Resistance Training

Resistance training (also called strength or weight training) involves exercises that cause muscles to contract against external resistance. It is a cornerstone intervention for preventing and reversing age-related musculoskeletal decline.

What Is Resistance Training?

- Uses weights, elastic bands, body weight, or machines to provide resistance.
- Aims to increase muscle strength, endurance, bone density, and functional capacity.
- Can be adapted to all age groups and fitness levels.

Benefits in Older Adults

- Prevents and treats **sarcopenia** (muscle loss).
- Improves **bone mineral density**, reducing risk of **osteoporosis** and fractures.
- Enhances balance, gait speed, and postural control.
- Reduces incidence of falls, disability, and frailty.
- Supports glucose metabolism, lipid profile, and mental health.

Basic Principles

- Progressive overload: Gradually increase resistance to stimulate adaptation.
- **Specificity**: Target major muscle groups—legs, hips, back, chest, arms, abdomen.
- Frequency: At least 2-3 non-consecutive days per week.
- Volume: 1-3 sets of 8-12 repetitions per exercise.
- **Rest**: 48 hours between sessions of the same muscle group.

Sample Routine for Older Adults

Warm-up (5-10 min): light cardio and dynamic stretches.

Core exercises:

- Chair squats
- Wall push-ups
- Seated rows (resistance band)
- Step-ups
- Shoulder press (light dumbbells)
- Heel raises
- Core: seated knee lifts or bird-dog

Cool-down: static stretching for major muscle groups.

▲ Safety Considerations

- Start under supervision (e.g., physiotherapist or trainer).
- Monitor for pain, dizziness, or joint instability.
- Adjust loads for osteoporosis, arthritis, or cardiovascular disease.
- Avoid Valsalva maneuver (holding breath during lifts).

Biological Effects

- ↑ Muscle protein synthesis (via mTOR activation).
- 1 Insulin sensitivity and glucose uptake.
- ↑ Myokines (e.g., irisin) with systemic anti-inflammatory effects.
- ↓ Myostatin (muscle growth inhibitor).

Evidence-Based Guidelines

- WHO (2020): ≥150 min of moderate activity/week + muscle strengthening 2x/week.
- EWGSOP2 (2019): Resistance training is first-line intervention in sarcopenia.
- ACSM (2011): Recommends multicomponent programs for older adults (strength + balance + flexibility).

From: https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki**

Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=resistance_training

Last update: 2025/06/05 07:53

