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Exercise for Management of Substance Use Withdrawal

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ABSTRACT

Substance use disorder is a current public health crisis that affects nearly 20 million people in the United States. SUD is associated with poor health outcomes including negative effects on physical and mental health. Typical treatment in a rehabilitation center includes therapy and medication therapy to help with withdrawal symptoms. This study aimed to assess if adding the holistic treatment of low-to-moderate intensity aerobic exercise can improve withdrawal symptom management, reduce the amount of medication needed, reduce cravings, and increase the completion rates for the rehabilitation program. This quasi-experimental enrolled 61 participants from a residential SUD treatment facility to join either an exercise or control group. The exercise group was asked to use a recumbent stationary bike for 20-30 minutes per day. Results indicate that symptom scores were reduced for clients in treatment for alcohol use disorder. In addition, cravings for drugs or alcohol at day 7 (studied at days 1, 7, 14) of the study were decreased for the exercise group. Medication use did not differ between groups. Further studies with larger sample size and investigating groups separated by substances used will be beneficial.

Keywords : Withdrawal management, Withdrawal symptoms, Exercise, SUD treatment, Addiction, Cravings

1. INTRODUCTION

"A substance use disorder (SUD) is a mental disorder that affects a person's brain and behavior, leading to a person's inability to control their use of substances such as legal or illegal drugs, alcohol, or medications" (National Institute of Mental Health, 2022, para. 1). Substance use disorder is a current public health crisis that impacts nearly 20 million people in the United States. SUD is associated with many poor health outcomes, including adverse effects on both physical and mental health. Treatment in a rehabilitation center has been a standard treatment for SUD for many years. Typical treatment in a rehabilitation center includes therapy such as behavioral, individual, group, and 12-step program usage as well as medication therapy to help with withdrawal symptoms (National Center for Drug Abuse Statistics, 2019). This study aimed to assess if adding the holistic treatment of low-to-moderate intensity aerobic exercise can improve withdrawal symptom management, reduce the amount of medication needed, reduce cravings, and increase the completion rates for the inpatient rehabilitation program.

Of the nearly 20 million people who are affected by substance use disorders, about 38% have an illicit drug SUD, 73% have an alcohol SUD, and 12% use a combination of the two substances (Cleveland Clinic, 2023). Substance use disorders can be found in people of all ages, races, genders, geographic locations, and socioeconomic statuses. However, SUDs are more commonly seen in males and individuals that are 18-25 years old. It is estimated that only 11% of adults with substance use disorders receive treatment for their illness (Cleveland Clinic, 2023).

It is important to note that substance use is not the same as substance use disorder. Substance use is an occasional episode of use rather than a chronic and habitual pattern of use (Cleveland Clinic, 2023). Substance use alone may not be as problematic but can become a problem if a dependency is formed and a substance use disorder is developed. Substance use disorders are a problematic pattern of use leading to distress or significant impairment in daily life (Department of Veteran's Affairs, 2021).

SUD is associated with several poor health outcomes including heart disease, stroke, cancer, endocarditis, cellulitis, lung disease, HIV/AIDS, hepatitis A, hepatitis B, and a number of psychological conditions (Nation Institute on Drug Abuse, 2020; SAMHSA, 2021). The more common psychological comorbidities in substance use disorders are major depression and anxiety, mainly panic, and generalized anxiety disorders. Other conditions that might be present include post-traumatic stress disorder (PTSD), psychosis, bipolar disorder, attention deficit hyperactivity disorder (ADHD), eating disorders, and personality disorders (National Institute on Drug Abuse, 2020; Udo & Grilo, 2019).

Individuals with substance use disorders commonly experience a co-occurring mental disorder in their lifetime, however, this does not mean that one necessarily causes the other. Research suggests three possibilities that could explain the connection between SUDs and mental disorders. 1) SUDs may contribute to the development of other mental disorders; substance use may trigger changes in the brain structure and function, which could increase the chance of developing a mental disorder. 2) Mental disorders may contribute to the development of substance use disorders; studies have found that individuals with a mental disorder may use substances as a form of self-medication, which can worsen a mental disorder over time. 3) Common risk factors may contribute to the development of mental disorders and SUDs; mental disorders and SUDs can run in families, suggesting a genetic component to risk. Additionally, environmental factors like stress and trauma can cause genetic changes and may contribute to the development of a mental disorder or SUDs (National Institute of Mental Health, 2022).

