

Activity Tolerance and Fatigue

Chapter 11

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EXERCISE AND ACTIVITY TOLERANCE

Types of Exercise

Aerobic Exercise
Isometric Exercise
Flexibility Exercise

Physiologic and Psychological Responses

Cardiopulmonary Responses
Neuromuscular Responses
Metabolic and Thermal Responses
Gastrointestinal Responses
Hemostasis and Immune Function
Psychological Responses

Assessment of Activity and Exercise Tolerance

Activity Tolerance and Fatigue
Aerobic Fitness

Exercise and Activity Tolerance in the Elderly

ACTIVITY INTOLERANCE AND FATIGUE

Mechanisms of Fatigue

Acute Physical Fatigue
Chronic Fatigue

Chronic Fatigue Syndrome

BED REST AND IMMOBILITY

Physiologic Effects of Bed Rest

Cardiovascular Responses
Pulmonary Responses
Urinary Tract Responses
Musculoskeletal Responses
Metabolic, Endocrine, and Immune Responses
Gastrointestinal Responses
Sensory Responses
Skin Responses

Psychosocial Responses

Time Course of Physiologic Responses

Interventions

➤ Exercise, or physical activity, is a physiologic state, so common in its many forms that true physiologic rest is seldom achieved. Defined ultimately in terms of skeletal muscle contraction, exercise involves the coordinated responses of every body system to provide the energy needed for increased muscle activity. Fatigue represents the perceived lack of sufficient energy to engage fully in physical activities. Fatigue may be acute, as in that resulting from increased physical activity, or it may be chronic, as in the chronic fatigue syndrome. Conditions that restrict physical activity, such as bed rest and immobility, can impair a person's exercise reserve and ability to perform work and other activities.

This chapter focuses on activity tolerance and exercise, activity intolerance and fatigue; and the physiologic and psychosocial responses to immobility and bed rest.



EXERCISE AND ACTIVITY TOLERANCE

After completing this section of the chapter, you should be able to meet the following objectives:

- Differentiate among aerobic, isometric, and flexibility exercises.
- Describe the physiologic and psychological responses to exercise.
- Define the term *maximal oxygen consumption* and state how it is measured.
- Describe methods that can be used to assess a person's activity tolerance and ability to engage in an exercise program.
- Describe the physiologic effects of exercise in the elderly population.

Physical activity is defined as the process of energy expenditure for the purpose of accomplishing an effect. Humans interact with their environment in a cyclic pattern involving periods of activity and rest, both of which have physical and psychological elements. Physical activity and exercise denote the process of skeletal muscle movement and energy expenditure, whereas rest is characterized by inactivity and minimal energy expenditure.