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PHYSICAL ACTIVITY

Effects of a Peer-Assisted Physical Activity Program on Depression and Anxiety in College Students

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Abstract

Physical activity is well-known to have a plethora of positive physiological, psychological, and sociological benefits. However, many college students do not meet the physical activity guidelines for Americans. In addition, depression and anxiety rates among college students have continued to rise. The purpose of this study was to examine the effects of a peer-assisted, self-selected physical activity program on depression and anxiety in college students. In-depth interviews were conducted with three program participants, six physical activity buddies, and three referring healthcare providers. Results showed significant benefits for everyone involved in the program. Program participants experienced reduced depression and anxiety, as well as increases in exercise self-efficacy and competence. The mechanism found to be primarily responsible for changes was the combination of physical activity and relatedness, and other mechanisms included routine, nature, and other lifestyle changes. Results illuminate a cost-effective way to address rising depression and anxiety rates in college students.

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Introduction

Depression is a common mental disorder, affecting an estimated 5% of adults globally (WHO, 2023). Depression is more than passing feelings of sadness or disappointment; symptoms include experiencing signs and symptoms most of the day, nearly every day, for at least two weeks, such as feelings of hopelessness, worthlessness, irritability, loss of interest, physical aches or pains, and thoughts of death or suicide (NIMH, 2023b). They may affect concentration, thoughts, mood, appetite, weight, energy levels, and sleep patterns (WHO, 2023). The symptoms of depression can range in intensity with varying effects and consequences, including impaired functioning in relationships, early termination of education, unemployment or underemployment, and substantially lower income (Kessler, 2012). Depressed individuals also have significantly decreased lifespans, up to 14 to 32 years earlier than the general population (Kessler, 2012; Kessler et al., 2003). Depression rates continue to rise, impacting an estimated 280 million people in the world, and it is about 50% more common among cisgender women than among cisgender men (WHO, 2023), and higher levels of depression for transgender and gender nonconforming college individuals (Borgogna et al., 2018). The economic burden of depression shouldered on the public was estimated to cost $326 billion in 2018 (Greenberg et al., 2021) due to direct medical, psychological, and pharmacological costs (Greenberg et al., 2003; Greenberg et al., 2015; Greenberg et al., 2021).

Another factor influencing the devastation and rising cost of depression is the high likelihood of comorbidity with other medical and psychological conditions (Gold et al., 2020; Greenberg et al., 2003). Depression is a greater predictor of overall poor health than many other chronic conditions (Moussavi et al., 2007). In addition to the high co-occurrence of depression and chronic physical health conditions, there is also a high comorbidity of depression with other mental health disorders, including mood, impulse control, substance use, and anxiety disorders (Gadermann et al., 2012; Kessler et al., 2005).

Anxiety disorders are the most common mental illness in the United States, affecting 40 million adults (19.1% of the population) age 18 and older every year (ADAA, 2022). Anxiety can range from occasional feelings of anxiousness to long-term debilitating anxiety.

Anxiety disorders are a group of mental disorders characterized by anxiety and fear (Konnopka & König, 2020). An anxiety disorder is persistent, overwhelming, and perceived as uncontrollable; it may affect mood, thought, and behavior and may cause physiological changes (NIMH, 2023a). Further, anxiety disorders often include excessive or irrational feelings of dread or unmanageable fear, which can have a negative effect on daily activities (NIMH, 2023a). The individual burden of anxiety disorders includes impairments in physical, emotional, social, and workplace functioning, as well as a significant reduction in overall quality of life (Hoffman et al., 2008). Anxiety disorders are associated with a significant increase in healthcare costs (Konnopka & König, 2020).

Young adults entering college are at increased risk for serious psychological distress as they undergo several developmental changes and face new challenges, such as living on their own, managing finances, developing individual identity, and navigating relationship issues (Shally-Jensen, 2013). In the 2022 executive summary of the ACHA NCHA III, results showed 51.7% of college students had moderate psychological distress, 23.3% had serious psychological distress, 48.1% were assessed as negative for loneliness, 27.6% had a positive suicidal screening, and 29.5% rated their overall level of stress as high (ACHA, 2022). Data from 190,907 college students seeking mental health treatment at 180 college and university counseling centers across the U.S. showed that 42.6% of students attended counseling for mental health concerns (before or after starting college), 22.7% used medication for mental health concerns (before or after starting college), and 39.7% seriously considered suicide within the last one to five years (CCMH, 2023). Mental health disorders may cause a decrease in academic performance, an increase in early termination of college, as well as a negative impact on lifetime employment and financial success (ACHA, 2022; Kessler, 2012). Among the most prevalent mental health concerns for college students are anxiety and depression. In the 2022 executive summary of the ACHA NCHA III, 34.6% of college students reported ever being diagnosed with anxiety, 26.9% reported ever being diagnosed with depression, and 23% of students reported ever being diagnosed with both (ACHA, 2022).

