Increasing Strength and Muscle mass in HIV+ Men Recovering from Substance Abuse

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ABSTRACT

The combination of substance (drug and/or alcohol) abuse and infection with human immunodeficiency virus (HIV) can result in the development of several co-morbidities, including muscle wasting. Resistance training could, therefore, be an important tool in the treatment of substance addiction/abuse and HIV. **PURPOSE:** The purpose of this study was to examine the effect of resistance training on measures of muscle mass and strength in the context of co-occurring substance abuse and HIV**. METHODS:** Seventeen untrained men (Mean ± SD: 42 ± 11 years, 89.7 ± 16.0 kg, 179.7 ± 9.1 cm, 18.9 ± 5.5 %fat) who are infected with HIV and enrolled in an in-patient substance addiction/abuse treatment program completed six weeks of either resistance training (RT) (three sessions per week) or no-exercise prescription (Control). Before (Pre) and after (Post) the 6-week period, anthropometric (e.g., body mass, skinfolds, and circumferences), strength (bench press and isometric squat), and power (vertical jumps) measurements were obtained. **RESULTS:** Predicted bench press 1-repetition maximum (1-RM) increased significantly ($p<0.05$) for RT (Pre: 73.4 ± 23.4 kg; Post: 85.0 ± 30.4 kg) but not for Control (Pre: 54.9 ± 24.6 kg; Post: 57.3 ± 27.0 kg). Peak isometric squat force increased significantly for RT (Pre: 2627 ± 1071 N; Post: 2892 ± 1171 N) but not for Control (Pre: 2411 ± 675 N; Post: 2394 ± 592 N). Peak vertical jump power also increased significantly for RT (Pre: 35.9 ± 3.5 $W \cdot kg^{-1}$; Post: 36.2 ± 5.0 $W \cdot kg^{-1}$) but not for Control (Pre: 33.9 ± 3.9 $W \cdot kg^{-1}$; Post: 35.7 ± 4 $W \cdot kg^{-1}$). Muscle mass increased significantly for RT (Pre: 46.4 ± 8.2 kg; Post: to 50.5 ± 8.1 kg) but not for Control (Pre: 46.9 ± 13.0 kg; Post: 47.8 ± 12.4 kg). Upper arm and forearm circumference increased only for RT. No adverse effects of the resistance training program were observed. **CONCLUSION:** Resistance training for six weeks increases muscle strength and power, and induces muscle hypertrophy, in men who are infected with HIV and recovering from substance abuse. These findings support the efficacy for including resistance training in the standard of care for men with HIV undergoing in-patient treatment for substance addiction/abuse.