Treatment in a rehabilitation facility is a common and often life-saving intervention for individuals with substance use disorders. In a treatment facility, medications and therapy are used in combination to manage withdrawal symptoms during the acute detoxification process. Common symptoms of withdrawal include joint and muscle pain, chills, sweating, tremors, sensory changes, nausea, headache, anxiety, and cognitive disturbances (American Addictions Centers, 2021). Seizures can be triggered by alcohol or drug withdrawal, which can be life-threatening if untreated (Addiction Center, 2023). Symptoms experienced during withdrawal can be extreme and can lead to relapse. Ideally, these symptoms can be managed with medications as well as with holistic measures, like talk therapy and exercise.

Exercise has successfully been used as medicine in the treatment of multiple diseases. Exercise is typically performed in combination with other treatments to enhance the benefits. Pedersen (2019) provides an updated review of their 2015 review that found up-to-date evidence-based data that suggests exercise as an effective form of treatment for 26 different diseases. Some of the diseases that have been found to be successfully treated with exercise are also diseases that are associated with SUDs. Exercise has been found to help in the treatment of diseases like depression and anxiety, neurological diseases, metabolic diseases, cardiovascular diseases, pulmonary diseases, and musculoskeletal diseases. Health professionals traditionally aim to prescribe treatments that are effective and practical while also carrying low risk and few side effects (Pedersen, 2019). Exercise has been shown to be effective as a medical treatment, and when performed correctly, should carry few risks and side effects.

While medications are appropriate for the management of symptoms in rehabilitation facilities, exercise may be a successful addition of intervention to relieve some withdrawal symptoms. Exercise has been shown to effectively reduce drug cravings (Ellingsen et al., 2021), increase abstinence rates, ease withdrawal symptoms, and reduce symptoms of anxiety and depression (Ashdown-Franks et al., 2020). Providing safe aerobic exercise equipment in a rehabilitation facility may improve symptom management for individuals being treated for substance use withdrawal and substance use disorders. Exercise increases dopamine concentration and activates dopamine receptors, which is that same reward pathway as drugs. Exercise should, in turn, reduce the craving or need for drugs (Zhang & Liu, 2022). Further, light-to-moderate aerobic exercise has been shown to change GABA and glutamate responses in the brain, which should improve brain function, neuroplasticity, and mood (Ashdown-Franks et al., 2020). If symptom management can be enhanced with exercise, the use of medication may be able to be reduced. Additionally, the completion of the program may be more easily achieved and the overall wellness of the client may be improved.

The goal of this quasi-experimental study was to incorporate the holistic approach of light-to-moderate aerobic activity using a stationary recumbent bicycle among clients in an acute rehabilitation facility to (a) improve symptom management, (b) reduce medication use, (c) increase completion rates for the program, and (d) reduce cravings.

Research Question 1. What is the difference in scores on opiate and alcohol withdrawal scales between the exercise group and the control group?

Research Question 2. What is the difference in the amount of medication needed to manage withdrawal symptoms between the exercise and control groups?

Research Question 3. What is the difference between program completion rates of the rehabilitation program between the exercise and control groups?

Research Question 4. Are the cravings for drugs or alcohol different between the exercise and control groups?

Our overall hypothesis was that the use of light-to-moderate aerobic exercise on a stationary recumbent bicycle will improve symptom management, reduce the need for medications, reduce cravings, and improve the likelihood that clients will complete the rehabilitation program.

This study will expand beyond the traditional medication and therapy for the treatment of SUDs to include exercise. Currently, numerous medications are used to manage symptoms of withdrawal, often resulting in dozens of medications being given per day.

As with any medication, the medications used to treat withdrawal symptoms are not without risks to the client. Medications and traditional therapy will continue to be provided in this study, but with the addition of the holistic method of light-to-moderate aerobic exercise. Although numerous studies have identified the benefits of physical exercise in addition to traditional treatment for substance use disorder treatment (Nowakowski-Sims & Bullard, 2018), none have examined if exercise during the treatment program can reduce medication needs, decrease drug cravings, and improve completion rates of the clients. Subjective positive feelings of moving forward in recovery and overall health benefits have been reported with incorporating exercise into the recovery plan (Dai et al., 2020).

