

Effects of Physical Activity on Depression and Anxiety Disorders

Kathleen Cooke

University of Georgia

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Dr. Proctor

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Introduction

Mental illness has become more prevalent in the United States over the past decade. Approximately 1 in 5 adults experience mental illness in a single year (National Alliance on Mental Illness, 2017). Mental illness is known as health conditions characterized by changes in thinking, mood, or behavior associated with distress or impaired functioning. The most common type of mental illness is depression. Depression affects more than 26% of adults in the United States. Globally, over 300 million individuals suffer from depression (World Health Organization, 2017). By 2020, depression is estimated to be the second leading cause of disability throughout the world (Centers for Disease Control and Prevention, 2017). Unfortunately, if left untreated depression can cause an individual to take their own life (Anxiety and Depression Association of America, 2017). Anxiety disorders are another important mental illness. Anxiety disorders are characterized by significant fear or worry about everyday tasks or events (Centers for Disease Control and Prevention, 2017). The five major types of anxiety disorders include generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, post-traumatic stress disorder, and social phobia. Anxiety disorders affect 18.1% of adults in the United States age 18 and older every year. Depression and anxiety disorders are not uncommon to be experienced together. Nearly half of the individuals diagnosed with depression have also been diagnosed with an anxiety disorder (Anxiety and Depression Association of America, 2017).

Common treatments of depression and anxiety disorders include different forms of therapy or medication (Anxiety and Depression Association of America, 2017). For example,

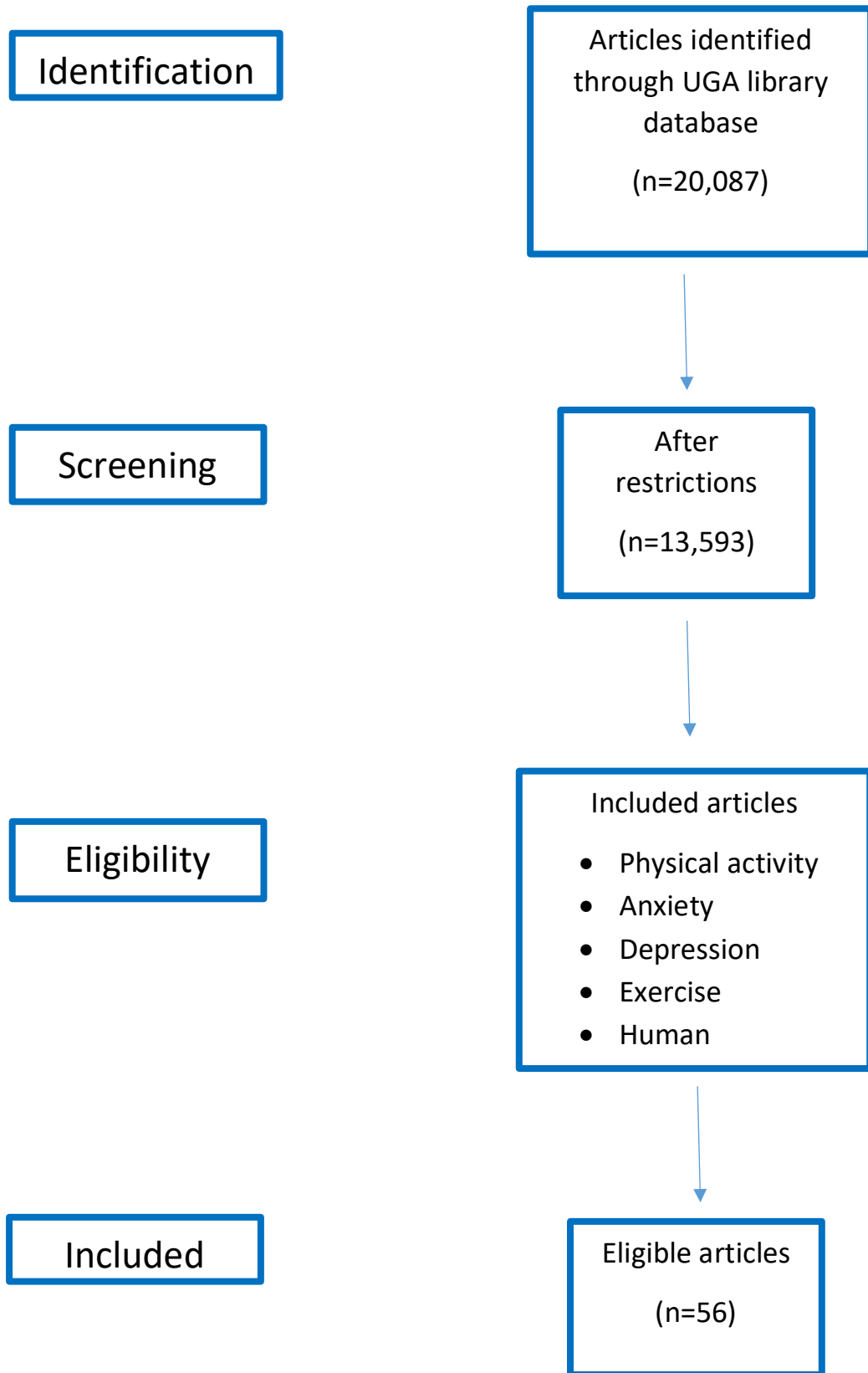
cognitive-behavioral therapy helps to replace negative thought patterns with more realistic ones. Interpersonal therapy and problem-solving therapy have shown to be effective treatment options as well. Common medication for depression and anxiety disorders include selective serotonin reuptake inhibitor (SSRI) and serotonin norepinephrine reuptake inhibitor (SNRI) (Anxiety and Depression Association of America, 2017). However, recent research has found physical activity to be an effective form of treatment for depression and anxiety disorders (Ramchandani et al.). When compared to placebo or no treatment, physical activity is superior in reducing depressive symptoms. For adults with major depression, exercise interventions have been as efficient as antidepressant medications (Brenes et al., 2007). Physical activity improves patients' perception of themselves and helps to create a sense of liveliness, improving their depressed or anxious state (Danielsson, Kihlbom, & Rosberg, 2016).

