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## Foundations of Resistance Training

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Introduction

### Course Objectives

The objectives of this online module include:

- Define the basic terminology of resistance training programs,
- Review current recommendations and guidelines for resistance training to improve health, fitness, and function,
- Understand and apply the basic principles of resistance training program design,
- Learn various resistance training systems and methods, and
- Practice developing individualized resistance training programs to safely and effectively attain specific training goals.

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Review of Foundational Concepts

### Neuromuscular System Review

A **motor unit** is composed of an alpha motor neuron and the muscle fibers it innervates.

**Wave summation** is the accumulative effect of continuous muscular stimuli (twitches) resulting in increased force production.

The **all or none law** states that when the threshold for stimulation is reached for a specific motor unit, *all* of the muscle fibers in that motor unit will be activated.

**Motor unit summation (recruitment)** occurs when the nervous system stimulates additional motor units, subsequently activating the associated muscle fibers to produce greater force.

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Resistance Training Guidelines and Methods

### Super-Set Training

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Resistance Training Program Design

### Building A Resistance Training Workout

**Upper Body Push**

Bench Press  
Shoulder Press  
Chest Press  
Triceps Push-down  
Push-up

**Upper Body Pull**

Seated Row  
Lat Pulldown  
Biceps Curl  
Assisted Pull-up  
Cable Row

“Functional” Whole Body

**Lower Body / Squat**

Ball Squat  
Barbell Squat  
Smith Squat  
Lunge  
Leg Press

**Core / Rotation**

Prone Plank  
Glute Bridge  
Ball Crunch  
Bird-Dog  
Russian Twist

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Case Studies

### Case Study Two – Sample Program One

| Exercise                     | Sets  | Repetitions        | Rest     |
|------------------------------|-------|--------------------|----------|
| Smith Squat                  | 2     | 10-12 RM, 8-10 RM  | 45 sec   |
| Prone Leg Curl               | 2     | 10-12 RM, 10-12 RM | 1-2 min. |
| Dumbbell Chest Press         | 2     | 10-12 RM, 8-10 RM  | 45 sec   |
| Seated Narrow Row            | 2     | 10-12 RM, 8-10 RM  | 1-2 min. |
| Dumbbell Shoulder Press      | 2     | 10-12 RM, 8-10 RM  | 45 sec   |
| Lat Pulldown                 | 2     | 10-12 RM, 8-10 RM  | 1-2 min. |
| Cable Upward Trunk Rotation  | 1R/1L | 15-20 each side    | 45 sec   |
| Suspension Trainer Knee Tuck | 2     | 15-20, 15-20       | ----     |

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