*TACSM Abstract*

# Wnt/β-Catenin and Androgen Receptor Signaling Increase Following High Load Resistance Exercise Without Elevations in Serum/Muscle Testosterone or Androgen Receptor Content

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ABSTRACT

**PURPOSE**: The purpose of this study was 1) to determine the effect of single bouts of volume- and intensity-equated low (LL) and high load (HL) full-body resistance exercise (RE) on AR-DNA binding, serum/muscle testosterone and dihydrotestosterone, muscle androgen receptor (AR), and AR-DNA binding and 2) to determine the effect of RE on sarcoplasmic and nucleoplasmic β-catenin concentrations in order to determine their impact on mediating AR-DNA binding in the absence/presence of serum/muscle androgen and AR protein. **METHODS**: In a cross-over design, ten resistance-trained males completed volume- and intensity-equated LL and HL full-body RE. Blood and muscle samples were collected at pre-, 3h-, and 24h post-exercise. Separate 2x3 factorial ANOVAs with repeated measures and pairwise comparisons with a Bonferroni adjustment were used to analyze main effects. **RESULTS**: No significant differences were observed in muscle AR, testosterone, dihydrotestosterone, or serum total testosterone in either condition ($p > .05$). Serum free testosterone was significantly decreased 3h post-exercise and remained significantly less than baseline 24h post-exercise in both conditions ($p < .05$). In response to HL, AR-DNA binding significantly increased at 3h post-exercise ($p < .05$), whereas no significant differences were observed at any time in response to LL ($p > .05$). Moreover, sarcoplasmic β-catenin was significantly greater in HL ($p < .05$) without significant changes in nucleoplasmic β-catenin ($p > .05$). **CONCLUSION**: Increases in AR-DNA binding in response to HL indicates AR signaling may be load-dependent. Furthermore, despite the lack of increase in serum and muscle androgens or AR content following HL RE, elevations in AR-DNA binding with elevated sarcoplasmic β-catenin suggests β-catenin may be facilitating this response.