**Effects of Structured Exercise as a Treatment Intervention for Veterans with Alcohol Disorders**

Research Proposal

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INTRODUCTION

The overconsumption of alcohol is a prevalent and popular pastime in American society. $184 billion per year is spent on associated costs of alcohol abuse, from accidents to incarceration to treatment facilities (NIAAA, 2000). Veterans are a population that in increasingly utilizing alcohol as a coping mechanism (Eisen, et.al., 2012). Since costs are so high already, a low-cost intervention treatment alternative is necessary. An exercise intervention program would provide an alternative activity for recovering alcoholics at a minimal cost. However, not much research has been currently carried out to prove the positive effects on exercise and its aid in the alcohol recovery process.

Two significant studies are related to the problem with exercise intervention for alcohol abuse disorders and veterans. In Brown, et al., (2009), a study was done using professional exercise physiologists to coach recovering alcoholics in an exercise program, exercise modules, and included incentives for participation. This study showed a decrease in drinks per day average, but it had a small sample size and no control group. In another experimental study, a large sample of veterans proven to drink an excessive amount was randomized to be in a control group that was only monitored or in an experimental group receiving alcohol behavior interventions. Exercise or lack of was logged and then correlated to reduction in drinking; however, no significant correlations were made between the two. In addition, exercise was not the key focus of the experiment (Kendzor, Dubbert, Olivier, Businelle, & Grothe, 2008). The goal of this study is to integrate the veteran sample and use of a control group of the second experiment, while implementing the focused exercise treatment method and use of incentives from the first experiment in order to truly see the effects of exercise interventions within the recovering alcohol-abusing veteran population.

Formal Statement of the Problem and Purpose of the Study

This study believes that there is a multi-faceted problem regarding substance abuse. Recovery programs are costly, and relapse rates are still high. Therefore, this study would like to seek a cost-effective method for those in recovery to prevent relapse. We would like to prove that an effective exercise program could prevent relapse rates. This study will implement exercise programs in a live-in recovery treatment facility at a VA hospital. There will be a group of recovering alcoholics who participate in the program with an added exercise program implemented and a group who will participate in the program without exercise involved over the course of a year. After in-house treatment, the experimental treatment group will continue to have access to the exercise facility for the duration of the year. The dependent variable will be the duration of abstinence from drinking or reduction of drinks per day average, and the independent variable will be implementation or lack of exercise. The study hypothesizes that there is a negative correlation rate between amounts of exercise and rates of relapse.

Significance of the Study

The importance of this study is to inform research and practice related to the use of exercise as a treatment intervention for veterans who suffer from alcohol disorders, a rapidly increasing population. Understanding how supervised exercise effects recovery may reveal an affordable and attainable alternative in alcohol abuse treatment for veterans.

Limitations

Possible limitations to this study may be the participants’ adherence to the exercise regime. Past studies cite participant attrition as problematic for study outcomes (Brown, et al., 2009; Brown, et al., 2008). In addition, participants may not remain steadfast to the daily log entries. As Gaye (2012) states, experimental studies involving humans are, at times, not easy.

Organization of the Study

This research proposal begins with an overview of the framework and context of the study. The problem statement, purpose, and significance of the study follow. Next is the discussion of the study’s limitations, literature review and research questions. Concluding the proposal is the discourse of the population represented, research instruments, design and procedure.

REVIEW OF THE LITERATURE

The following review of literature presents the clinical definition of alcohol abuse and highlights this prevailing issue America and veterans, as documented by various government agencies. It reveals that few studies exist related to exercise as an intervention for alcohol abuse recovery and even less conducted with a large sample size and control groups (Read and Brown, 2003; Taylor, Sallis, & Needle, 1985). Finally, the review discuss existing studies related to exercise, alcohol abuse recovery, and veterans that have informed the methodology of this study,

Viewed as a rite of passage for the young and as a source of relaxation and enjoyment by much of the population, regardless of age, alcohol has established a major role in America. A 2010 Gallup digital dial survey showed 67% of 1,020 adults drink alcohol in America (Newport, 2010). However, this countrywide indulgence in alcohol has severe consequences.

