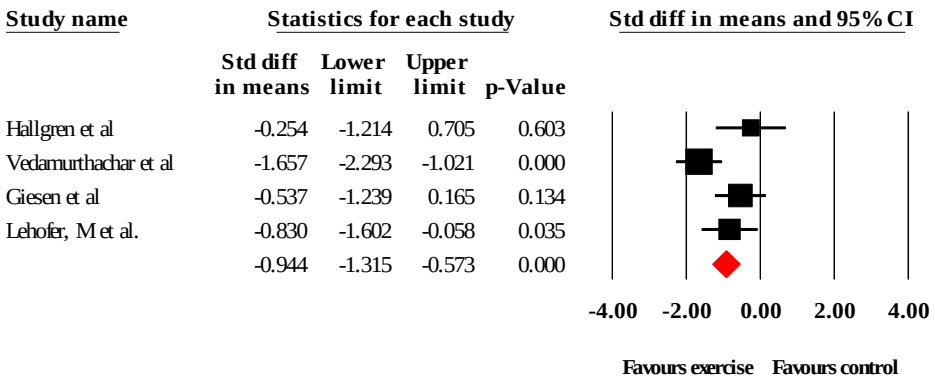
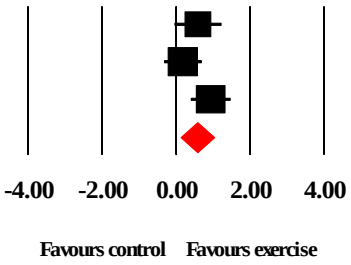
Supplementary material

Effects of exercise on depression in AUDs



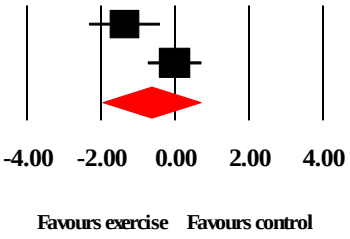
Effects of exercise on V02 in AUDs

Study name	Std diff in means	Lower limit	Upper limit	p-Value
Weinstock et al	0.595	-0.056	1.245	0.073
Brown et al.	0.187	-0.335	0.710	0.483
Sinyor et al	0.938	0.386	1.491	0.001
	0.565	0.111	1.018	0.015



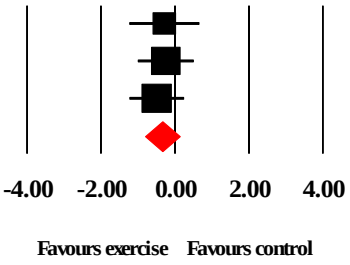
Effects of exercise on heart rate in AUDs

Study name	Std diff in means	Lower limit	Upper limit	p-Value
Gary & Guthrie	-1.365	-2.339	-0.392	0.006
Lehofer, M et al.	-0.011	-0.752	0.730	0.976
	-0.650	-1.975	0.675	0.336



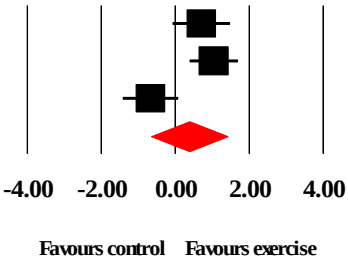
Effects of exercise on anxiety in AUDs

Study name	Std diff in means	Lower limit	Upper limit	p-Value
Hallgren et al	-0.288	-1.248	0.673	0.557
Weber, A	-0.247	-1.019	0.524	0.530
Lehofer, M et al.	-0.495	-1.247	0.257	0.197
	-0.354	-0.823	0.116	0.140



Effects of exercise on self-efficacy in AUDs

Study name	Std diff in means	Lower limit	Upper limit	p-Value
Weber, A	0.704	-0.088	1.497	0.081
Steinsmeier-Pelster	1.040	0.373	1.707	0.002
Lehofer, M et al.	-0.670	-1.432	0.091	0.084
	0.366	-0.665	1.397	0.487



Narrative summary of studies reporting alcohol consumption outcomes

Focusing on the primary outcome, results from the pooled analyses indicate no significant reduction in alcohol consumption compared to the control group. However, it is noteworthy that for each of the three drinking outcomes reported (average daily consumption, average weekly consumption, and AUDIT total), the trend favoured the exercise condition. The five studies reporting usable alcohol consumption data[1-5] were heterogeneous in terms of age range, gender, participant diagnosis and study design, making comparison of the findings and generalizability difficult. Three investigations were described as pilot/preliminary studies,[1, 2, 5] with 18, 31 and 49 participants, respectively. One pilot study included an active control group comparator and found no differences in post-treatment alcohol consumption.[5] Weinstock et al (2014) compared the effects of motivational enhancement therapy (MET) to increase exercise, with MET plus 8 weeks of contingency management (CM) for adhering to specific exercise activities.[5] The MET+CM condition showed an increased frequency of exercise compared to MET alone, but other indices of exercise, physical fitness and alcohol use did not differ between groups over time. A previous review by the authors indicated a bias in exercise for depression studies with active control group comparitors, potentially lowering the magnitude of the effect of exercise.[6] Also relevant is that two studies used yoga-based interventions,[2, 4] with one reporting significant effects on alcohol consumption favouring the yoga group[4] and the other indicating a positive trend among the yoga participants.[2] A further three studies used aerobic exercise (e.g. running and aerobic classes),[1, 3, 5] with two of these reporting significant reductions in alcohol consumption among exercise participants compared to control.[1, 3] One of the more recent and methodologically rigorous of these trials was conducted by Brown et al (2014).[1] Forty-nine sedentary adults aged 18-65 years who met the DSM-IV-TR criteria for alcohol dependence were randomized to either a 12-week moderate-intensity supervised group aerobic exercise intervention, or a 'brief advice to exercise' intervention, consisting of a single 15-20 minute discussion about the psychological and physiological benefits of exercise (including public health recommendations for exercise frequency, intensity and duration). Results showed that individuals in the exercise group reported significantly fewer drinking and heavy drinking days, relative to the brief advice condition during treatment. Higher levels of exercise participation appeared to facilitate alcohol recovery, regardless of intervention

arm; however, assignment to the supervised exercise group appeared to further enhance the positive effect of exercise on consumption levels.[1]

References

1. Brown RA, Abrantes AM, Minami H, *et al*. A preliminary, randomized trial of aerobic exercise for alcohol dependence. *J Subst Abuse Treat* 2014;47:1-9.
2. Hallgren M, Romberg K, Bakshi AS, *et al*. Yoga as an adjunct treatment for alcohol dependence: a pilot study. *Complement Ther Med* 2014;22:441-445.
3. Murphy TJ, Pagano RR, Marlatt GA. Lifestyle modification with heavy alcohol drinkers: effects of aerobic exercise and meditation. *Addict Behav* 1986;11:175-186.
4. Reddy S, Dick AM, Gerber MR, *et al*. The effect of a yoga intervention on alcohol and drug abuse risk in veteran and civilian women with posttraumatic stress disorder. *J Altern Complement Med* 2014;20:750-756.
5. Weinstock J, Capizzi J, Weber SM, *et al*. Exercise as an intervention for sedentary hazardous drinking college students: A pilot study. *Mental Health and Physical Activity* 2014;7:55-62.
6. Stubbs B, Vancampfort D, Rosenbaum S, *et al*. Challenges Establishing the Efficacy of Exercise as an Antidepressant Treatment: A Systematic Review and Meta-Analysis of Control Group Responses in Exercise Randomised Controlled Trials. *Sports Med* 2015.