Adding Resistance Training to the Standard of Care for Inpatient Substance Abuse Treatment in Men With Human Immunodeficiency Virus Improves Skeletal Muscle Health Without Altering Cytokine Concentrations

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Abstract

Substance abuse and human immunodeficiency virus (HIV) infection can independently lead to myopathy and related inflammatory alterations; importantly, these effects seem to be additive. Resistance training (RT) can improve muscle health in people living with HIV (PLWH), but the efficacy of this intervention has not been examined for PLWH recovering from substance abuse. The purpose of this study was to determine the effect of RT on muscle health markers (mass, strength, and power) and basal circulating biomarkers for men living with HIV undergoing substance abuse treatment. Men living with HIV undergoing 60-day inpatient substance abuse treatment completed either RT (3×/wk) or no exercise training (control) for 6 weeks. Muscle mass, strength, and power, and fasting circulating cytokines (interferon γ, tumor necrosis factor-α, interleukin (IL)-1β, IL-2, IL-4, IL-6, and IL-10), vascular cellular adhesion molecule-1, and cortisol were measured before (PRE) and after (POST) the 6-week period. Both groups received the standard of care for HIV and substance abuse treatment determined by the inpatient facility. Muscle mass, strength, and power increased ($p \leq 0.05$) from PRE to POST for RT but were unchanged for control. No differences were found for circulating biomarkers. Adding RT to the standard of care for substance abuse treatment improved aspects of muscle health (mass, strength, and power) in men living with HIV. These improvements are associated with a lower risk of a number of health conditions. Therefore, practitioners should consider implementing RT interventions as part of substance abuse treatment programs in this population to help manage long-term health.