Prevalence of Problem

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Test revision cites alcohol abuse disorders as the “maladaptive pattern of [alcohol] use manifested by recurrent and significant adverse consequences related to the repeated use of substances” (APA, 2000, p. 198). In 2009, 23.5 million people, 12 years old and above, experienced emotional, social and physiological distress due to an alcohol disorder (SAMHSA, 2009). Only 2.6 million of this population received treatment in a drug related facility. In addition, SAMHSA reports 41.4 percent of treatment admissions are alcohol abuse related, the highest among all abused substances. In effect, the impact of alcohol abuse takes a tremendous toll on America’s pocketbook.

According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the earliest data related to the cost of alcohol abuse is in 1998, with a price upward of $184 billion per year (2000). The data reveals costly incidences from car wrecks to lost jobs, and to medical and therapeutic treatment. Conversely, the Veterans Health Administration (VHA) is currently experiencing tremendous repercussions of alcohol disorders among returning soldiers.

A study by Eisen, et al. (2012) examines alcohol abuse as a symptom to posttraumatic stress symptoms (PTSS) found within veterans 1 year after deployment from Afghanistan or Iraq. Samples of 596 veterans (both sexes) showed “39.2% of the total sample screened positive for probable alcohol use disorder” (Eisen, et al., 2012, p. 68). With the increasing number of veterans in need of costly alcohol treatment, it is paramount to utilize a cost-effective, evidence-based intervention.

Case Study

Research has recently been done on the effects of exercise and substance abuse recovery. Hays speculated in a case study that multiple reasons could account for recovery success due to exercise. First, endorphins could replace the addiction on the alcohol within the body. People also might acquire a sense of accomplishment that they did not have before. Third, exercise could become a place to let out the emotional energy formerly refocused with the use of alcohol. Next, it gives a recovering alcohol abuser a new social circle, and it also distracts people in recovery during times when they might want to drink (1999). Bolitho agreed with that reasoning as well (2010).

Previous Literature Reviews

In a literature review on the effects of exercise, it notes that exercise has been proven in studies to help with the treatment of depression. However, it addressed that few studies have used exercise in alcohol recovery programs. Four studies from the 1970s and 1980s were cited to either have improved the recovering alcoholics’ views of self or their abstinence rates. However, they did not find enough resources to claim that exercise benefits alcohol abuse recovery. They also noted that people can become addicted to running, which would be something a researcher would want to be mindful of during an experiment implementing exercise into an addiction recovery program (Taylor, Sallis, & Needle, 1985). In a more current literature review on using exercise in alcohol recovery programs, Read and Brown cite that there are still few studies that have been done implementing exercise in addiction recovery programs. They reinforce that exercise correlates positively with depression, and that many of those in alcohol recovery programs suffer from depression. Through their analysis, they saw flaws in what little research has been done due to small sample sizes and low motivation. However, due to exercise being a cost-effective method to take up time that a recovering addict might spend thinking about their next drink, they deemed it necessary for others to continue testing its effects on recovering addicts (2003).

With one final extensive literature review, Williams and Strean gave several recommendations on how to make an effective physical activity program for substance abuse recovery. They advocated participants should be post-detox and not under the influence of anything. They proposed that physical activities should be somewhat of choice and at a level that suits their physical readiness. If a person used drugs during a physical activity (example given: hiking), then they should not participate in that activity during their recovery physical activity program. Physical activity should not be the only treatment method; counseling and other practices should still be employed for the recovery process. Staff should be trained in coaching physical activities. Finally, allow freedom of choice in activity within the boundaries of the recovery program they are participating in (2004).

Survey of Recovery Therapists

Implementing a survey research method, a study was done with participants from the Therapeutic Recreators for Recovery society to see therapists’ viewpoints on implementing exercise in treatment programs. They found that eighty percent of those surveyed used exercise as a method of recovery. Exercise options most commonly offered included walking, running, aerobics, weight training, swimming, and games. Physical assessments, interviews, and observations were used to determine subjects’ ability to perform in such activities. Though most surveyed held a degree in therapeutic recreation (54%), many responded they felt they had fair or poor knowledge (70% combined) knowledge in how to create physical activity programs. Only 16% of those surveyed held certification status in physical activity programming (Kremer, Malkin, & Benshoff (1995). Perhaps a problem with programs implemented today is the lack of physical activity knowledge on the part of the program facilitator.

