

Improvements in Mood State Following an 8-Week Strength Training Intervention in Healthy Adult Subjects

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ABSTRACT

Recently, a growing body of literature has identified the potential role of exercise in modulating the microbiome-gut-brain axis, by which changes in the gut microbiome have been associated with improved markers of psychological health. **PURPOSE:** To introduce the potential role of strength training, an underrepresented exercise modality in this field, as a modifiable lifestyle factor that may improve mental health outcomes via the microbiome-gut-brain axis. **METHODS:** This randomized controlled trial implicates an 8-week, remotely monitored strength training intervention consisting of three total-body exercise sessions per week in healthy adults. The intervention arm (ST; n=11; 91% female; 38.5±10.3 y) received detailed instructions on how to complete all programmed sessions at their baseline visit, attending a total of three visits to the laboratory where various strength, depression, mood state, and anthropometric measures were collected. A waitlisted control arm (WC; n=9; 78% female; 38.2±14.7 y) participated in the same series of measures but did not receive the training protocol until their final visit to the lab. **RESULTS:** The findings of this study indicate that, between groups, significantly greater improvements in strength were achieved in the ST arm (p=0.035) compared to the WC arm. Strength improvements were defined as total training volume for the bench press and split squat in pounds (load*repetitions performed) completed during each laboratory visit. Furthermore, significantly greater improvements in overall mood state were observed in the ST arm (p=0.033) compared to the WC arm. This was determined by the administration of the Profile of Mood States (POMS) questionnaire. The observed changes in mood state, however, were not correlated with changes in strength (r=-0.021) indicating that the exercise stimulus itself may be implicated in these effects rather than its effectiveness in improving absolute strength over an 8-week period. **CONCLUSION:** Improvements in overall mood state may be observed following the administration of an 8-week strength training intervention. This effect may be modulated, in part, by the microbiome-gut-brain axis, highlighting a need for quantifiable measures of intestinal barrier function and neuroinflammation which will be presented in future reports.