High rates of college student depression and anxiety illuminate the necessity for mental health services and prevention programs (Duffy et al., 2019; Shally-Jensen, 2013), and as these rates continue to rise, campus health centers are often overburdened and not able to provide sufficient services (CCMH, 2023; Kirsch et al., 2014; Shally-Jensen, 2013). College health centers often limit individual counseling sessions, such as six sessions per student (Kirsch et al., 2014; Shally-Jensen, 2013) and refer students to community resources to help alleviate some of the burden (Shally-Jensen, 2013).

Treatments for depression and anxiety, such as psychotherapy, medication, brain stimulation therapies, and support groups, can be effective for managing symptoms, and often a combination of treatments is used (ADAA, 2022, NIMH 2023a, NIMH 2023b). However, some treatments have side effects or are unavailable through university counseling centers. Interventions to increase treatment options for anxiety and depression are needed on university campuses (Duffy et al., 2019; Kessler et al., 2005).

One alternative treatment with increasing support and efficacy for reducing depression and anxiety is exercise, which can be an effective adjunct as well as an alternative to traditional treatment (Cai, 2000; Craft, 2005; Kvam et al., 2016). Compared to traditional treatment, exercise does not carry the same risk of side effects, is affordable, does not require doctor's visits, and can be utilized within the chosen time frame of the participant (Daley, 2008). Findings from a meta-analysis showed that exercise can have a moderate to large effect on depression, and exercise is comparable to psychotherapy and antidepressants for depression (Kvam et al., 2016). Related to anxiety, findings from a systematic review and analysis found that exercise could be a useful, affordable, accessible treatment for anxiety; however, lack of data from rigorous, methodologically sound randomized clinical trials precludes any definitive conclusions about its effectiveness (Stonerock et al., 2015). Various types and intensities of exercise have shown to be effective in reducing depression and anxiety (Stanton & Raeburn, 2014). Although exercise has been shown to be effective in the reduction of depression and anxiety, as well as improving overall health, exercise adherence often remains elusive. Data from the 2020 National Health Interview Survey (NHIS) showed that only 24.2% of adults in the United States met the

physical activity guidelines for aerobic physical activity and muscle-strengthening activity for Americans (CDC, 2022). In addition, the ACHA NCHA III results showed that only 42.9% of college students met the physical activity guidelines for "Active Adults" (meeting the recommendation for aerobic activity and strength training; ACHA, 2022). Beginning and adhering to a consistent exercise program is challenging; 50% of people who begin an exercise program drop out within the first six months (Dishman, 1982). Specifically related to college students, results from one study showed that in a four-month period, without an intervention, 40% of students were found to either decrease their regularity or stop their exercise programs (Keeler et al., 2013). Populations struggling with anxiety and depression may also be at increased risk for failing to adhere to exercise programs (Martin et al., 2005; Sabourin et al., 2011). Some mechanisms that have been shown to be beneficial for exercise adherence include enhancing intrinsic or autonomous motivation, self-efficacy, and basic psychological needs (Edmunds et al., 2007).

Two relevant theories to exercise adherence are the self-determination theory (SDT) and self-efficacy theory. SDT is a framework for understanding behavior motivation, choices, and ambition that affirms that people are intrinsically motivated by fulfilling three basic psychological needs: competence, autonomy, and relatedness (Deci & Ryan, 2008). SDT has been extremely useful in understanding motivation in various settings and applications, including how intrinsic and autonomous motivation (i.e., self-governed) relates to long-term exercise adherence (Deci & Ryan, 2008; Teixeira et al., 2012). Self-efficacy theory also contributes to the understanding of motivation by addressing the concept that people have a strong desire to act when they believe that their actions will be effective and that they are capable of success (Bandura, 1997). Enhancing self-efficacy in exercise situations can be a valuable way to support exercise adherence (Fletcher & Banasik, 2001).