Experimental Studies

In a preliminary experimental study, twenty participants going through detoxification were given an Alcohol Urge Questionnaire before exercise, during a ten minute moderate-level exercise activity, and after exercise. Their results showed a decrease in urges to drink; however, they cited more research was needed due to their small sample size and presumed notions of the participants as to the reason for the study (Ussher, Sampuran, Doshi, West, & Drummond, 2004). In another study, 187 random outpatient substance abusers were required to log their activities over twelve weeks. Their activities were coded exercise or non-exercise. Those who regularly cited exercise activities (24.1%), averaged 6.04 weeks of abstinence. Those who did not participate in exercise activities (75.9%) only averaged 4.75 weeks of abstinence. This study cited that by exercise being purely by choice and by relying solely on logs from the participants, their results could be skewed (Weinstock, Barry, & Petry, 2008).

In a recent study on cannabis users not seeking outside treatment, twelve participants who qualified as cannabis addicts did two weeks of supervised treadmill exercise at a specified heart rate (60% max). Participants averaged 5.9 joints per day pre-exercise (1 week). During exercise, they averaged 2.8 joints (2 weeks), and post-exercise (2 weeks) they averaged 4.1 joints per day (Buchowski, Meade, Charboneau, Park, Dietrich, Cowan, & Martin, 2011). This study was the first of its kind with cannabis users.

Next, a study was completed with 328 potential participants from patient charts and newspaper advertisement call ins. After refusals, psychiatric evaluation rule outs, and people they lost contact with , 19 completed the study. 11 were females, and 8 were males, and 18 out of 19 were Caucasian, and all qualified under the DSM-IV as addicted to alcohol. Subjects were actively participating in an outpatient recovery program. They participated in a weekly moderate-intensity aerobic workout with a trained exercise physiologist after taking a breathalyzer test, and then logged exercise they completed at home throughout the rest of the week. They also had weekly fitness training classes with the physiologist dealing with topics like benefits of exercise, how to set reasonable goals, and managing their time. Finally, they were paid for coming to weekly sessions and completing their logs. Results showed that participants had a decreased drink per day average at the end of the twelve week program and again at a three month follow-up. However, there was a low sample size and no control group (Brown, R.A. et. al, 2009).

Next, the same research group did a study with 316 potential participants. After refusals, psychiatric evaluation rule outs, and people they lost contact with, 16 completed the study. 11 were males and 5 were females. Subjects had mainly used alcohol, but some had used cocaine, marijuana, opiates, and sedatives, or a combination of these. They were in a wide range of treatment facilities, but the exercise component included aerobic exercise, group behavior training, and incentives. This was the same method as the program in the last paragraph. Percent days abstinent increased after the intervention and at a three month follow up. 66.7% of the sixteen participants did not relapse. However, the study did not include a control group, and many restrictions were put on the participants which excluded many from the original sample (Brown, R.A., et al, 2010).

Finally, the correlational study that most parallels with this research proposal was conducted in 2008 with a group of 620 male veterans. 311 participants were randomly assigned to an intervention for alcohol abuse recovery, and 309 participants were randomly assigned to a control group. Participants had to have consumed an average of 21 drinks per week for the past six months, and the goal was for those who participated in the alcohol behavior modification group to reduce their average to 14 drinks per week or fewer. The study also had all participants log their exercise throughout six months. Neither group showed that physical activity led to a reduction in alcohol use; however, the study was not randomized to account for that, only for the behavior/counseling alcohol treatment aspect. The benefits of this study included a control group and a large sample size (Kendzor, Dubbert, Olivier, Businelle, & Grothe, 2008).

Summary of the Literature Review

To wrap up, not many studies have been done to determine the worth of exercise in an alcohol recovery program. However, parts of each study can be used to create a more well-rounded experimental study. It is important that participants be under the supervision and teaching of an experienced exercise professional who can not only teach them how to exercise, but the benefits of exercise and fitness. It is important that exercise be a key component in filling time that may otherwise be spent thinking of relapsing, and it is even better if that exercise is in a group setting to give alcoholics an opportunity to form a new social circle. Incentives would be a helpful way to prevent attrition, and it was realized that high restrictions on samples may lead to smaller sample sizes. This study would also like to address recovering alcoholic veterans, since that would be another similarity within the group. Finally, many of the studies did not include a true control group, so this study would like to build upon that deficiency but draw from several of the positive components of previously completed studies.

