**Peroxisome Proliferator-Activated Receptors Delta Content Is Increased and Associated with Altered Serum Lipid Profile with Resistance Exercise Training**

Objectives: While resistance exercise increases plasma free fatty acids and mobilizes kinases activity, the direct effect of resistance exercise on skeletal muscle peroxisome proliferator-activated receptors delta (PPARδ) remained unclear. The present study investigated the acute and training effects of resistance exercise on PPARδ protein content and its association with serum lipid profile.

Equipment and methods: Seventeen young males (n=8) and females (n=9) performed a 10-week progressive resistance exercise training regimen. Body composition was measured before, at the midpoint, and after the training. Vastus lateralis biopsies were obtained 24 hours before and after the first exercise and 24 hours after the last exercise to assess PPARδ content. Blood samples were collected immediately before and after, and 24 hours after the first and the last exercises.

Results: PPARδ content acutely increased 49.1 ± 28.7% after exercise when adjusted for body fat percentage, and the increase was inversely proportional to body fat percentage (R=-0.877). The acute change in PPARδ was associated with the initial lean mass (R=0.789) before training. After training, PPARδ content increased 114.7 ± 31.9% and was inversely associated with resting serum total cholesterol (TC) (R=-0.731) and low-density lipoprotein cholesterol (LDL) (R=-0.746). Ten-week Lean mass gain was associated with greater changes in resting serum TC (R=0.592), high-density lipoprotein cholesterol (HDL) (R=0.616), and LDL (R=0.587).

Conclusionː The associations among altered serum lipid profile, lean mass gain, and the increased PPARδ protein content induced by resistance exercise suggest that resistance exercise may alter lipid metabolism and play a role in lean mass gain through PPARδ.