Another aspect of understanding and enhancing motivation and adherence to physical activity is the use of a peer assistant, a knowledgeable guide, an ally, and a role model (Mead et al., 2001). Peer relationships are related to positive health outcomes in general, and the peer-assistance model for increasing physical activity has been shown to be beneficial (Smith, 2003), especially in young adults (Fuhr

et al., 2014). Similar to the relatedness aspect of SDT, peer assistance fosters a sense of connection and an ability to identify with another human being. Social engagement has been shown to be directly related to increasing intrinsic motivation, exercise participation, and adherence (Teixeira et al., 2012). In addition to the benefits for the participant in a peer-assistance relationship, research has shown that the peer-assistant also receives benefits by helping to develop social responsibility and the ability to support another in healing (Keeler, et al., 2021; Mead et al., 2001; Rieck et al., 2012). Specifically, in a physical activity program for college students' depression, Stroud et al. found that peer assistants grew professionally, personally, and interpersonally as a result of participation, and an SDT framework could conceptualize that growth.

With rising rates of depression and anxiety in college students, alternative treatment options need to be researched and developed to alleviate the overburdened resources and impacted counseling services. There is a growing need for effective, affordable, and easily implementable programs to provide support to the vulnerable populations of students experiencing depression and anxiety. A peer-led physical activity intervention for college students has been implemented on multiple campuses; preliminary research from these interventions has shown improvements in mental health and physical activity factors (Keeler et al., 2021; Rieck et al., 2012). However, the mechanisms by which the program is effective from the perspectives of the social agents involved (peers and mental health providers) and participants have not yet been explored qualitatively. Therefore, the purpose of this study was to examine the effects of a peer-assisted, self-selected physical activity program on depression and anxiety of program participants at a four-year university and to explore the various possible mechanisms by which depression and anxiety were affected. A secondary purpose was to examine the benefits of participation for the physical activity buddies. It was hypothesized that program participants in the peer-supported, self-selected physical activity program would experience a decrease in depression and anxiety from the beginning to the end of the program. Additionally, it was hypothesized that the program would be beneficial for the physical activity buddies providing peer support.

Methods

Participants

There were 12 total participants in this study, including program participants (PPs), physical activity buddies (PABs), and healthcare providers (HCPs). PPs were three students who participated in the program. Students were eligible to participate in the study if they met the following criteria: 1) were referred to a peer-assisted, self-selected physical activity program from a university health care provider for anxiety and/or depression; 2) had no injuries limiting participation in physical activity at least two hours a week; and 3) were at least 18 years of age. The PABs were six students who supported the PPs and were required to complete training and readings and pass a competency exam before being matched with PPs. Three referring professional campus HCPs who referred PPs were also involved in this study. All participants in this study provided written informed consent before participation in accordance with the University Institutional Review Board.

Study Design and Procedures

The qualitative study design included semi-structured interviews, which allowed for probing follow-up questions that were conducted to gather data to analyze and uncover themes on the effects of a self-selected peer-assisted physical activity program on depression and anxiety of college students. Questions for the interviews were designed by the research team to uncover and illuminate the participants' perceptions in the study. The questions were generally structured to be broad, open-ended, and conversational, which has been shown to be most appropriate for seeking "to understand the context of a health problem" (Lewis, 2015, p. 474). This type of questioning was intentional to gain an overall sense of the PPs' experiences of how their depression and anxiety may have changed during their involvement, to understand the PABs' experiences of participating, and to discover the referring HCPs' perception of the overall effectiveness of the intervention. The questions were designed with the intent to understand the various mechanisms that helped alleviate depression and anxiety, which included self-efficacy and the three basic psychological needs of the self-determination theory: compe-

tence, autonomy, and relatedness (Deci & Ryan, 2008). The research team conducted a pilot study in the semester before the current study to test and refine interview questions for the current study.