Hypotheses/Research Questions

The hypothesis of this study is that a structured exercise regimen will decrease the relapse rate among recovering alcoholic veterans more so than among recovering alcoholic veterans not exposed to a structured exercise regimen.

* How can exercise programs integrated into an inpatient alcoholic recovery program?
* What is the correlation between exercise and relapse rate?
* What is the effect of structured group exercise on detoxification symptoms?

METHODOLOGY

The efficacy of the addition of aerobic exercise as an adjunct to a treatment plan for individuals diagnosed with alcohol dependence disorder will be measured by data collected through combined methods of self-report questionnaires, urinalyses, and observed behavior charts that will inform compliance with study parameters. The general methodologies most authors have utilized in previous studies of this population have mostly depended exclusively on self-report questionnaires in order to measure efficacy of assigned treatment plans. The adjunct exercise treatment module utilized in similar studies was not verified by a trained observer for accurate data collection concerning the duration and intensity of exercise by the participants. This study will include a trained observer for collecting the exercise module data and will also include a third data collection method through urinalysis in order to account for the measurement of alcohol use abeyance.

Participants/Subjects

The target population for this study is described as United States (U.S.) military service veterans presenting to a Veteran Administration (VA) combination inpatient/outpatient treatment facility with symptoms that fall within the criteria for a diagnosis of alcohol dependence disorder according to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision (DSM-IV-TR). Demographics of the population will include specific parameters concerning veteran designation, treatment membership, physical condition, existing co-morbid mental disorders, age, gender, and willingness; as defined later in this section.

The study will be populated through a nonrandom, purposive sampling selected according to specific demographic criteria. The sample will be collected according to eight criteria that include:

1. Eligibility to receive veteran benefits through a VA hospital.
2. Presentation of symptoms that match criteria for the diagnosis of alcohol dependence disorder for treatment to an inpatient/outpatient recovery facility.
3. Participate in alcohol dependence treatment program that includes thirty day detoxification, alcohol use cessation, and relapse prevention.
4. General, good health with ability to perform exercise module.
5. Absence of co-morbid mental disorders with the exception of Mood Disorders in order to diminish self-termination of treatment.
6. Age between twenty-one and forty-five years in order to eliminate ethical considerations for under-age alcohol consumption, utilize similar range for target heart-rate, and increase generalization of population.
7. Non-gender specific; inclusion of both genders.
8. Willingness to participate in the exercise module of treatment.

Participants who meet the demographic criteria will be randomly assigned to either a control group of N=25, or an experimental group of N=25. N=25 for each sample is an expected number of participants, but is restricted by the availability of possible participants who present with previously listed criteria for inclusion in the sample population.

Instruments

The primary instruments utilized in this study will need to measure the efficacy of the relapse prevention plan, the duration, intensity, and session attendance of the aerobic exercise module, and the correlation of relapse prevention efficacy to adherence to aerobic exercise module. Timeline Followback (TLFB) will be used to measure the relapse events. A chart consisting of sections for calculating and recording intensity (target aerobic exercise heart-rate), duration (time spent at the target aerobic heart-rate), and recording attendance at exercise facility.

TLFB is a calendar assisted structured interview that provides memory cues so that accurate recall is increased (Sobell & Sobell, 2000). TLFB has been found to be reliable with r=.79-.98 when correlated to actual alcohol consumption (Sobell, Maisto, Sobell, & Cooper, 1979). Validity is measured by Pearson product-moment correlations of .65 when comparing the number of reported drinking days on psychometric self-report instrument (Carey, 1997).

Target heart-rate intensity and duration measurement tools are based on information taken from the Mayo Clinic web article on the subject (Mayo Clinic Staff, 2011). Reliability and content validity for the use of this measurement instrument is established in the field

Research Design & Procedure

According to information from the literature review the design for this study is well suited for the accumulation of data concerning the efficacy of relapse prevention with the addition of an aerobic exercise module within an established alcohol dependence treatment plan. The design of the study best suits a quantitative research approach due to the inclusion of statistical comparisons of the control and experimental group means necessary for establishing effect on compliance with relapse prevention norms. Numerical data that will be collected and collated for selection of the population sample, collection procedures for program adherence, and relapse prevention data.

