Faculty of Health: Medicine, Dentistry and Human Sciences

Peninsula Dental School

2020-10

Physical activity and the prevention, reduction, and treatment of alcohol and other drug use across the lifespan (The PHASE review): A systematic review

Panda, Asim

http://hdl.handle.net/10026.1/16582

10.1016/j.mhpa.2020.100360 Mental Health and Physical Activity Elsevier BV

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.

Supplementary File 1 – Risk of Bias Tables

Risk of bias was assessed using the Cochrane Risk of Bias Tool v2 (Higgins et al., 2016) and the ROBINS-I (Sterne et al., 2016) tool for randomised and non-randomised studies, respectively.

Table 1 Risk of bias (Cochrane Risk of Bias Tool v2) for randomised prevention studies

Study	Bias arising from the randomisation process	Bias due to deviations from the intended interventions (effect of adhering to the intervention)	Bias due to missing outcome data	Bias in measurement of the outcome	Bias in the selection of the reported result	Overall
(Butzer, LoRusso, Shin, & Khalsa, 2017)	SC	SC	L	Н	SC	н
(Velicer et al., 2013)	L	SC	L	Н	SC	н
(Werch et al., 2003)	L	SC	L	SC	SC	SC

L=low risk of bias; SC=some concerns over risk of bias; H=high risk of bias

Table 2 Risk of bias (ROBINS-I) for non-randomised studies prevention studies

Study	Bias Due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviation from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
(Collingwood, Reynolds, Kohl, Smith, & Sloan, 1991)	S	М	М	М	S	М	L	S
(Collingwood, Sunderlin, Reynolds, & Kohl 3rd, 2000)	S	L	М	М	S	М	L	S

L=low risk of bias; M=moderate risk of bias; S=severe risk of bias; C=critical risk of bias

Table 3 Risk of bias (Cochrane Risk of Bias Tool v2) for randomised reduction studies

Study	Bias arising from the randomisation process	Bias due to deviations from the intended interventions	Bias due to missing outcome data	Bias in measurement of the outcome	Bias in the selection of the reported result	Overall
(Murphy, Pagano, & Marlatt, 1986)	SC	н	Н	SC	L	н
(Correia, Benson, & Carey, 2005)	SC	SC	L	SC	L	SC
(Reddy, Dick, Gerber, & Mitchell, 2014)	SC	SC	SC	SC	L	SC
(Weinstock, Capizzi, Weber, Pescatello, & Petry, 2014)	SC	SC	L	SC	L	SC
(Weinstock, Petry, Pescatello, & Henderson, 2016)	L	SC	L	SC	L	SC

L=low risk of bias; SC=some concerns over risk of bias; H=high risk of bias

Table 4 Risk of bias (ROBINS-I) for non-randomised studies reduction studies

Study	Bias Due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviation from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
(Georgakouli et al., 2017)	S	M	С	C	S	М	С	С
(Oaten & Cheng, 2006)	S	S	М	L	L	S	S	S
(Scott & Myers, 1988)	S	S	S	М	М	М	S	S

L=low risk of bias; M=moderate risk of bias; S=severe risk of bias; C=critical risk of bias

Table 5 Risk of bias (Cochrane Risk of Bias Tool v2) for randomised treatment studies

Study	Bias arising from the randomisation process	Bias due to deviations from the intended interventions	Bias due to missing outcome data	Bias in measurement of the outcome	Bias in the selection of the reported result	Overall
(Brown et al., 2014)	L	SC	L	SC	L	SC
(Colledge et al., 2017)	SC	SC	L	SC	L	SC
(Cutter et al., 2014)	SC	SC	L	L	L	sc
(De La Garza et al., 2016)	SC	L	L	L	SC	sc
(Donaghy, 1997)	L	SC	Н	L	L	н
(Hallgren, Romberg, Bakshi, & Andréasson, 2014)	SC	SC	SC	SC	Н	н
(Rawson et al., 2015)	L	SC	L	L	L	SC
(Roessler et al., 2017)	L	SC	SC	SC	Н	н
(Shaffer, Lasalvia, & Stein, 1997)	н	н	Н	SC	Н	н
(Trivedi et al., 2017)	L	SC	L	L	SC	SC