This purpose of this literature review is to examine the effects physical activity has on depression and anxiety disorders. The objective is to establish physical activity as a proper treatment for these disorders and symptoms of these disorders. By establishing physical activity as an official treatment, communities can educate their population on the subject with hopes of reducing depression and anxiety rates. Policy makers will be influenced to provide exercise facilities or public parks to further reduce the rates as well.

Methods

Several search strategies were used when gathering literature for this review. By using the University of Georgia's Library Multi-Search Tool, a systematic search was conducted to find studies that provide information the potential positive effects associated with physical activity and depression and anxiety disorder symptoms. The University of Georgia's Multi-Search Tool allows multiple keywords to be searched at once. Keywords used for this literature included "depression AND anxiety", "exercise AND depression", "exercise AND anxiety", and "physical activity AND depression AND anxiety". Searching "depression AND anxiety" resulted in 636,737 documents. After restricting the search to show only scholarly peer reviewed journals published between 2000 and the present this number decreased to 418,096. Searching "exercise AND depression" resulted in 84,331 documents which was decreased to 42,475 when restricted. Searching "exercise AND anxiety" resulted in 84,251 documents which was decreased to 26,505 when restricted. Searching "physical activity AND depression AND anxiety" resulted in 20,087 documents which was decreased to 13,593 when restricted. Most articles used for this literature were found under this final search. **Figure 1** explains how articles were narrowed during this search. After restricting all searches the articles were narrowed based on the inclusion and exclusion criteria. 20 articles were chosen to be reviewed for this paper.

Figure 1.



Exclusion Criteria

Of the articles found in the results of each search, articles were excluded if the target population was children. This literature review focuses only on adults aging 18 years and older. Articles focusing on treatments for depression and anxiety disorders other than physical activity were excluded as well. Additionally, articles published before 2000 were also excluded. This year was chosen because it is approximately 20 years prior allowing a more relevant search.