The exercise module is selected due to the universal acceptance of the norms for intensity, duration, and interval of the aerobic exercise activity. The Mayo Clinic, as well as The National Fitness Council and The President’s Council on Fitness, endorse the normative levels of exertion measured in this study.

The population for the study follows guidelines set forth in the literature review of similar studies of inpatient/outpatient alcohol dependence recovery groups. Specific individuals with specific issues are chosen according to the data that is needed to complete the study (Brown et al., 2009).

Furthermore, principles of relapse prevention, as established by Marlatt & Gordon in 1985, are to be utilized as normative guidelines for success/no success as measured in the ratio between number of drinking days/number of drinks per drinking day in the study due to the researchers’ familiarity and experience with the aspects of the theory and the acceptance of the theory within the field of alcohol dependence recovery.

Procedure

The study will follow two groups, one control and one treatment, of individuals through a twelve month alcohol dependence recovery program. The question to be answered concerns the efficacy of adding an aerobic exercise module to an existing alcohol dependence recovery program. The two groups of participants will undergo three stages of treatment beginning with a detoxification module. After thirty days the groups will transition into stage two which will emphasize Motivational Enhancement Therapy (MET) and Cognitive Therapy (CT) to encourage abeyance of alcohol dependent behaviors. Third stage of the program will include a psychoeducational module for instituting Relapse Prevention (RP).

Participants will be given an intake interview in order to establish adherence to purposive sampling criteria described previously. The participants who meet the selection criteria will then be assigned randomly to either control group or treatment group. By using this random assignment potentially confounding variables of group membership can be diffused through both the control and treatment groups.

Participants will then enter the alcohol dependence recovery program stage one. The independent variable of aerobic exercise education will be added into this stage for both groups so that neither group is aware of which group will begin the aerobic exercise module during stage two of the recovery program. By educating both the control and treatment groups, cross-contamination of the groups may be lessened.

At the beginning of stage two of the program the treatment group will be given access to the physical therapy/exercise area of the inpatient VA hospital in order to begin the aerobic exercise module. Participants in the treatment group will record intensity and duration on self-report charts, but attendance of exercise sessions will be recorded by an assigned physical trainer to minimize reporting error and increase reporting reliability. The aerobic exercise module will extend until the twelfth and final month of the study. There is additional incentive offered to participants for adherence to this module in the way of rewards for attendance and for record keeping of intensity and duration data, but not for abstinence from alcohol. No direct cash payments are included in incentive rewards, only vouchers. Cash payments could adversely affect alcohol abstinence by triggering alcohol dependent behaviors such as celebratory drinking (Brown et al., 2009)

At this stage the control group will be informed that the aerobic exercise module has been cancelled and will transition into normative stage two of the original alcohol dependence recovery program. No adherence incentive will be given to the control group as no exercise goals will be expected or encouraged.

During the third stage of the study the RP information is taught to both control and treatment groups. Aerobic exercise module is continued for treatment group and adherence incentives are maintained. No incentive is given for increases in aerobic exercise intensity or duration as this is not a goal of the study. Only, attendance incentive is continued.

The TLFB reporting system will be instituted at the beginning of stage one with both control and treatment groups. Baseline numbers will be collected on number of drinking days and number of drinks per drinking day. This instrument is then re-administered every 90 days for the duration of the study with both population sample groups. Reliability and validity of the TLFB instrument has been empirically tested for twelve month continuous use, thus the inclusion of this instrument in order to match the duration of this study (Carey, 1997).

At the end of the twelfth month of the study both the control and treatment groups will be dismissed from the study and data collected will be evaluated. A T-Test will be administered to compare the mean ratio of the number of drinking days/drinks per drinking day of the control group and the treatment group to check for significant difference between the two groups. Only data collected form participants that completed the twelve month study will be included in the calculation of mean ratio for each group in order to minimize skewed short-term results.

These T-Test results will inform this study as to any positive or negative outcomes resulting from the inclusion of aerobic exercise with professionally recognized alcohol dependence recovery best practices, and inform any future research studies concerning these topics. Also, a pilot study is not necessary for this study due to the instances of similar research related to this topic found during the literature review.

FORM

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