Nurses working in rehabilitation programs are ideally suited to assist with health promotion activities of their clients. Nurses teach the importance of healthy behaviors, and exercise can be an important factor to discuss to promote overall well-being. Incorporating exercise while in the treatment program will ideally lead to continuation of the healthy behavior after discharge.

2. Methods

The study took place at a local substance use rehabilitation facility in Southwest Michigan. This center is a 37-bed facility with 13 detox and 24 residential beds, serving male, female, transgender, and non-binary adult clients. The typical stay for clients is 19 days, with 5 in the detox area and 14 in the residential section. The facility serves approximately 650 adult clients per year and provides care for persons aged 18 and older. The study was approved by Western Michigan University Institutional Review Board and the Clinical Director of the rehabilitation center.

This study was a quasi-experimental design, consisting of an intervention (exercise bike) but lacking randomization. Participants were allowed to select the intervention group or the control group because not all willing participants were able to physically complete the requirements of the intervention group. Clients in the intervention group were asked to use the recumbent exercise bike for mild to moderate exercise for 20-30 minutes per day. Moderate exercise was defined as being able to hold a conversation while exercising and not feeling short of breath. Participants could use the heart rate monitor on the bike if they preferred. For safety reasons, the exercise bike was placed in a large open room that is monitored by staff at the facility. The control group was asked to go about their day "as usual" and document any physical activity that they participated in but were not directed to use the bike. Both groups were asked to document "other activity" such as walking, pushups, sit ups.

Power analysis was based on calculations using ClinCalc.com, and the number needed for each group for a power of .8 and alpha .05 was 16 per group. To assure adequate power we chose to enroll 30 participants per group. Clients at a local substance use rehabilitation facility were asked to participate in the study after they completed the "detox" portion of their rehabilitation. This period for most clients was 5 days. The PI's monitored the census to determine who was eligible to participate in the study, and approached those that were eligible. Inclusion criteria were age between 18-65, receiving treatment for opiate or alcohol abuse, and able to read and write in English. Exclusion criteria were over 65 years of age, known cardiac or neurological conditions, uncontrolled hypertension, unsteady gait, weakness that prevents use of equipment, and pregnancy. In addition, people seeking treatment for benzodiazepines, cocaine, and methamphetamine who do not also use opiates or alcohol were excluded because they may not experience the same symptoms as those with opiate and alcohol withdrawal. Once the participant provided informed consent, they were assigned a study number that was used to link all demographic and study variables. Study forms were stored in a secure location and then inputted to a statistical database as de-identified data. Clients in both groups were offered a $20 gift card upon completion of the study, and a $5 gift card for less than 7 days of participation.

Measures

Participants in each group were given a journal with clear instructions for what to complete on a daily basis. Both groups were asked to log their daily amount of physical activity as well as the following measurement scales. The measurement scale language was modified to remove medical jargon and increase accuracy of participant completion.

Cravings Scale

The 3 item Craving Scale has been used to monitor cravings during treatment for a variety of substance use disorders (McHugh, Trinh, Griffin, & Weiss, 2021; Weiss et al., 2003). The items include current, past week, and imagined future cravings. Participants of both groups completed the Craving Scale in their journal on days 1, 7, and 14 of the study. The Craving Scale has been shown to be valid, reliable, and useful for both opiate and alcohol evaluation. McCue and colleagues (2020) note internal consistency of the scale at .81, items loading on 1 factor, and adequate discriminant validity.

Opiate Withdrawal Scale

The Clinical Institute Narcotic Assessment (CINA) was used to assess participants' symptoms of withdrawal from opiates. This scale includes 11 questions/statements regarding common withdrawal symptoms. Examples of the questions are nausea, abdominal cramping, nasal congestion, restlessness, and sweating. Response options are 0 for *not experiencing the symptom*, to a maximum of 6 *severe symptoms* on certain items, for a total score possible of 31. This scale has been found to have good reliability and validity in other studies, which explains why it is a main method utilized to assess and quantify the intensity of opioid-induced withdrawal symptoms (Nuamah et al., 2019).

