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The Acute Effects of Aerobic and Resistance Exercise on Cardiovascular Function and Arterial Stiffness

Hayleigh Raiff

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Purpose

The aim of this study was to investigate the acute effects of aerobic and resistance exercise consistent with ASCM recommendations on arterial stiffness post-exercise.

Methods

- 11 healthy males age 18-45
- Completed 3 sessions consisting of 20 minutes initial rest, 30 minute activity, 60 minutes of recovery
  1. Control: seated upright
  2. Aerobic Exercise: Monark cycle ergometer at 70% HR_max
  3. Resistance Exercise: 6 exercise routine of 3 sets of 10 repetitions at 80-90% of 10-RM
- PWV and PWA measures at rest and at 10, 20, 30, 40, 50, 60 minutes of recovery

Findings

- No significant change in regional arterial stiffness (cfPWV)
- Resistance exercise elicited an increase in systemic arterial stiffness (PWA)
- Increase in resistance PWA remained elevated after 60 minutes of recovery

Arterial Stiffness

- Assesses structural integrity of artery
- Clinical indicator of cardiovascular disease
- Measured by SphygmoCor XCEL applanation tonometry
- Carotid-femoral Pulse Wave Velocity (cfPWV): regional arterial stiffness
- Pulse Wave Analysis (PWA): systemic arterial stiffness

Practical Application

- Further inform exercise prescription for those with cardiovascular disease
- Better understand parameters contributing to acute arterial stiffness elicited by various exercise modalities