Fitness Evaluation: Muscular Fitness, Flexibility, and Body Composition

EXS 150 – Chap 2b

2 Muscular Fitness: Why
- Improves and/or maintains:
  - Fat-free mass and resting metabolic rate
  - Bone mass/density
  - Glucose intolerance
  - Musculotendinous integrity (stability)
  - Activities of daily living

3 Muscular Strength Vs. Endurance
- **Strength** – maximal force generated by a muscle group
  - 1-repetition max (1-RM)
  - Most common are bench press and leg press
  - Table 2.7 for norms

- **Endurance** – ability of a muscle group to execute repeated contractions over time to cause fatigue
  - Examples: Push-ups and Curl-ups
  - Tables 2.8, 2.9A, and 2.9B for norms

4 Muscular Fitness Tests:

   *Key points for administration*
- Safety
  - Make sure to complete a dynamic warm-up
  - Familiarization – practice the technique a few times before actually doing the test!
- Specificity – remember that the tests describe fitness specific to a particular muscle group
- Absolute Vs. Relative Strength (1-RM) (p. 27)
  - Relative strength = \( \frac{1 \text{ RM weight}}{\text{body weight}} \)

5 Muscular Strength Tests
- Bench Press
• Leg Press

• Hand-grip: Demo

6 Muscular Endurance Tests
• Push-Up Test – m. fitness test designed to evaluate muscular endurance of shoulder and arm muscles (see p. 29)

7 Muscular Endurance Tests (con’t)
• Sit-Up Test – a filed test to evaluate abdominal muscle endurance (see p. 29-31)

• Curl-Up Test – modified sit-up test (see p. 31)

8 Flexibility
• Ability to move joints freely though their full range of motion
• Determine the ability to carry out activities of daily living, recreational, or sport activities
• Flexibility is joint specific
• Most common sites of assessment
  • Neck, trunk, hip, and shoulder
  • Why??

9 Flexibility Tests
• Sit and reach test – measures the ability to flex the trunk (low back and hamstrings) (see p. 33, Tab. 2.10)

• Shoulder flexibility - shoulder range of motion (see p. 34, Tab 2.11)

10 Contraindications:

Muscular Fitness and Flexibility
• Muscular Fitness (strength)
  • Elderly
  • Hypertensive patients
• Flexibility
  • Make sure to note any musculoskeletal injuries that may be exacerbated by ROM testing
    • Ex. Muscular Fitness:
Body Composition

- Relative percentage of body weight that is fat and fat-free tissue
- Related to rates of chronic disease
- Desirable level of body fat (Tab 2.14)
  - Males – 13 to 18%
  - Females – 20 to 26%
- Borderline obesity
  - Males – 25%
  - Females – 30%

Body Composition: Methods

- Densitometry – based on mass/volume ratio
  - Hydrostatic weighing (Gold Standard) – a method of determining body comp that involves weighing the individual both on land and in a tank of water
- Anthropometric Methods
  - Skinfold measurements
  - Waist-to-Hip Circumference
  - Body Mass Index

Estimation of Body Fatness

Skinfold test - estimates body fat based on the fact that over 50% of the body fat lies just beneath the skin (subcutaneous)

- See p. 35 – 36 for administration
- Table 2.12 and 2.13 for norms
- IMPORTANT! - Potential for large error if not careful

Sites for Skinfold Test

Field Tests for Body Fatness

- Waist-to-Hip ratio – a high waist to hip circumference ratio indicates high risk of disease (hypertension, diabetes, high cholesterol)
  - See p. 36 for administration
  - Table 2.15 for norms

Field Tests for Body Fatness

- Body Mass Index – ratio of body weight (kg) to height (m)
  - Useful technique for testing population
  - Table 2.16 for norms
BMI = weight (kg) / height (m²)

1 kg = 2.2 pounds; 1 m = 39.25 inches

Example: weight = 142 lbs, height = 67.5 inches

142 lbs = ____ kg; 67.5 in = ____ m; ____ m²

BMI = ______

Body Composition:

Results and Appropriateness of testing

- Table 4-4 and 4-5 for norms
- Use body type presentation to determine the most appropriate mode of testing
- Ex. Use waist-to-hip as a measure in obese