Alcohol Withdrawal Scale

The Clinical Institute Withdrawal Scale (CIWA) was used to measure alcohol withdrawal. The scale has 10 items with response options ranging from 0 (n*ot experiencing symptom*) to 7 (*severe symptom*) with a total score possibility of 67 (the orientation item maximum score is 4 instead of 7). This scale has been found to have good reliability and validity in other studies and is commonly used to measure alcohol withdrawal severity (Knight & Lappalainen, 2017). The CIWA scale is widely used in alcohol rehabilitation settings and is known to be valid and reliable measure (Higgins et al., 2019; Tomkins et al., 2009).

Chart Reviews

Upon completion of the study, the PI's utilized chart review to determine the amount of medication used. Charts were evaluated to determine the amount of use of PRN medications for pain, anxiety, and muscle spasms. Also, for individuals with opioid addiction, the amount of buprenorphine (Subutex) used and for alcohol the amount of diazepam (Valium) or lorazepam (Ativan). In addition, the length of stay in rehabilitation was recorded, comparing the approved days to the actual number of days completed.

Demographic Form

Demographic information included age, gender identity, BMI, drug of choice plus positives on the urine drug screen, and the total number of previous treatment programs.

3. Statistical Reporting

Demographics

Sixty-one clients participated in the study, 30 in the intervention group and 31 in the control group. Participants identified as 47 male, and 14 female, with the experimental group having 24/6 male/female ratio and the control group 23/8. Drug of choice for the participants were 42 (69%) alcohol and 19 (31%) opiates (See table 1). Other drugs used in addition to alcohol or opiates included methamphetamines, cocaine, marijuana, and benzodiazepines.

Table 1

Demographics	Exercise	Control	Total
Number of clients	30	31	61
Male	24	23	47
Female	6	8	14
DOC Opiates	7	12	19
DOC Alcohol	23	19	42

The number of prior treatment programs used was collected and ranged from 0 to 9 programs, mean score of 2, SD 1.97. Completion of the program was calculated with 56 (90%) completing the program for their allowed number of days. Despite completing the entire program, some clients did not complete the same number of days in their journal. Days of the journal completed ranged from 3-14, with the majority (N=59, 95%) of clients completing 7 or more days of their journal.

To answer the research question regarding if there was a difference in alcohol or opiate withdrawal scores between the exercise and control groups, a Mann Whitney U test was performed. There was a statistically significant difference in alcohol withdrawal scale scores between the experimental and the control group. The mean daily score for alcohol withdrawal symptoms (CIWA) was 3.91 while the mean daily score for the control group was 8.75. Results of the Mann Whitney U test reveal a mean rank of 13.68 for the exercise group and 23.88 for the control group, U=70, P=.04. (See figure 1)

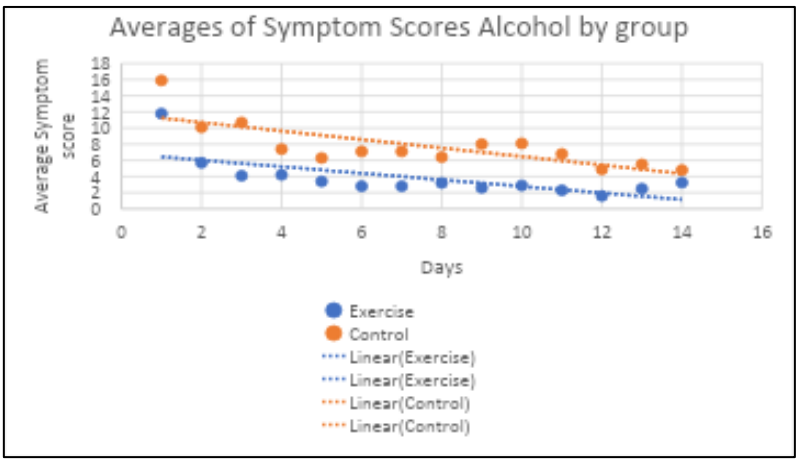

Figure 1

The mean daily score on the opiate withdrawal scale (CINA) for the exercise group was 4.10, while the mean for the control group was 6.44. Results of the Mann Whitney U test reveal a mean rank of 9.91 for the exercise group and 15.53 for the control group with U=43, P=.063. Despite the lower scores for the exercise group, the statistical significance was not achieved. (See figure 2)

