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Heat Stress and Athletic Participatic

Early fall football, cross country, soccer and field hockey practices are conducte very hot and humid weather in many parts of the United States. Due to the equi and uniform needed in football, most of the heat problems have been associated football. From 1995 through the 2000 football season there have been 14 high heat stroke deaths in football. This is not acceptable. There are no excuses for heatstroke deaths, if the proper precautions are taken. During hot weather condi the athlete is subject to the following:

HEAT CRAMPS – Painful cramps involving abdominal muscles and extremiti caused by intense, prolonged exercise in the heat and depletion of salt and wate profuse sweating.

HEAT SYNCOPE – Weakness fatigue and fainting due to loss of salt and wat sweat and exercise in the heat. Predisposes to heat stroke.

HEAT EXHAUSTION (WATER DEPLETION) – Excessive weight loss, re sweating, elevated skin and core body temperature, excessive thirst, weakness, headache and sometimes unconsciousness.

HEAT EXHAUSTION (SALT DEPLETION) – Exhaustion, nausea, vomitin muscle cramps, and dizziness due to profuse sweating and inadequate replacem body salts.

HEAT STROKE – An acute medical emergency related to thermoregulatory f Associated with nausea, seizures, disorientation, and possible unconsciousness coma. It may occur suddenly without being preceded by any other clinical signs individual is usually unconscious with a high body temperature and a hot dry sk stroke victims, contrary to popular belief, may sweat profusely).

It is believed that the above-mentioned heat stress problems can be controlled p certain precautions are taken. According to the American Academy of Pediatric Committee on Sports Medicine, heat related illnesses are all preventable.(Sport Medicine: Health Care for Young Athletes, American Academy of Pediatrics, J 2000). The following practices and precautions are recommended:

1. Each athlete should have a physical examination with a medical history wh entering a program and an annual health history update. History of previous hea illness and type of training activities before organized practice begins should be included. State High School Associations recommendations should be followed

2. It is clear that top physical performance can only be achieved by an athlete in top physical condition. Lack of physical fitness impairs the performance of a athlete who participates in high temperatures. Coaches should know the **PHYS CONDITION** of their athletes and set practice schedules accordingly.

3. Along with physical conditioning the factor of acclimatization to heat is important. Acclimatization is the process of becoming adjusted to heat and it is essential to provide for **GRADUAL ACCLIMATIZATION TO HOT WEA** It is necessary for an athlete to exercise in the heat if he/she is to become acclin to it. It is suggested that a graduated physical conditioning program be used and 80% acclimatization can be expected to occur after the first 7-10 days. Final sta acclimatization to heat are marked by increased sweating and reduced salt concentration in the sweat.

4. The old idea that water should be withheld from athletes during workouts has **SCIENTIFIC FOUNDATION**. The most important safeguard to the health of athlete is the replacement of water. Water must be on the field and readily avail the athletes at all times. It is recommended that a minimum 10-minute water bre scheduled for every half hour of heavy exercise in the heat. Athletes should rest shaded area during the break. **WATER SHOULD BE AVAILABLE IN UNLIMITED QUANTITIES**.

5. Check and be sure athletes are drinking the water. Replacement by thirst alo inadequate. Test the air prior to practice or game using a wet bulb, globe, tempe index (WBGT index) which is based on the combined effects of air temperature relative humidity, radiant heat and air movement. The following precautions are recommended when using the WBGT Index: (ACSM's Guidelines for the Team Physician, 1991)

Below 64 – Unlimited activity

65-72 – Moderate risk

74-82 – High risk

82 plus – Very high risk

6. There is also a weather guide for activities that last 30 minutes or more (Fo Mathews, 1981) which involves know the relative humidity and air temperature

AIR TEMP	DANGER ZONE	CRITICAL ZONE
70 F	80% RH	100% RH
75 F	70% RH	100% RH
80 F	50% RH	80% RH
85 F	40% RH	68% RH
90 F	30% RH	55% RH
95 F	20% RH	40% RH
100 F	10% RH	30% RH

RH = RELATIVE HUMIDITY

One other method of measuring the relative humidity is the use of a sling psychrometer, which measures wet bulb temperature. The wet bulb temperature be measured prior to practice and the intensity and duration of practice adjusted accordingly. Recommendations are as follows:

Under 60 F ……. Safe but always observe athletes

61-65 F …….. Observe players carefully

66-70 F …….. Caution

71-75 F …….. Shorter practice sessions and more frequent wate ……and rest breaks

75 plus F …… Danger level and extreme caution

7. Cooling by evaporation is proportional to the area of the skin exposed. In extremely hot and humid weather reduce the amount of clothing covering the b much as possible. NEVER USE RUBBERIZED CLOTHING.

8. Athletes should weigh each day before and after practice and WEIGHT CH CHECKED. Generally a 3 percent weight loss through sweating is safe and ov percent weight loss is in the danger zone. Over a 3 percent weight loss the athle should not be allowed to practice in hot and humid conditions. Observe the athl closely under all conditions. Do not allow athletes to practice until they have adequately replaced their weight.

9. Observe athletes carefully for signs of trouble, particularly athletes who los significant weight and the eager athlete who constantly competes at his/her cap Some trouble signs are nausea, incoherence, fatigue, weakness, vomiting, cram weak rapid pulse, visual disturbance and unsteadiness.

10. Teams that encounter hot weather during the season through travel or follo unseasonably cool period, should be physically fit but will not be environmenta Coaches in this situation should follow the above recommendations and substitu more frequently during games.

11. Know what to do in case of an emergency and have your emergency plans with copies to all your staff. Be familiar with immediate first aid practice and prearranged procedures for obtaining medical care, including ambulance servic

HEAT STROKE – *THIS IS A MEDICAL EMERGENCY* – DELA COULD BE FATAL. Immediately cool body while waiting for transfer to a hospital. Remove clothing and place ice bags on the neck, in the axilla (armpit) the groin areas. Fan athlete and spray with cold water to enhance evaporation.

HEAT EXHAUSTION – *OBTAIN MEDICAL CARE AT ONCE*. Cool body

would for heat stroke while waiting for transfer to hospital. Give fluids if athlet to swallow and is conscious.

SUMMARY – The main problem associated with exercising in the hot weathe water loss through sweating. Water loss is best replaced by allowing the athlete unrestricted access to water. Water breaks two or three times every hour are bet one break an hour. Probably the best method is to have water available at all tin to allow the athlete to drink water whenever he/she needs it. Never restrict the a of water an athlete drinks, and be sure the athletes are drinking the water. The s amount of salt lost in sweat is adequately replaced by salting food at meals. Tal your medical personnel concerning emergency treatment plans.

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