



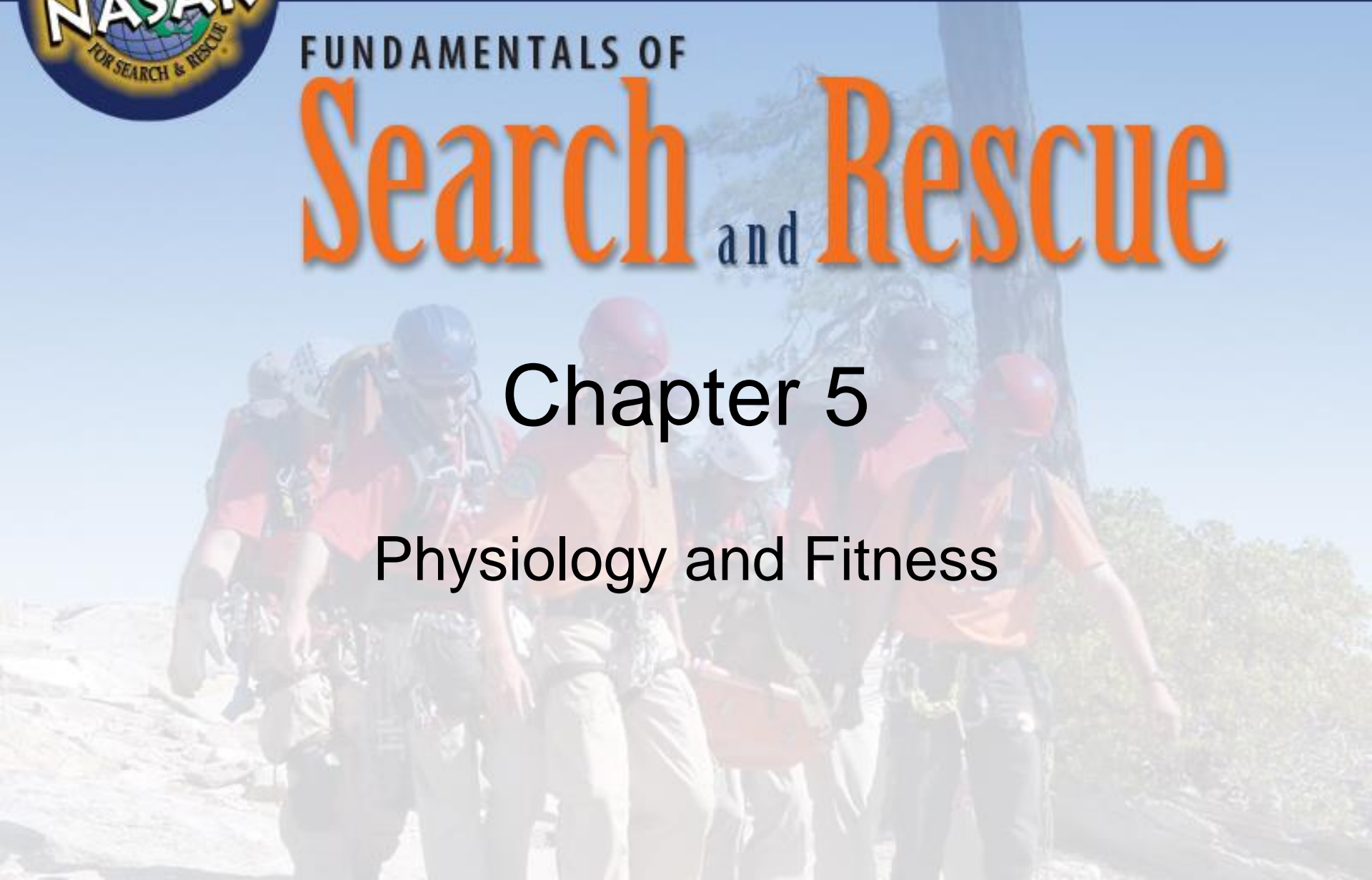
National Association for Search and Rescue

FUNDAMENTALS OF

Search and Rescue

Chapter 5

Physiology and Fitness





Objectives (1 of 3)

- Demonstrate awareness of and need for identifying your personal limitations and strengths as a member of a search crew.



Objectives (2 of 3)

- Describe how, in each of the following processes, the human body loses heat:
 - Radiation
 - Conduction
 - Convection
 - Evaporation
 - Respiration



Objectives (3 of 3)

- Describe the heat production and heat loss balance equation of the human body.
- Describe the basic water and chemical needs of the human body.
- List the average daily food and water requirements of the human body in average, cold, and hot environments.



Fitness and Physiology

- Physical and mental fitness are integral to the primary SAR objective of working for the victim.
- SAR personnel must have working knowledge of human biological survival.

Food and Nutrition

- What you eat today is what you run on tomorrow.
- Humans in cold environments need as many as 2000 extra calories per day.
- Heavy activity significantly increases caloric requirements.





Daily Caloric Needs

Activity Level	Male Calories per lb	Female Calories per lb
Light	17	16
Moderate	19	17
Heavy	23	20



Water Needs (1 of 2)

- Humans are two thirds water.
- Decrease in normal water levels:
 - 1% decrease causes thirst.
 - 10% decrease causes mental deficiencies.
 - 20% decrease can cause death.

Water Needs (2 of 2)

- An inactive person requires a minimum of 1.2 liters per day.
- Active searchers need as much as 8-10 liters of water per day.
- Water is more essential than food.





Methods of Heat Transfer

- Radiation
- Conduction
- Convection
- Evaporation
- Respiration

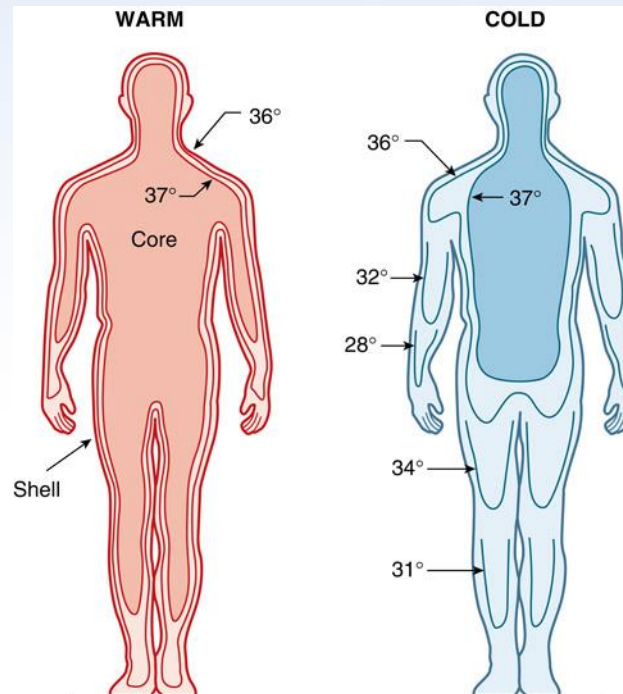


The Heat Balance Equation

- Body heat produced by:
 - Metabolism
 - Muscle movement
- Body heat lost by:
 - Environment
 - Heat loss mechanisms

Body Heat Balance

- Body heat is produced and lost in an effort to maintain homeostasis.



The Four Components of Fitness

- Strength
- Agility
- Flexibility
- Endurance





Admitting Limitations

- Make a realistic assessment of your physical abilities.
- Worse than being in poor physical condition during a mission is not realizing you are unfit!
- Everyone is different—Set your own limits.



Mental Fitness

- The victim needs you to be alert, resourceful, and thinking clearly.
- Be thorough, confident, conscientious, and assertive.