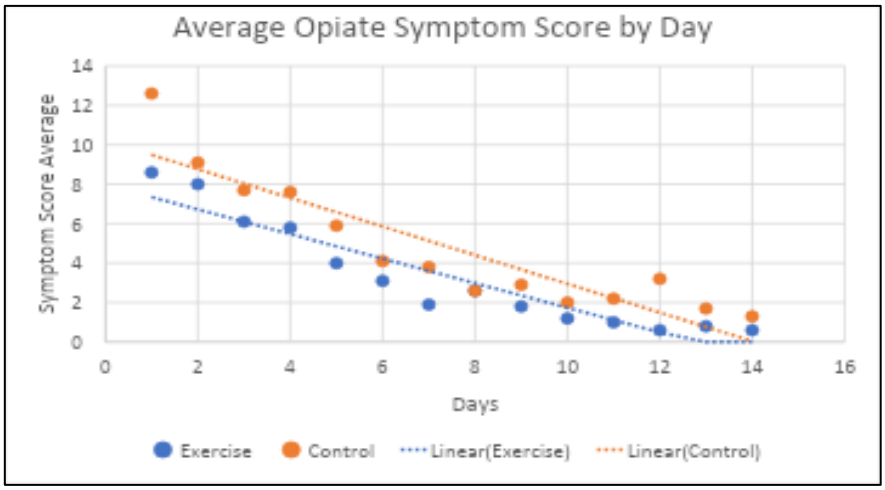

Figure 2

The Mann Whitney U test was also used to identify if there was a difference in the amount of medication needed to manage withdrawal symptoms between the exercise and control groups. Results for comparing the number of medications taken to control symptoms reveal that the control group used an average of 4.09 medications per day, and the exercise group used an average of 3.07. Mann Whitney U test was used to compare groups for statistical differences showed non-significant differences with mean rank of the control group of 35.45 with a mean rank for the exercise group of 27.53 and while the exercise group used less medications, this did not achieve statistical significance, (U=361, P= .133). (See figure 3)

We hypothesized that program completion rates would differ by group. Since the majority of clients did not leave the program early, there was not enough data for statistical analysis. One client from each group left treatment early against staff advice, and 1 from each group left by mutual agreement to attend sober living. One client in the exercise group left the program for code of conduct violation.

There were statistically different ratings in the craving scale between groups. Clients were asked to complete the cravings scale on days 1, 7, and 14. There were no significant differences between groups for day 1 of the 3 items within the cravings scale. For day 7, there was a significant difference between groups for the questions 1) What is the likelihood of you using drugs or alcohol if you were in the previous environment (U=564, p=.004), and 2) How strong are your urges for drugs or alcohol when something in the environment reminds you of it (U=526 p=.025)? The question regarding how strong is the desire to use in the past 24 hours was statistically non-significant. For day 14, group comparisons on the cravings scale were not significant. Summed scores for days 1,

7, and 14 were compared by group and there were significant differences between the summed cravings scale score for day 7 only (U=243, p=.023).

4. Discussion

This study found that there was a significant difference in symptom scores for persons in the exercise group who were experiencing alcohol withdrawal. Alcohol withdrawal symptoms can range from mild to severe, with this facility managing the mild to moderate cases of withdrawal while severe cases should be treated at a hospital. For safety reasons, the use of exercise as a modality to relieve withdrawal symptoms was begun after the acute detoxification stage, typically day 5 of their stay. Symptoms associated with withdrawal can begin soon after the last drink and may begin to decline after 72 hours of detoxification management. Symptom length beyond that time period is very individualized and not well understood (American Addictions Centers, 2024).

Opiate withdrawal symptoms were lower in the exercise group but did not achieve statistical significance. Reasons for this may be the small sample size, or that the physical symptoms of opiate withdrawal are expected to last longer than alcohol (Gupta, Gokarokonda, Attia, 2023). For this reason, we are proposing a future research study with a larger sample investigating opiate withdrawal alone.