L=low risk of bias; SC=some concerns over risk of bias; H=high risk of bias

Table 6 Risk of bias (ROBINS-I) for non-randomised treatment studies

Study	Bias Due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviation from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall
(Abrantes et al., 2017)	S	М	М	м	L	М	L	м
(Brown et al., 2010)	М	М	М	м	м	М	L	м
(Buchowski et al., 2011)	S	S	L	L	L	м	L	S
(Burling, Seidner, Robbins-Sisco, Krinsky, & Hanser, 1992)	S	S	S	S	L	М	L	S
(Giesen, Zimmer, & Bloch, 2016)	S	S	S	S	L	L	L	S
(Mamen, Pallesen, & Martinsen, 2011)	S	S	S	S	S	М	L	S
(Sinyor, Brown, Rostant, & Seraganian, 1982)	S	S	М	S	S	М	L	S
(Weinstock, Barry, & Petry, 2008)	S	S	М	L	L	L	L	S

L=low risk of bias; M=moderate risk of bias; S=severe risk of bias; C=critical risk of bias

References

- Abrantes, A. M., Blevins, C. E., Battle, C. L., Read, J. P., Gordon, A. L., & Stein, M. D. (2017). Developing a Fitbit-supported lifestyle physical activity intervention for depressed alcohol dependent women. *Journal of Substance Abuse Treatment*, *80*, 88–97. https://doi.org/10.1016/j.jsat.2017.07.006
- Brown, R. A., Abrantes, A. M., Minami, H., Read, J. P., Marcus, B. H., Jakicic, J. M., ... Stuart, G. L. (2014). A preliminary, randomized trial of aerobic exercise for alcohol dependence. *Journal of Substance Abuse Treatment*, 47(1), 1–9. https://doi.org/10.1016/j.jsat.2014.02.004
- Brown, R. A., Abrantes, A. M., Read, J. P., Marcus, B. H., Jakicic, J., Strong, D. R., ... Gordon, A. A. (2010). A pilot study of aerobic exercise as an adjunctive treatment for drug dependence. *Mental Health* and Physical Activity, 3(1), 27–34. https://doi.org/10.1016/j.mhpa.2010.03.001
- Buchowski, M. S., Meade, N. N., Charboneau, E., Park, S., Dietrich, M. S., Cowan, R. L., & Martin, P. R. (2011). Aerobic Exercise Training Reduces Cannabis Craving and Use in Non-Treatment Seeking Cannabis-Dependent Adults. *PLoS ONE*, 6(3), e17465. https://doi.org/10.1371/journal.pone.0017465
- Burling, T. A., Seidner, A. L., Robbins-Sisco, D., Krinsky, A., & Hanser, S. B. (1992). Batter up! Relapse prevention for homeless veteran substance abusers via softball team participation. *Journal of Substance Abuse*, 4(4), 407–413. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1338187
- Butzer, B., LoRusso, A., Shin, S. H., & Khalsa, S. B. (2017). Evaluation of Yoga for Preventing Adolescent Substance Use Risk Factors in a Middle School Setting: A Preliminary Group-Randomized Controlled Trial. J Youth Adolesc, 46(3), 603–632. https://doi.org/10.1007/s10964-016-0513-3
- Colledge, F., Vogel, M., Dürsteler-Macfarland, K., Strom, J., Schoen, S., Pühse, U., & Gerber, M. (2017). A pilot randomized trial of exercise as adjunct therapy in a heroin-assisted treatment setting. *Journal of Substance Abuse Treatment*, *76*, 49–57. https://doi.org/10.1016/j.jsat.2017.01.012
- Collingwood, T. R., Reynolds, R., Kohl, H. W., Smith, W., & Sloan, S. (1991). Physical fitness effects on substance abuse risk factors and use patterns. *Journal of Drug Education*, *21*(1), 73–84.
- Collingwood, T. R., Sunderlin, J., Reynolds, R., & Kohl 3rd, H. W. (2000). Physical training as a substance abuse prevention intervention for youth. *J Drug Educ*, *30*(4), 435–451. https://doi.org/10.2190/rvue-9xw7-tyrq-ejr8
- Correia, C. J., Benson, T. A., & Carey, K. B. (2005). Decreased substance use following increases in alternative behaviors: a preliminary investigation. *Addictive Behaviors*, *30*(1), 19–27. https://doi.org/10.1016/j.addbeh.2004.04.006
- Cutter, C. J., Schottenfeld, R. S., Moore, B. A., Ball, S. A., Beitel, M., Savant, J. D., ... Barry, D. T. (2014). A pilot trial of a videogame-based exercise program for methadone maintained patients. *Journal of Substance Abuse Treatment*, 47(4), 299–305. https://doi.org/https://doi.org/10.1016/j.jsat.2014.05.007
- De La Garza, R., Yoon, J. H., Thompson-Lake, D. G. Y., Haile, C. N., Eisenhofer, J. D., Newton, T. F., & Mahoney, J. J. (2016). Treadmill exercise improves fitness and reduces craving and use of cocaine in individuals with concurrent cocaine and tobacco-use disorder. *Psychiatry Research*, 245, 133–140. https://doi.org/10.1016/j.psychres.2016.08.003