The program coordinator met with all PPs and PABs individually to determine the best matches; matches were based on the preferences of PPs (e.g., gender), goals, and interests (e.g., a PP who wanted to try running and prepare to run a 5K was matched with a PAB who enjoys running), and personality. Once matched, the PP and PAB pairs engaged in self-selected one-hour physical activity sessions twice a week for a 10- to 12-week intervention. Research has shown support for the benefits of exercising three or more times per week (Stanton & Raeburn, 2014); however, students with depression and/or anxiety in this program have had high adherence rates when scheduled for only two days per week (Keeler et al., 2021). At the end of the program, PPs, PABs, and HCPs were asked to volunteer to participate in the interviews. The principal investigator conducted and recorded each interview in a private room and then transcribed verbatim.

Data Analysis

After the primary researcher transcribed the interviews, the data were analyzed using the professional research software Atlas.ti (Hwang, 2008) to help uncover and systematically analyze complex phenomena hidden in unstructured data. This program provides tools to help locate relevant topics and themes, weigh their importance, and provide a visualization of the complex relationships between the themes. Along with Altas.ti, the process of constant comparison was used. Constant comparison is a coherent, systematic, inclusive approach to comparing each item and adding categories and themes (Pope et al., 2000). Also, deductive and inductive data analysis were used as some of the themes were previously expected to emerge in the analysis (deductive analysis), and several themes were inductively obtained as they gradually emerged from the data (Pope et al., 2000).

Results

Effectiveness of the Intervention: Changes in Depression and Anxiety

The intervention was shown to be effective in reducing depression and anxiety, as all interviewed PPs reported improvement in their symptoms. In addition, all PABs and HCPs noticed direct changes in the moods and behaviors of the PPs with whom they came into contact while the PPs were involved in the program. The reduction in depression and anxiety symptoms was reported by PPs on both acute (immediately after exercising) and chronic (over the duration of the program) time points. Participants in all three groups reported the acute effects and benefits of the program. One PAB reported, "Afterwards we just would both be in a better mood… it was cool to see… how we were before and after, and comparing that." Another PAB noticed that after exercise sessions, his buddies often "seemed happy… and they seemed fulfilled, they seemed like they accomplished something."

Regarding chronic changes over time, participants from all three groups also reported significant differences in the PPs. One PP stated that she noticed both her anxiety and depression "went down a significant amount" and she added, "I don't feel anxiety when I go out anymore." When asked if she believed these changes were due to the program or other factors she said, "it's because of the program 'cause I haven't changed much else since I started." Another PP reported that "my depression decreased to the point where I went off the antidepressants that I was taking" and also attributed her success to the program. One PAB stated, "I noticed a big difference from the start to the end… they [the PPs] have just been more positive, saying more positive things, talking good about themselves." This PAB continued to say that not only did he observe changes, but the PPs he worked with also voiced that they felt better on several occasions. Another PAB described the program overall as "extremely beneficial" and that one PP shared with her "how exercise has been really helping her feel more excitement about getting out of the house and doing more things" and that this led to "the improvement of her depression symptoms." One HCP reported that she found the program was beneficial for students by saying that, "it was clear that they [the

PPs] felt better physically, mentally, emotionally." Another HCP said that she received direct feedback from a PP about "how great the program was and [that she] wanted to do it again."

Another common response as to which mechanism was most beneficial was physical activity. One PP shared that she believed the physical activity itself had the most significant influence on the reduction in her depression symptoms, stating, "I just do much better when I'm exercising on a regular basis. In terms of staving off depression and I just feel better physically and I feel better emotionally and its fun and it helps me have a relationship." However, she continued that, "I wouldn't have done the exercise if I didn't have a [physical activity] buddy."

Themes and Mechanisms

Relatedness/Peer and Companionship Support

Relatedness, also described as peer support, was the most common response participants from each of the three groups gave when asked about which aspect they believed to be most beneficial; however, the majority of responses cited the combination of both relatedness/peer support and physical activity together. Five of the six PABs reported relatedness or human connection first when asked what they believed to be the most beneficial elements, using phrases such as, "the partner relationship is the most important aspect" and "social interaction" and "the most beneficial part of it was for her to have a friend that she could talk to… someone who could listen… that isn't a therapist, that isn't her mom."