The number of medications used to relieve symptoms was not statistically significant between groups. While we did see trends for less medications with the exercise group, we speculate that the individual differences of persons seeking substance use treatment may be factors in medication use. Some individual factors that may impact medication need include comorbidities such as anxiety, depression, opiate use especially intravenous, and the use of multiple substances (Rosic, Worster, Thabane, Marsh, Samaan, 2020).

There were significant differences within the Cravings Scale on day 7 of participation in the study. It is expected that there would not be a difference at day 1, as the exercise program would begin on that day. We speculate that the reason significance was not achieved at day 14 had to do with attrition between days 7 and 14 of participation (N=56 vs N=31).

Future research

Future research with a larger sample size is needed. It also may be helpful to perform research on each substance separately to clarify symptom trends and medication requirements. Also, it would be beneficial to have clients participate in the full 14 days of their rehabilitation stay, or longer if the study were replicated at facilities meant for longer residential stays. For this study we allowed clients to self-report symptom scores and for future research we recommend nursing staff collect this information at the times when clients are requesting medications.

Summary

Nurses working with clients experiencing substance use withdrawal are called upon to help them manage the associated symptoms. Many times, the management includes medications and therapy, and other avenues should be considered as adjunct treatments. Mild to moderate exercise can be helpful to manage symptoms and other holistic modalities can be explored with future studies.

REFERENCES

1. Addiction Center. (2023). *Seizures and substance use.* Recovery Worldwide LLC. Retrieved on 23 January 2023 from https://www.addictioncenter.com/addiction/seizures-substance-use/
2. American Addiction Centers. (2024). *Alcohol Withdrawal Symptoms, Timeline, Detox, and Treatment.* Retrieved on 5 February 2024 from https://americanaddictioncenters.org/alcohol/withdrawal-detox.
3. American Addiction Centers. (2021). *Disease of Addiction*. Retrieved on 24 January 2022 from https://americanaddictioncenters.org/disease-of-addiction.
4. Ashdown-Franks, G., Firth, J., Carney, R., Carvalho, A. F., Hallgren, M., Koyanagi, A., Schuch, F. B., Smith, L., Solmi, M., Vancampfort, D., & Stubbs, B. (2020). Exercise as medicine for mental and substance use disorders: A meta-review of the benefits for neuropsychiatric and cognitive outcomes. *Sports Medicine, 50*(1), 151-170.
5. Cleveland Clinic. (2023). Substance use disorder (SUD). Retrieved 1 February 2023 from https://my.clevelandclinic.org/health/diseases/16652-drug-addiction-substance-use-disorder-sud
6. Dai, C. L., Chen, C. C., Richardson, G. B., & Gordon, H. R. (2020). Managing substance use disorder through a walking/running training program. *Substance Abuse: Research and Treatment, 14*, 1178221820936681.
7. Department of Veterans Affairs, Department of Defense (2021). VA/DoD Clinical practice guideline for the management of substance use disorders. Retrieved on 24 January 2022 from https://www.healthquality.va.gov/guidelines/MH/sud/VADODSUDCPGRevised22216.pdf