Donaghy, M. E. (1997). The investigation of exercise as an adjunct to the treatment and rehabilitation of

the problem drinker. Retrieved from http://theses.gla.ac.uk/3250/1/1997donaghyphd.pdf

- Georgakouli, K., Manthou, E., Georgoulias, P., Ziaka, A., Fatouros, I. G., Mastorakos, G., ... Jamurtas, A. Z. (2017). Exercise training reduces alcohol consumption but does not affect HPA-axis activity in heavy drinkers. *Physiology & Behavior*, *179*, 276–283. https://doi.org/https://doi.org/10.1016/j.physbeh.2017.07.003
- Giesen, E. S., Zimmer, P., & Bloch, W. (2016). Effects of an Exercise Program on Physical Activity Level and Quality of Life in Patients with Severe Alcohol Dependence. *Alcoholism Treatment Quarterly*, *34*(1), 63–78. https://doi.org/10.1080/07347324.2016.1113109
- Hallgren, M., Romberg, K., Bakshi, A.-S., & Andréasson, S. (2014). Yoga as an adjunct treatment for alcohol dependence: A pilot study. *Complementary Therapies in Medicine*, *22*(3), 441–445. https://doi.org/10.1016/j.ctim.2014.03.003
- Higgins, J., Sterne, J., Savovic, J., Page, M., Hrobjartsson, A., Boutron, I., ... Eldridge, S. (2016). A revised tool for assessing risk of bias in randomized trials. In J. Chandler, J. McKenzie, I. Boutron, & V. Welch (Eds.), *Cochrane Database of Systematic Reviews* (p. Issue 10 (Suppl 1)).
- Mamen, A., Pallesen, S., & Martinsen, E. (2011). Changes in mental distress following individualized physical training in patients suffering from chemical dependence. *Eur. J. Sport Sci.*, *11*(4), 269–276. https://doi.org/10.1080/17461391.2010.509889
- Murphy, T. J., Pagano, R. R., & Marlatt, G. A. (1986). Lifestyle modification with heavy alcohol drinkers: effects of aerobic exercise and meditation. *Addictive Behaviors*, *11*(2), 175–186.
- Oaten, M., & Cheng, K. (2006). Longitudinal gains in self-regulation from regular physical exercise. *Br. J. Health Psychol.*, *11*(4), 717–733. https://doi.org/10.1348/135910706X96481
- Rawson, R., Chudzynski, J., Gonzales-Castaneda, R., Ang, A., Dickerson, D., Mooney, L., ... Cooper, C. (2015). Impact of an exercise intervention on methamphetamine use outcomes post residential treatment care. *Drug and Alcohol Dependence*. https://doi.org/10.1016/j.drugalcdep.2015.07.501
- Reddy, S., Dick, A. M., Gerber, M. R., & Mitchell, K. (2014). The effect of a yoga intervention on alcohol and drug abuse risk in veteran and civilian women with posttraumatic stress disorder. *Journal of Alternative and Complementary Medicine (New York, N.Y.), 20*(10), 750. https://doi.org/10.1089/acm.2014.0014
- Roessler, K. K., Bilberg, R., Sogaard Nielsen, A., Jensen, K., Ekstrom, C. T., & Sari, S. (2017). Exercise as adjunctive treatment for alcohol use disorder: A randomized controlled trial.(Research Article)(Report). *PLoS ONE*, *12*(10), e0186076. https://doi.org/10.1371/journal.pone.0186076
- Scott, K. A., & Myers, A. M. (1988). Impact of fitness training on native adolescents' self-evaluations and substance use. *Can J Public Health*, *79*(6), 424–429.
- Shaffer, H. J., Lasalvia, T. A., & Stein, J. P. (1997). Comparing Hatha yoga with dynamic group psychotherapy for enhancing methadone maintenance treatment: a randomized clinical trial. *Alternative Therapies in Health and Medicine*, *3*(4), 57.
- Sinyor, D., Brown, T., Rostant, L., & Seraganian, P. (1982). The role of a physical fitness program in the treatment of alcoholism. *Journal of Studies on Alcohol*, *43*(3), 380–386.