Inclusion Criteria

All articles included were scholarly peer reviewed articles. This restriction allows access to more valid information. Articles regarding studies from across the world were also included. Reviewing similar studies done in different countries provides information that can be compared. This allows researchers to discover if physical activity effects depression and anxiety disorder symptoms positively or if there are confounding factors that differ between each country.

Results

Physical Inactivity

Of the 20 articles used for this literature review, 5 made conclusions regarding physical inactivity. 3 of these studies used cross-sectional research designs to discover that physical inactivity is associated with depression and cognitive deficit (Paulo et al., 2016) as well as increased prevalence of anxiety (Stubbs et al., 2017). These studies also found individuals who never engage in physical activity to be twice as likely to exhibit depression and anxiety symptoms compared to those who regularly exercise (De Mello et al., 2013).

Another study used a prospective cohort research design to conclude that people with depression and anxiety disorders have lower rates of sports participation and general physical activity (Hiles, Lamers, Milaneschi, & Penninx, 2017). The remaining study used a descriptive and multinomial logic regression analysis to gather data. Participants in this study were requested to exercise to control their anxiety disorder symptoms. Interventions were also used to increase self-management and develop strategies to solve the issue of time constraints. Researchers were able to conclude that increasing age, decreasing level of education, household income adequacy, and individuals with anxiety were more likely to be physically inactive. Pre-existing physical conditions, time constraints, and lack of will power were found to be the most common barriers for not exercising (Louise, Shamila, Scott, & Alain, 2017). Fifty different countries were sampled for these studies.

Emotional Well-Being

Five of the articles looked into the emotional well-being and feelings that came with exercising. The participants for one study included 13 individuals ranging in age from 24 to 62 years with major depression. Researchers used an inductive approach using qualitative content analysis to gather results for this study. Exercise interventions required participants to choose one of four exercise programs differing in difficulty. After 7 months of evaluation, it was found that physical activity improved the patients' perception of their physical ability and created a sense of liveliness. Feelings of being alive and doing something good for themselves were also reported (Danielsson et al., 2016).

Another study used a self-reported questionnaire to determine if the benefits from physical activity differ between those that occur in nature, indoors, and in built outdoor environments. Although it was reported that all participants felt happy after exercising regardless of the location, the study concluded that emotional well-being had the most consistent positive connection with physical activity in nature and built outdoor settings (Pasanen, Tyrväinen, & Korpela, 2014). Similarly, the remaining 3 studies used cross-sectional research designs to investigate the relationship between physical activity in an outdoor or neighborhood environment and depressive symptoms. The results found that depressive symptoms affected the relationship between neighborhood environments and physical activity (Orstad, McDonough, Klenosky, Mattson, & Troped, 2017). One study reported that participants who went outdoors every 2-3 days or less had significantly higher depressive symptoms (Sakurai et al., 2017). Additionally, it was reported that people without moderate

physical activity had higher odds for depression and suicidal ideation (Min, Kim, Kim, & Min, 2017). Two different countries were sampled for these studies.

Physical Activity

The remaining articles concluded physical exercise has positive effects on depression and anxiety disorders. These articles are categorized into subsections based on the research design used.

Surveys

Of the remaining articles, 3 collected data using surveys. One study surveyed university freshman to explore the relationship between physical activity, depression, and non-suicidal self-injury. Researchers were able to conclude that physical activity can have a protective nature against non-suicidal self-injury, specifically in those with depression (Boone & Brausch, 2016). One of the surveys was done by health care workers to examine if changes in physical activity were associated with changes in mental health, specifically depression and anxiety. It was found that changes in physical activity were moderately to strongly associated with changes in depression and anxiety (Lindwall, Gerber, Jonsdottir, Börjesson, & Ahlborg, 2014). The remaining questionnaire surveyed 40 men and 40 women aging 18-58 years who exercise regularly (at least three days a week) to examine whether individuals with emotional difficulties would benefit from exercise to show swifter recovery than those who did not exercise. The results of this study found that moderate aerobic exercise helps relieve negative emotions for individuals experiencing regulatory difficulties (Bernstein & McNally, 2017).