8. Ellingsen, M. M., Clausen, T., Johannesen, S. L., Martinsen, E. W., & Hallgren, M. (2021). Effects of acute exercise on drug craving in adults with poly-substance use disorder. A randomized controlled trial. *Mental Health and Physical Activity*, *21*, 100423. https://doi.org/10.1016/j.mhpa.2021.100423
9. Gupta, M., Gokarakonda, S. B., & Attia, F. N. (2023). Withdrawal Syndromes. In *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK459239/
10. Higgins, J., Bugajski, A. A., Church, D., Oyler, D., Parli, S., Halcomb, P., Fryman, L., & Bernard, A. C. (2019). A psychometric analysis of CIWA-Ar in acutely ill and injured hospitalized patients. *Journal of Trauma Nursing*, *26*(1), 41–49. https://doi.org/10.1097/JTN.0000000000000414
11. Knight, E., & Lappalainen, L. (2017). Clinical Institute Withdrawal Assessment for Alcohol-Revised might be an unreliable tool in the management of alcohol withdrawal. *Canadian Family Physician*, *63*(9), 691–695.
12. McHugh, R. K., Trinh, C. D., Griffin, M. L., & Weiss, R. D. (2021). Validation of the craving scale in a large sample of adults with substance use disorders. *Addictive behaviors*, *113*, 106651. https://doi.org/10.1016/j.addbeh.2020.106651
13. National Center for Drug Abuse Statistics. (2019). *Substance abuse statistics.* Retrieved on 24 January 2022 from https://drugabusestatistics.org/
14. National Institute of Mental Health. (2022). *Substance use and co-occurring mental disorders.* U.S. Department of Health and Human Services. Retrieved on 1 February 2023 from https://www.nimh.nih.gov/health/topics/substance-use-and-mental-health
15. National Institute on Drug Abuse [NIDA]. (2020A). *Comorbidity: addiction and other mental illnesses.* U.S. Department of Health and Human Services. Retrieved on 14 December 2022 from https://www.drugsandalcohol.ie/12727/1/NIDA_Comorbidity.pdf
16. National Institute on Drug Abuse [NIDA]. (2020B). *Drugs, brains, and behavior: The science of addiction.* U.S. Department of Health and Human Services. Reviewed on 23 January, 2023 from https://nida.nih.gov/sites/default/files/soa.pdf
17. Nowakowski-Sims, E., & Bullard, K. (2018). Relearning to live life without substances: A grounded theory of the impact of group physical exercise on sobriety. *Journal of Social Work Practice in the Addictions*, *18*(3), 305-324.
18. Nuamah, J.K., Sasangohar, F., Erraguntla, M.& Mehta, R. (2019). The past, present and future of opioid withdrawal assessment: A scoping review of scales and technologies. *BMC Medical Informatics and Decision Making*, 19, 113 (2019). https://doi.org/10.1186/s12911-019-0834-8
19. Pedersen, B. K. (2019). The physiology of optimizing health with a focus on exercise as medicine. *Annual Review of Physiology*, *81*(1), 607–627. https://doi.org/10.1146/annurev-physiol-020518-114339
20. Rosic T, Worster A, Thabane L, Marsh DC, Samaan Z. Exploring psychological symptoms and associated factors in patients receiving medication-assisted treatment for opioid-use disorder. BJPsych Open. 2020 Jan 8;6(1):e8. doi: 10.1192/bjo.2019.99. PMID: 31910933; PMCID: PMC7001483.
21. Substance Abuse and Mental Health Services Administration. (2021). *Alcohol, tobacco, and other drugs.* Retrieved on 24 January 2022 from https://www.samhsa.gov/find-help/atod.
22. Tompkins, D. A., Bigelow, G. E., Harrison, J. A., Johnson, R. E., Fudala, P. J., & Strain, E. C. (2009). Concurrent validation of the Clinical Opiate Withdrawal Scale (COWS) and single-item indices against the Clinical Institute Narcotic Assessment (CINA) opioid withdrawal instrument. *Drug and Alcohol Dependence*, *105*(1-2), 154–159. https://doi.org/10.1016/j.drugalcdep.2009.07.001
23. Udo, T., & Grilo, C. M. (2019). Psychiatric and medical correlates of DSM-5 eating disorders in a nationally representative sample of adults in the United States. *International Journal of Eating Disorders*, *52*(1). https://doi.org/10.1002/eat.23004
24. Weiss, R. D., Griffin, M. L., Mazurick, C., Berkman, B., Gastfriend, D. R., Frank, A., Barber, J. P., Blaine, J., Salloum, I., & Moras, K. (2003). The relationship between cocaine craving, psychosocial treatment, and subsequent cocaine use. *The American Journal of Psychiatry*, *160*(7), 1320–1325. https://doi.org/10.1176/appi.ajp.160.7.1320
25. Zhang, Z. & Liu, X. (2022). A systemic review of exercise intervention program for people with substance use disorder. *Frontiers in Psychiatry*, *13*(n.a.), 817927–817927. https://doi.org/10.3389/fpsyt.2022.817927

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