

Preseason Heat-Acclimatization Guidelines for Secondary School Athletics

Douglas J. Casa, PhD, ATC, FNATA, FACSM*; David Csillan, MS, LAT, ATC*

*Inter-Association Task Force for Preseason Secondary School Athletics Participants: Lawrence E. Armstrong, PhD, FACSM†; Lindsay B. Baker, PhD‡; Michael F. Bergeron, PhD, FACSM§; Virginia M. Buchanan, JD†; Michael J. Carroll, MEd, LAT, ATC||; Michelle A. Cleary, PhD, LAT, ATC||; Edward R. Eichner, MD, FACSM†; Michael S. Ferrara, PhD, ATC, FNATA||; Tony D. Fitzpatrick, MA, LAT, ATC||; Jay R. Hoffman, PhD, FACSM, FNCSA¶; Robert W. Kenefick, PhD, FACSM#; David A. Klossner, PhD, ATC||; J. Chad Knight, MSHA, MESS, ATC, OTC||; Stephanie A. Lennon, MS, NBCT, LAT, ATC||; Rebecca M. Lopez, MS, ATC||; Matthew J. Matava, MD**; Francis G. O'Connor, MD, FACSM††; Bart C. Peterson, MSS, ATC||; Stephen G. Rice, MD, PhD, FACSM, FAAP‡‡; Brian K. Robinson, MS, LAT, ATC||; Robert J. Shriner, MS, LAT, ATC||; Michael S. West, MS, ATC||; Susan W. Yeargin, PhD, ATC||*

*Co-Chairs; †Individual Representatives; ‡Gatorade Sports Science Institute; §American College of Sports Medicine; ||National Athletic Trainers' Association; ¶National Strength and Conditioning Association; #United States Army Research Institute of Environmental Medicine; **American Orthopaedic Society for Sports Medicine; ††American Medical Society for Sports Medicine; ‡‡American Academy of Pediatrics

A proper heat-acclimatization plan in secondary school athletic programs is essential to minimize the risk of exertional heat illness during the preseason practice period. Gradually increasing athletes' exposure to the duration and intensity of physical activity and to the environment minimizes exertional heat-illness risk while improving athletic performance. Progressive acclimatization is especially important during the initial 3 to 5 days of summer practices. When an athlete undergoes a proper heat-acclimatization program, physiologic function, exercise heat tolerance, and exercise performance are all enhanced.¹⁻⁶ In contrast, athletes who are not exposed to a proper heat-acclimatization program face measurable increased risks for exertional heat illness.

For these reasons, the Inter-Association Task Force for Preseason Secondary School Athletics, in conjunction with the National Athletic Trainers' Association's Secondary School Athletic Trainers' Committee, recommends that these "Preseason Heat-Acclimatization Guidelines for Secondary School Athletics" be implemented by all secondary school athletic programs. These guidelines should be used for all preseason conditioning, training, and practice activities in a warm or hot environment, whether these activities are conducted indoors or outdoors. When athletic programs implement these guidelines, the health and safety of the athletes are primary. However, the recommendations outlined here are only minimum standards, based on the best heat-acclimatization evidence available. Following these guidelines provides all secondary school athletes an opportunity to train safely and effectively during the preseason practice period.

DEFINITIONS

Before participating in the preseason practice period, all student-athletes should undergo a preparticipation medical

examination administered by a physician (MD or DO) or as required/approved by state law. The examination can identify predisposing factors related to a number of safety concerns, including the identification of youths at particular risk for exertional heat illness.

The *heat-acclimatization period* is defined as the initial 14 consecutive days of preseason practice for all student-athletes. The goal of the acclimatization period is to enhance exercise heat tolerance and the ability to exercise safely and effectively in warm to hot conditions. This period should begin on the first day of practice or conditioning before the regular season. Any practices or conditioning conducted before this time should not be considered a part of the heat-acclimatization period. Regardless of the conditioning program and conditioning status leading up to the first formal practice, all student-athletes (including those who arrive at preseason practice after the first day of practice) should follow the 14-day heat-acclimatization plan. During the preseason heat-acclimatization period, if practice occurs on 6 consecutive days, student-athletes should have 1 day of complete rest (no conditioning, walk-throughs, practices, etc).

Days on which athletes do not practice due to a scheduled rest day, injury, or illness do not count toward the heat-acclimatization period. For example, an athlete who sits out the third and fourth days of practice during this time (eg, Wednesday and Thursday) will resume practice as if on day 3 of the heat-acclimatization period when returning to play on Friday.

A *practice* is defined as the period of time a participant engages in a coach-supervised, school-approved, sport- or conditioning-related physical activity. Each individual practice should last no more than 3 hours. Warm-up, stretching, and cool-down activities are included as part of the 3-hour practice time. Regardless of ambient tempera-

ture conditions, all conditioning and weight-room activities should be considered part of practice.