Participants from the three groups discussed the combination of physical activity and relatedness. Several participants reported that it was easier to talk and form a deeper connection while being physically active; this was especially true for pairs who walked together (compared to reports of pairs who exercised in the gym, for example). Participants spoke of how the physical activity enhanced their sense of connection and how having someone to exercise with motivated them to be active. When asked which aspect(s) she believed to be most beneficial, one PP shared, "Well, the working out, in itself. And then, also having someone to work out with, so then you're not alone, especially like on a day that if you were feeling depressed or had anxiety, it was nice to have someone there with

you to do something else other than think about the depression or anxiety. I think having the buddy was the biggest [factor]." Another PP said, "It was really nice to be able to workout and have somebody to talk to about stuff." PABs also noticed how well exercise and human connection worked together and that it was difficult to isolate the benefits of one from the other. One PAB said, "It's hard to know how much [benefit] is associated with the exercise and how much is associated with the time that we have had together" and that, "I think that on a psychological somatic level, the ability to be moving, that brings up past memories, that brings up past experiences, and so the combination of walking and talking was probably the most beneficial thing."

Self-Efficacy/Competence

Another theme that participants from each of the three groups indicated as beneficial in reducing depression and anxiety for PPs was self-efficacy or competence. PABs also reported they noticed PPs' self-efficacy and competence improved over the course of the program, and as those levels increased, the PPs seemed to feel better overall. One HCP said, "They [the PPs] felt accomplished. They did it. They signed up for a task. And they were able to do the task and they completed the task." All the PABs spoke about their PPs' increasing self-efficacy and competence. One PAB shared, "at the beginning of the program it [self-efficacy] was like nonexistent, because she didn't even bother to try… but towards the end she told me, 'my confidence is so much better!'" Another PAB shared about his experience with a PP that "we did a plank, and she's never done a plank before…. [and] that one time made her excited for the rest… and we just kept improving and improving and showing [her] that [she] can do stuff, when [she didn't] realize it." The PAB continued, "I know now she feels way more comfortable, like if I'll say, 'we're going to do dumbbell press,' she knows exactly what to do, and she says, 'I got this!'… her confidence shot up." Another PAB reported that "she [the PP] got comfortable enough with me to try new things and she realized that she could do more," and that in the beginning of the program, "she really felt like she couldn't exercise or she couldn't do some of the things… toward the end she told me, 'my confidence is so much better'… and [she was] proud of any accomplishment that she made." Another PAB shared the following after his PP showed

clear improvement from the start of the program, " I was stoked and she was stoked, and obviously it was such an awesome moment!" The same PAB also reported that while he believed social interaction was the most beneficial element, "building that confidence and comfortability in exercise environments" was the second most beneficial for his Pp. One PP, who had very little self-efficacy for exercise in the beginning of the program, said, "Definitely, when we first started she [the PAB] would say, 'Oh, let's try this exercise' and in my head I was like, 'No way can I do that! I'm not strong enough!' But, I was able to do it! So, I think that, yes, I was able to do things that I had no idea that I could. And it was awesome!"

Structure is also a main component at increasing competence need satisfaction and was another beneficial mechanism highlighted by the HCPs, PPs, and PABs. All the HCPs spoke to the importance of routine or structure in helping students with depression and/or anxiety. One HCP said that she thought the most beneficial aspect "was the structure. It was a simple task with steps that they [PPs] could follow it, wasn't complex or complicated… they really appreciated the consistency of it… The consistency and routine is helpful." Another HCP spoke to the benefit of having a "routine established" while another said, according to direct feedback she received from a PP, the most beneficial aspect was "the commitment of meeting with someone and the social thing of having someone that they were going to meet with… was really helpful." PPs also found routine beneficial, not only in the consistency of meeting up regularly, but also building familiarity with exercise consistency, with one PP sharing, "we tried to stick to a similar routine every time when we met in the gym. And I liked that a lot." In regard to the benefit of being consistent, one PAB said, we "would go into a regular routine: lower body, upper body, back, & also cardio…. it only takes a little bit of time to get yourself better overall, over time."

Autonomy and Self-Selected Activity

When asked about the importance of being able to self-select their modes of physical activity, there were various feelings about the level of importance of autonomy from PPs; however, both HCPs and PABs recognized the importance of fostering autonomy in their PPs. While one PP said autonomy was "pretty important" and "I really loved that I was able to choose my own [physical activity]", the

other PPs preferred to have their PABs select and guide the physical activity sessions. One PP said, "it wasn't that important to me because I didn't know where to start. I like that she [the PAB] took the lead," and that if there was something she wasn't interested in trying, she would let her PAB know and they could choose another activity. Another PP said, "It wasn't that important to me. I'd rather have them choose."

