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Healthy Body Healthy Mind: Trialling an exercise intervention for reducing depression in youth with major depressive disorder

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ABSTRACT

Introduction: Major Depressive Disorder (MDD) has high prevalence among adolescents and young adults but evidence of any effective treatments is limited. Exercise as an effective treatment for adults has some support but studies in younger populations are lacking. MDD is associated with inflammation and exercise may contribute to reductions in inflammatory marker levels. Therefore the aim of this study was to investigate the feasibility and preliminary efficacy of brief motivational interviewing (MI) plus 12-weeks exercise training as a treatment for MDD in youth.

Methods: Youth (15-25 years) with MDD were recruited to participate in a prospective trial investigating exercise as treatment for MDD. Twenty-six participants were screened (telephone then clinical psychology diagnosis) and 13 (9 females) were eligible (MDD from SCID, no psychotic illness, not pregnant, no physical barriers to exercise, not suicidal, no major eating disorder) to participate. Participants completed assessments at baseline and after 12 weeks training, which included questionnaires: the Beck Depression Inventory (BDI-II); blood samples for analysis of inflammatory biomarkers; and fitness measures: VO₂max, YMCA bench press test, and a seated horizontal leg press endurance test. Prior to commencing the training program, participants engaged in a motivational interview with a psychologist to enhance engagement with the program. IL-6 was measured by ELISA. The exercise program consisted of small group trainer-led supervised exercise (resistance and endurance) training 3 times a week (1h per session) for 12 weeks, and encouragement to do at least 30min of physical activity on other days. Paired t-tests were used to determine changes from baseline and correlations used to explore relationships between changes in depression scores, training attendance and fitness levels.

Results: 12 participants (mean±SD, aged 20.7±1.7 y) completed 12-week assessments; one withdrew due to family issues. Attendance at training averaged 66±25% of sessions; 3 participants completed less than 40% of training sessions. At baseline all participants met the criteria for MDD; at 12 weeks only 2 still met the criteria; depression severity (BDI-II) decreased ($p<0.001$) from 32±9 to 12±10. Aerobic fitness levels did not change with training. YMCA bench press repetitions increased ($p<0.001$) from 20±11 to 27±11. IL-6 decreased ($p<0.05$) from 1.39±0.78 to 0.73±0.80 pg.mL⁻¹.

Changes in depression symptom scores were significantly correlated ($p<0.05$) with attendance ($r=0.32$), improvements in bench press endurance ($r=0.65$) and changes in IL-6 ($r=0.34$). Changes in IL-6 were also correlated with attendance ($r=0.60$)

Conclusion: Exercise training is a feasible and potentially effective intervention for MDD in youth and reductions in depression severity are associated with reductions in IL-6.