A *walk-through* is defined as a teaching opportunity with the athletes not wearing protective equipment (eg, helmets, shoulder pads, catcher's gear, shin guards) or using other sport-related equipment (eg, footballs, lacrosse sticks, blocking sleds, pitching machines, soccer balls, marker cones). The walk-through is not part of the 3-hour practice period, can last no more than 1 hour per day, and does not include conditioning or weight-room activities.

A *recovery period* is defined as the time between the end of 1 practice or walk-through and the beginning of the next practice or walk-through. During this time, athletes should rest in a cool environment, with no sport- or conditioning-related activity permitted (eg, speed or agility drills, strength training, conditioning, or walk-through). Treatment with the athletic trainer is permissible.

RECOMMENDATIONS FOR THE 14-DAY HEAT-ACCLIMATIZATION PERIOD

1. Days 1 through 5 of the heat-acclimatization period consist of the first 5 days of formal practice. During this time, athletes may not participate in more than 1 practice per day.
2. If a practice is interrupted by inclement weather or heat restrictions, the practice should recommence once conditions are deemed safe. Total practice time should not exceed 3 hours in any 1 day.
3. A 1-hour maximum walk-through is permitted during days 1–5 of the heat-acclimatization period. However, a 3-hour recovery period should be inserted between the practice and walk-through (or vice versa).
4. During days 1–2 of the heat-acclimatization period, in sports requiring helmets or shoulder pads, a helmet should be the only protective equipment permitted (goalies, as in the case of field hockey and related sports, should *not* wear full protective gear or perform activities that would require protective equipment). During days 3–5, only helmets and shoulder pads should be worn. Beginning on day 6, all protective equipment may be worn and full contact may begin.
 - A. Football only: On days 3–5, contact with blocking sleds and tackling dummies may be initiated.
 - B. Full-contact sports: 100% live contact drills should begin no earlier than day 6.
5. Beginning no earlier than day 6 and continuing through day 14, double-practice days must be followed by a single-practice day. On single-practice days, 1 walk-through is permitted, separated from the practice by at least 3 hours of continuous rest. When a double-

practice day is followed by a rest day, another double-practice day is permitted after the rest day.

6. On a double-practice day, neither practice should exceed 3 hours in duration, and student-athletes should not participate in more than 5 total hours of practice. Warm-up, stretching, cool-down, walk-through, conditioning, and weight-room activities are included as part of the practice time. The 2 practices should be separated by at least 3 continuous hours in a cool environment.
7. Because the risk of exertional heat illnesses during the preseason heat-acclimatization period is high, we strongly recommend that an athletic trainer be on site before, during, and after all practices.

REFERENCES

1. American College of Sports Medicine, Armstrong LE, Casa DJ, et al. American College of Sports Medicine position stand: exertional heat illnesses during training and competition. *Med Sci Sports Exerc.* 2007;39(3):556–572.
2. Bergeron MF, McKeag DB, Casa DJ, et al. Youth football: heat stress and injury risk. *Med Sci Sports Exerc.* 2005;37(8):1421–1430.
3. Binkley HM, Beckett J, Casa DJ, Kleiner DM, Plummer PE. National Athletic Trainers' Association position statement: exertional heat illnesses. *J Athl Train.* 2002;37(3):329–343.
4. Casa DJ, Almquist J, Anderson S, et al. Inter-Association Task Force on Exertional Heat Illness consensus statement. *NATA News.* June 2003:24–29.
5. Department of the Army and Air Force. *Heat Stress Control and Casualty Management.* Washington, DC: Dept of the Army and Air Force; 2003. Technical bulletin MED 507/AFPAM 48-152 (I).
6. Wallace RF. *Risk Factors and Mortality in Relation to Heat Illness Severity.* Natick, MA: United States Army Research Institute Environmental Medicine; 2003. Technical report T-03/14.

DISCLAIMER

The National Athletic Trainers' Association (NATA) and the Inter-Association Task Force for Preseason Secondary School Athletics advise individuals, schools, athletic training facilities, and institutions to carefully and independently consider each of the recommendations. The information contained in the statement is neither exhaustive nor exclusive to all circumstances or individuals. Variables such as institutional human resource guidelines, state or federal statutes, rules, or regulations, as well as regional environmental conditions, may impact the relevance and implementation of these recommendations. The NATA and the Inter-Association Task Force advise their members and others to carefully and independently consider each of the recommendations (including the applicability of same to any particular circumstance or individual). The foregoing statement should not be relied upon as an independent basis for care but rather as a resource available to NATA members or others. Moreover, no opinion is expressed herein regarding the quality of care that adheres to or differs from any of NATA's other statements. The NATA and the Inter-Association Task Force reserve the right to rescind or modify their statements at any time.