Body Composition and Anthropometric Changes During a 10-week Training Academy in Police Recruits

CHRISTIAN LAVALLE[1], CHRISTIAN RODRIGUEZ[1], ETHAN G. TINOCO[1], MADELIN R. SIEDLER[1], CHRISTINE M. FLOREZ[1], KEALEY J. WOHLGEMUTH[2], CARINA M. VELASQUEZ[2], KATHRYN E. SOUTHALL[2], MCKENZIE M. HARE[2], JACOB A. MOTA[2], GRANT M. TINSLEY[1]

[1]Energy Balance & Body Composition Laboratory; [2]Neuromuscular and Occupational Performance Laboratory; Department of Kinesiology & Sport Management; Texas Tech University; Lubbock, TX

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Advisor / Mentor: Tinsley, Grant (grant.tinsley@ttu.edu)

ABSTRACT

Obesity and cardiometabolic risk factors are often present in law enforcement personnel, which may compromise physical readiness and long-term health. As such, physical fitness interventions are warranted for promoting officers' performance and wellbeing. **PURPOSE**: To determine the body composition and anthropometric changes experienced by police recruits undergoing a departmental training academy. **METHODS**: Twenty-one police recruits (20 M, 1 F; age: 25.1 ± 5.0 y; BMI: 27.8 ± 4.3 kg/m^2) were tested before and after a 10-week training academy in Lubbock, Texas. Supervised physical training was conducted 5 times per week and consisted of ~1–1.5 hours of high-intensity, multi-modal (i.e., running, weightlifting, calisthenics), functional training following linear periodization. Dual-energy X-ray absorptiometry (DXA; GE Lunar iDXA) and 3-dimensional optical imaging (3DO; Size Stream SS20) were performed to assess body composition and anthropometry. Paired-samples t-tests were performed to compare values before and after the training academy, and Cohen's d effect sizes were generated. After Bonferroni correction, statistical significance was accepted at $p<0.003$. Changes are presented as mean $\pm$ SD. **RESULTS**: From DXA, statistically significant decreases in total fat mass (FM; -3.3 ± 3.1 kg, $p<0.001$, $d=1.1$), trunk FM (-2.1 ± 2.2 kg, $p<0.001$, $d=1.0$), arms FM (-0.3 ± 0.3 kg, $p=0.001$, $d=1.1$), legs FM (-0.9 ± 0.9 kg, $p<0.001$, $d=1.1$), and body fat percentage (-3.1 ± 2.5%, $p<0.001$, $d=1.2$) were observed. Increases in total lean soft tissue (LST; 1.3 ± 1.3 kg, $p=0.002$, $d=1.0$) and trunk LST (0.8 ± 0.9 kg, $p<0.001$, $d=0.9$) were also noted, with trends for increases in leg LST (0.2 ± 0.7 kg, $p=0.096$, $d=0.4$) and arm LST (0.2 ± 0.4, $p=0.04$, $d=0.5$). Decreases in 3DO abdomen circumference (-3.5 ± 3.8 cm, $p<0.001$, $d=0.9$) and hip circumference (-2.2 ± 2.2 cm, $p<0.001$, $d=1.0$) were noted, with trends for decreases in the circumferences of the waist (-2.4 ± 3.6 cm, $p=0.007$, $d=0.7$) and upper arm (-0.9 ± 1.5 cm, $p=0.02$, $d=0.6$). No significant changes in thigh circumference (-0.7 ± 1.9 cm, $p=0.12$, $d=0.4$) or calf circumference (-0.2 ± 1.5 cm, $p=0.52$, $d=0.1$) were noted. A trend for a decrease in body mass (-2.0 ± 3.1 kg, $p=0.007$, $d=0.7$) was also observed. **CONCLUSION**: The present study indicates that police academy training significantly improves recruits' body composition, both reducing FM and increasing LST, which has the potential to positively affect operational performance. Future studies should track these changes over time to help develop ongoing health and fitness strategies for career police officers, ultimately improving their long-term wellbeing and job readiness.