PABs felt more strongly about the importance of autonomy. When asked which aspects worked well in the program, one PAB said, "I think just the fact that we… had the freedom to choose different activities." Another PAB who was paired with a PP who asked the PAB for activity ideas said, "I would give them [PPs] options, like, 'so we're going to do a leg workout, which leg workout would you like to try?' and they would pick. I figured having them decide within a parameter was easier for them than just saying, "What do you want to do now?"

Other Factors to Consider

While the initial scope of this study sought to examine the above themes as mechanisms for helping to reduce depression and anxiety, several additional themes were uncovered through the interviews. These themes included nature, routine or consistency, and healthier lifestyle changes.

Nature

While PPs and PABs had the option of participating in physical activities indoors and/or outdoors, several participants brought up the importance of exercising in nature in their interviews. One PP said that being in "the outdoors here, in the beautiful nature," was the most beneficial aspect for her after the physical activity. One HCP spoke to the importance of "outside activities." One PAB shared that she and her PP gained benefits by "going on forest runs and running around the track." Another PAB said, "green exercise or exercising outside is something that is really a beneficial part."

Holistic Health

Participants from each of the three groups reported that throughout the program, PPs adopted healthier lifestyle habits in other areas of their lives in addition to being more physically active. HCPs,

PABs, and PPs all believed that as PPs began reducing their depression and anxiety, they were able to make healthier choices regarding several other aspects of their lives, such as diet, living circumstances, and relationships. One HCP shared, "Once they were treating their bodies better, that also affected the way they wanted to care for their bodies, like what they wanted to eat, so I think that helps in the relationship like, 'Ok, this is how my body feels when I take care of it and I also want to feed it healthier things.'" Although PABs were trained in a non-weight/diet approach to exercise, two of them commented on the PP's dietary behavior. One PAB said that her PP "just decided to move out of her current place, because she doesn't like the living situation" and followed up that she believed the program had an effect on that decision by saying, "being able to talk about it, and just the physical activity benefits too, I feel like it keeps you level-headed a little bit." Some additional insights from PABs about their PPs included, "she cleaned up her diet, too, during this program" and that another PP became "more conscious about diet" and increased her "awareness of lifestyle."

Altruism and Empathy

In addition to the effects and benefits for the PPs, there were benefits reported for the PABs. The main recurring theme of benefit for PABs included positive feelings of being of service and assisting in beneficial changes for another. One PAB said that his experience in the program was excellent because "just being able to be an effective outlet for somebody else to make changes in their life that are going to benefit them… that's what made it a great experience for me… I can't say anything bad about my experience." Another PAB spoke to how "doing something selfless, it was rewarding" and continued that working out with people in this way would "be something that I'd like to do in my career."

Other benefits of the PABs were the development of empathy and compassion. One PAB said the program "impacted my life a lot. It showed me who I am trying to show up to be" and that the program helped her in "learning how to be more patient, refined, understanding, have more open communication with people." Another PAB reported, "I'm a lot more understanding… I'm definitely going to try a lot more, even if people are kind of quiet or something, I'm more likely to probably go out of my way." Several PABs reported

that the program was beneficial in increasing their communication skills. One PAB said the program "helped my people skills and communication and listening skills" while another said that he learned to "have compassion and heart… to have an open ear, [to be an] active listener." Another PAB said, "I learned that it's something [depression and anxiety] that most of us can relate to, and that most of us are working through similar issues on different levels" and she continued that she learned "the power of showing up and holding space for other people to show up."

Additional factors that benefitted the PABs included increased time management skills, accountability, and increased physical activity. One PAB said the program "definitely taught me time management." Another PAB said, "The accountability thing is awesome because it works both ways. It's like I feel just as responsible to exercise because now I have a responsibility to them [PPs]."

Discussion

This study provides additional qualitative evidence for the effectiveness of a peer-supported, self-selected physical activity program for college students with depression and anxiety. Additionally, this study uncovered possible mechanisms that provided the most benefit for students with depression and/or anxiety from multiple lenses of participant, peer assistant, and medical provider. Participation in this program was shown to benefit not only the PPs but also the PABs who supported them, which is consistent with previous literature (Keeler et al., 2021; Leenstra et al., 2019) and provides evidence that a program such as this one may provide a cost-effective resource to supplement the resources offered by overburdened campus health care centers.