Sterne, J. A., Hernán, M. A., Reeves, B. C., Savović, J., Berkman, N. D., Viswanathan, M., ... Higgins, J. P.

(2016). ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ*, i4919. https://doi.org/10.1136/bmj.i4919

- Trivedi, M. H., Greer, T. L., Rethorst, C. D., Carmody, T., Grannemann, B. D., Walker, R., ... Nunes, E. V. (2017). Randomized Controlled Trial Comparing Exercise to Health Education for Stimulant Use Disorder: Results From the CTN-0037 STimulant Reduction Intervention Using Dosed Exercise (STRIDE) Study. J Clin Psychiatry, 78(8), 1075–1082. https://doi.org/10.4088/JCP.15m10591
- Velicer, W., Redding, C., Paiva, A., Mauriello, L., Blissmer, B., Oatley, K., ... Fernandez, A. (2013). Multiple behavior interventions to prevent substance abuse and increase energy balance behaviors in middle school students. *Practice, Policy, Research*, 3(1), 82–93. https://doi.org/10.1007/s13142-013-0197-0
- Weinstock, J., Barry, D., & Petry, N. M. (2008). Exercise-related activities are associated with positive outcome in contingency management treatment for substance use disorders. *Addictive Behaviors*, 33(8), 1072–1075. https://doi.org/10.1016/j.addbeh.2008.03.011
- Weinstock, J., Capizzi, J., Weber, S. M., Pescatello, L. S., & Petry, N. M. (2014). Exercise as an intervention for sedentary hazardous drinking college students: A pilot study. *Mental Health and Physical Activity*, 7(1), 55–62. https://doi.org/10.1016/j.mhpa.2014.02.002
- Weinstock, J., Petry, N. M., Pescatello, L. S., & Henderson, C. E. (2016). Sedentary College Student Drinkers Can Start Exercising and Reduce Drinking After Intervention. *Psychology of Addictive Behaviors*. https://doi.org/10.1037/adb0000207
- Werch, C., Moore, M., DiClemente, C. C., Owen, D. M., Jobli, E., & Bledsoe, R. (2003). A sport-based intervention for preventing alcohol use and promoting physical activity among adolescents. *The Journal of School Health*, *73*(10), 380–388.