Fourth Edition

SCD = sudden cardiac death

- a. to ensure that current health problems are managed appropriately;
 - b. to identify conditions that serve as barriers to performance;
 - c. to allow the student-athlete an opportunity to establish a relationship with the team physician, athletic trainer, and other members of the medical team who may be involved in providing continuing medical care;
 - d. to assess for characteristics that may place the student-athlete at risk for future injury or disease;
 - e. to review medications and/or supplements, including addressing possible Therapeutic Use Exemption requests; and
 - f. to educate student-athletes regarding health risks, health-related behavior, and pertinent issues regarding safe play in sport.
2. Although all models of cardiac screening require more research and education to improve and validate both performance and feasibility, the NCAA supports, in concept, pre-participation cardiovascular screening using a comprehensive personal and family history and physical examination, such as the American Heart Association (AHA) 14-point recommendations and/or the Pre-Participation Physical Evaluation Monograph, Fourth Edition (PPE-4).
 3. The pre-participation evaluation process should be formalized and in writing.
 - a. The member institution's pre-participation examination should be conducted on campus under the supervision of the institution's director of medical services, or, if an off-campus approach is used, evaluations should be reviewed in a process supervised by the institution's director of medical services. The director of medical services should identify 1 clinician provider at the medical doctor/doctor of osteopathic medicine level (most likely the head team physician) and 1 clinician provider at the athletic trainer level (most likely the head athletic trainer) who will be charged with the responsibility for ensuring that the pre-participation cardiac screening is conducted with the necessary components, as documented in the following text. Medical records of the examination should be kept in an accessible, secure file for at least the duration of the student-athlete's college career, and should accompany the athlete during any school transfers.
 4. As afforded by local resources, cardiac screening on campus is encouraged in an effort to maintain a consistent and high-quality level of care.
 - a. For member institutions that choose to rely on external care providers to provide pre-participation evaluations, an on-campus mechanism should be established to confirm that the pre-participation evaluations are thoroughly reviewed. The goal of the review is to ensure follow-up and completion of any potential abnormal finding (either confirmed or dismissed) prior to organized athletic participation.
 5. To ensure that team physicians are chosen and retained on the basis of broadly accepted criteria, member institutions that choose, appoint, and oversee team physicians should be familiar with the "Team Physician Consensus Statement: 2013 Update" (1).
 6. It is recognized that many member institutions utilize the electrocardiogram (ECG) as part of pre-participation cardiac screening, even though there is no consensus as to the short- and long-term risk/benefit ratio of such an approach. For those member schools that choose to utilize the ECG as part of the pre-participation cardiac screening, the following guidance is provided:
 - a. Pre-ECG screening planning and coordination:
 - Before pre-participation physicals are conducted, team physicians, athletic trainers,

Association (NCAA) headquarters in September 2014, was provided by the NCAA Sport Science Institute. The task force included representatives from the following affiliations: American Academy of Pediatrics' Council on Sports Medicine and Physical Fitness; National Athletic Trainers' Association; College Athletic Trainers' Society; American Medical Society for Sports Medicine; American College of Cardiology Sports and Exercise Cardiology Leadership Council; National Federation of State High School Associations; American Orthopaedic Society for Sports Medicine; NCAA Student-Athlete Advisory Council; American Osteopathic Academy of Sports Medicine, National Strength and Conditioning Association; Collegiate Strength and Conditioning Coaches Association; American Heart Association; NCAA Committee on Competitive Safeguards and Medical Aspects of Sports; and the American College of Sports Medicine. Dr. Thompson has received research support from Genomas, Roche, Sanofi, Regeneron, Esperion, Amarin, and Pfizer; has served as a consultant for Amgen, Regeneron, Merck, Esperion, and Sanofi; has received speaker honoraria from Merck, AstraZeneca, Regeneron, Sanofi, and Amgen; owns stock in AbbVie, Abbott Labs, CVS, General Electric, Johnson & Johnson, Medtronic, and JA Willey; and has provided expert legal testimony on exercise-related cardiac events and statin myopathy. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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