Changes in Depression and Anxiety

It was hypothesized that PPs in the peer-supported, self-selected physical activity program would experience a decrease in depression and anxiety. This hypothesis was supported as results showed that participants from the three groups found the intervention to have significantly beneficial psychological effects for the PPs. All PPs reported that the intervention had a significant effect on reducing their depression and/or anxiety, both acutely immediately after exercise sessions as well as chronically over the duration of the semester; this

was consistent with previous campus exercises for depression programs (Keeler et al., 2021; McFadden et al., 2017; Rieck et al., 2012).

Themes and Mechanisms

The changes in depression and anxiety and the improvement in overall mood were due to many overlapping factors and mechanisms that are discussed in further detail below. Based on the theoretical background of this program, the researchers expected the results would support the deductive themes outlined, including peer-support/relatedness, physical activity, self-efficacy/competence, and autonomy or the ability to self-select physical activity. Results showed support for all these themes.

Peer-Support, Relatedness, and Physical Activity

Throughout the data analysis, one theme that continued to be discussed with potency and significant effectiveness was the combination of human connection with physical activity. Based on previous research, it was expected that both relatedness and physical activity would be uncovered individually as significantly beneficial mechanisms; however, the compound effectiveness of the two together was surprising to the participants and, therefore, of particular interest to the research team. It has been well documented that peer support is an effective element in increasing intrinsic motivation (Deci & Ryan, 2008), and the results from this study add to the growing field of research about the use of peer support for depression and anxiety, especially in college students (Basudan et al., 2017). Additionally, previous research has shown that in-person interactions, including the combination of physical activity and with counseling, are beneficial based on factors such as promoting equality within the therapeutic relationship, the change in physicality, the act of movement, and experiencing the outdoor environment (Revell & McLeod, 2016).

Self-Efficacy/Competence

Data analysis also showed support for self-efficacy and competence. PPs, PABs, and HCPs all reported significant changes in PPs regarding self-efficacy for exercise, competence, and overall increases in self-confidence. As the PPs gained self-efficacy for exercise, they also improved their overall self-confidence. The research team anticipated that self-efficacy for exercise would be beneficial

for reducing depression and anxiety, as previous research on self-efficacy in college students has shown similar results (Ryan, 2008). The self-efficacy mechanism was responsible for how PPs perceived themselves and cared for themselves, including improved social interactions and a healthier diet.

Autonomy and Self-Selected Activity

Some participants found autonomy, or the ability to self-select their mode of physical activity to be "very important," whereas other PPs preferred to have their PABs select and lead the physical activities. Even with the mixed support shown for selecting the exercise type, autonomy may also include the selection of where and when the activities took place and the intensity levels during the sessions; therefore, autonomy is still a foundational element of the intervention upon which the effectiveness partially rests. The data analysis affirmed that although some PPs preferred to have their PABs select and lead the activity, ultimately, what remains important is that each pair (PP and PAB) could work together to create their desired physical activities. Previous research has shown autonomy to be an integral aspect in fostering high-quality intrinsic motivation (Deci & Ryan, 2008), so although the choice of type of physical activity did not support autonomy as a mechanism for reducing depression and anxiety in the current study for all PPs, its importance in the program should not be overlooked. Further research is recommended to uncover how the ability to self-select physical activity may affect individuals with depression and anxiety directly and the other various aspects of the program the PPs may make decisions about, such as location and intensity.

Other Factors to Consider

In addition to these deductive themes, support was also found for inductive themes uncovered through analysis, including nature, routine, and additional lifestyle changes. There is a growing body of research on "green exercise" and the benefits of exercising in nature to reduce depression and anxiety (Gladwell et al., 2013) and to affect the mental health of college students specifically (Olafsdottir et al., 2017). The area in which this program is implemented offers many opportunities for green exercise, as the majority of the county is forestlands and recreational areas. Additional beneficial effects for

PPs in the program, including being able to limit antidepressant use, more positive self-talk, healthier eating habits, being more social, and moving out of undesirable living conditions were not directly hypothesized. However, these findings are congruent with and add to the body of research that shows that as individuals reduce their depression and anxiety, they may improve their overall quality of life in many sectors (Olatunji et al., 2007). These changes were due to the reduction in the PPs' depression and anxiety and are tangible effects of the intervention.

