

NAME: Key

## CHAPTER 6 WORKSHEET

# ENVIRONMENTAL CONSIDERATIONS

**MATCHING** – Match the following terms with the appropriate response.

- |                                    |   |
|------------------------------------|---|
| <u>D.</u> 1. Acclimatization       | A. Affect biological time clock                             |
| <u>G.</u> 2. Chilblains            | B. Thermoregulatory failure                                 |
| <u>A.</u> 3. Circadian Dysrhythmia | C. Caused by combustion of fossil fuels                     |
| <u>H.</u> 4. Frost Nip             | D. Adapting to an environment                               |
| <u>I.</u> 5. Heat Exhaustion       | E. Sunlight acts on nitrogen dioxide and stagnant air       |
| <u>B.</u> 6. Heat Stroke           | F. Measures heat and humidity                               |
| <u>J.</u> 7. Mountain Sickness     | G. Exposure to cold for many hours; skin is red and swollen |
| <u>E.</u> 8. Photochemical Haze    | H. Exposure to cold; skin is firm with cold, painless areas |
| <u>F.</u> 9. WBGT                  | I. Profuse sweating, excessive thirst                       |
| <u>C.</u> 10. Smog                 | J. Headaches, vomiting, insomnia                            |

**SHORT ANSWER** – Respond to the following with a brief response.

11. Heat is dissipated from the body through what four mechanisms? Conduction, convection, radiation and evaporation can dissipate body heat.
12. What factors influence the effectiveness of sweat evaporation? Height/weight, acclimatization, fitness, hydration, clothing, intensity + duration of activity, heredity, environmental conditions (i.e. hot, humid)
13. What characteristics/attributes of an athlete can make them more susceptible to heat illnesses? Being overweight, out of shape, dehydrated, sleep deprived; haven't eaten, poor acclimatization, wearing of protective equipment
14. What factors play into the development of *hypothermia*? Low temperatures accentuated by wind + wetness (e.g. perspiration, rain); inactivity or a poor warm-up.
15. Describe the difference between *superficial frostbite* and *deep frostbite*? Super. = involves skin + subcutaneous tissues only; edema, redness, mottled gray skin, stiffness + transient tingling/burning. Deep = Tissues are frozen; can lead to necrosis, medical emergency
16. What signs and symptoms may be present when an individual works out in a high ozone environment? Work capacity is ↓, shortness of breath, coughing, chest tightness, pn during deep breathing, nausea, eye irritation, fatigue, lung irritation, ↓ resistance to lung infections.
17. Who might suffer adverse effects of working out in air that is high in sulfur dioxide? Asthmatics
18. What is *altitude illness/sickness*? Results from ascending to a high altitude, causing ↓ O<sub>2</sub> concentration in inhaled air.

**LISTING** – List six actions that can be taken to prevent heat illnesses in athletes.

19. Acclimatize athletes over 7-14 days
20. Educate about fluid intake + electrolyte balance; provide adeq.  $H_2O$  + sports drinks
21. Educate athletes to get 6-8 hrs per night in a cool environment
22. Monitor heat index; modify practice length/type accordingly
23. Min. amt. of equipment worn + warm up time in hot, humid conditions
24. Weigh high-risk athletes before + after particip. to track hydration

List six things you can do to adapt to time-zone changes.

25. Get up + go to bed 1 hr later/earlier for ea time zone crossed going west/east.
26. Eat lighter to heavier/heavier to lighter meals going west/east.
27. Drink plenty of fluids to remain hydrated, avoid alcohol.
28. Consume caffeine traveling west, avoid traveling east.
29. Train later/earlier in the day when traveling west/east.
30. Upon arrival, immediately adopt local time for training, sleep, eating.

### ESSAY

31. What effect does *altitude* have on performance and how does the body of a visitor try to adapt?  $O_2$  concentration is lower @ higher altitudes, thus  $\downarrow$  the amt. of  $O_2$  available for working muscle. This leads to a  $\downarrow$  in performance. The body tries to adapt by  $\uparrow$  breathing,  $\uparrow$  HR,  $\uparrow$  hemoglobin in circulating blood,  $\uparrow$  blood alkalinity,  $\uparrow$  myoglobin in bld, changes in blood flow distribution and cell enzyme activity.
32. What guidelines should be followed in regard to lightning and outdoor sports? Develop comprehensive EAPs for ea venue (est. a chain of command for decision-making, use a reliable means of monitoring weather [e.g. lightning detectors], set criteria for suspending/resuming activity, have emerg. equip. avail. in case of lightning strike, promote lightning safety slogans), if lightning is seen or thunder heard, immediately seek shelter, preferably indoors or vehicles, do not stand near trees, flag poles or light poles.
33. Explain what the WBGT is and how a wet bulb temperature, dry bulb temperature and globe temperature come into play.

The wetbulb globe temp. provides ATs  $\bar{c}$  objective means for determining necessary precautions for practices/competitions in hot, humid weather. The WBGT is calculated using a wet bulb temp. measure, dry bulb temp. measure + globe temp. measure. WBGT indices provide fluid replacement + activity restriction recommendations for practices/competitions.