Interventions

The final 6 articles used exercise interventions to discover the effects physical activity has on depression and anxiety symptoms. Two studies used secondary analysis of a randomized controlled trials to identify the influence of physical exercise as an adjunct to antidepressants for the treatment of depression. The participants were placed into three different groups: the first taking only antidepressants, the second taking antidepressants as well as participating in low-intensity exercise, and the third taking antidepressants as well as participating in high-intensity exercise. Participants in both the moderate and high-intensity exercise groups reported feeling significantly lower depression severity compared to the control group (Brenes et al., 2007). Therefore, researchers were able to conclude that the combination of physical exercise and antidepressants could improve the management of depression (Zanetidou et al., 2017). Further research needs to be done to determine which impact measure had more of an effect on the levels of depression.

The remaining 4 studies used interventions that focused only on the effects of physical activity on depression and anxiety disorders. During these interventions, participants were randomly selected for each group: a control group that participates in no exercise, a group participating in moderate exercise, and a group participating in high-intensity exercise. All studies provided results showing that participants in the exercise groups reported lower levels of depression (Krogh, Petersen, Timmermann, Saltin, & Nordentoft, 2007) as well as significantly improved levels of anxiety (Ma, Wu, Su, & Yang, 2017). Patients in the control groups exhibited minimal changes in their depression and anxiety levels (Frühauf et al., 2016). Statistically significant differences in anxiety and self-esteem levels between case and control groups were also reported (Zahra, Putri Teesa, & Karyono, 2015).

Discussion

Through this systematic review of the literature, it was found that physical activity has significantly positive effects on depression and anxiety disorders. Results show that individuals who do not participate in regular physical activity reported having higher levels of depressive and anxiety symptoms compared to individuals who do exercise regularly. Improved feelings of liveliness and self-esteem were also reported. The purpose of this literature review was to gather evidence on physical activity as a treatment for depression and anxiety disorders. Establishing physical activity as a useful treatment will influence policy makers to provide communities with access to exercise facilities or public parks, lowering the rates of depression and anxiety even further.

Limitations

This review had several limitations. Only 20 articles were used to gather this information. This topic is fairly new and more information will need to be discovered and studied in the future. Additionally, many informative articles could have been left out because they did not include the key terms used during the search. This review only focused on adults aging 18 years or older. The results for the effects of physical activity on depression and anxiety disorders may be different for children and adolescents. The final limitation of this review is self-reporter bias. Many of the articles chosen used self-reported questionnaires to collect data. Therefore, many participants could have submitted false information, causing the results to be skewed.

Future Implications

Future research is necessary in order to officially establish physical activity as a treatment for depression and anxiety disorders. Future research should focus on educating populations about the effects of physical activity on depression and anxiety disorders as well as motivating these communities to exercise. Additionally, it is important to focus on younger age groups. The studies used for this review consistently found physical activity to have positive effects on depression and anxiety for adults, however, children and adolescents may react differently. Focusing on children and adolescents permits interventions such as school-based interventions to be implemented, allowing the issues to be resolved or decreased prior to adulthood.

Conclusion

As depression and anxiety disorders become increasingly more prevalent (Almeida et al., 2012), options for treatment need to be expanded. Physical activity has been found to significantly decrease depressive and anxiety symptoms (Krogh et al., 2007). Interventions should focus on having individuals with depression and/or anxiety disorders do moderate to high-intensity levels of physical activity. Future research is needed to officially establish physical activity as a treatment for depression and anxiety disorders. Officially establishing this treatment will influence policy makers to provide communities with exercise facilities or community parks where the population can participate in physical activity. This topic is fairly recent and therefore extensive research has not been done. This literature review can help

future research in determining if physical activity truly is an appropriate treatment for depression and anxiety disorders.

Resources

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