Benefits for the Physical Activity Buddy

There was evidence for the hypothesis that the program would benefit PABs by providing peer support. PABs gained confidence in communication skills and working with others and improved their time management skills and exercise adherence. The most striking benefit the PABs reported was their increased compassion and understanding of the power of human connection. Although the PABs anticipated that participation in the intervention would be enjoyable, they were often surprised or taken aback by how impactful and transformational their experience was in terms of being of service to others. These themes were consistent with previous findings in a similar study that peers in the program grew personally, interpersonally, and professionally (Leenstra et al., 2019). There is a growing body of research on altruism and being of service facilitating health and well-being (Post, 2005), and the present study supports this hypothesis by revealing how the PABs benefited significantly by supporting others. Additionally, the eudaimonic approach to understanding happiness helps explain why the PABs may have received more benefits than anticipated. This approach focuses on the development of meaning and self-realization as a means to wellness (Ryan & Deci, 2001) and explains that as the PABs provided peer assistance, they were creating benefits for themselves by being of service to another.

Considerations for Health Care Centers

All three HCPs referred several PPs to the program; however, there was a wide range in the amount of direct feedback or ongoing interaction HCPs had with PPs. One HCP, a counselor, had continuous sessions and interactions with several PPs that she referred to the program. This HCP was able to observe significant changes

in the PPs and received direct feedback about their experiences in the program. Of the other two HCPs, one had very little follow-up contact with the PPs she referred, only getting direct feedback from one PP. This example signifies the direct effect of the overburdened healthcare centers that do not have the resources for HCPs to follow up with students and provide the ongoing care students may need. All of the HCPs spoke of the rising rates of depression and anxiety and their limited abilities to be able to provide services to students in need. The HCPs expressed gratitude for the program, stating the rising prevalence of anxiety and depression and the increasing quantity of medications they prescribed.

Limitations and Future Research Recommendations

Although this study shows promise, there are several limitations and recommendations for further research to understand how the present findings may be applied to a wider population. One limitation of this study was the small sample size. A relatively small sample population is common in qualitative research as the aim is to gain a deep understanding of phenomena focusing on the meaning of a particular issue. The aim is not to collect large amounts of data but to gather the in-depth lived experiences of enough individuals to glean common themes and to understand the relationships between those themes (Charmaz, 2006), which occurred in this study. Although the sample was small, we believe that saturation was achieved.

Another limitation of the present study is that while all PABs participated in the interviews, not all PPs and HCPs who were part of the program were interviewed. The PPs and HCPs volunteered to participate in the study, and therefore, individuals who felt the program was especially beneficial may have been more likely to respond to e-mail requests to participate. This may have limited the findings because the research team did not have the opportunity to interview participants who may have felt indifferent about either the program or the task of being interviewed.

This study does not include a review of longer-term or ongoing effects. The recommendation for future research would be to conduct a longitudinal research study to gain a greater understanding of the impact of the intervention on the PPs' lives moving beyond the immediate time they participated in the program.

Practical Implications

Although there are limitations to this study, the results showed significant effects for all PPs, PABs, and HCPs and highlighted that this type of cost-effective program has been beneficial on multiple campuses (Keeler et al., 2021; Rieck et al., 2012) and potentially could benefit students if implemented by other universities nationwide. Results from this study showed the benefits of a program that addresses rising mental health disturbances and is effective, affordable, and practical to implement. All of the HCPs interviewed for this study found the intervention to be significantly beneficial and wished that the program was more extensive to help more of the students they serve.

Conclusion

The years young adults spend on college campuses can be a challenging period in which they have increased susceptibility to mental health problems such as depression and anxiety. However, these years are also ripe with the potential to help students develop beneficial behaviors to facilitate their mental and physical health. The present study supported the effectiveness of a program that reduced depression and anxiety and uncovered the mechanisms that facilitated these changes, which included the combination of relatedness/peer support and physical activity, self-efficacy and competence, and other factors. In addition, results showed the theme of altruism, or being of service and helping others, produced significantly beneficial effects in the lives of the students who provided peer support for individuals with depression and/or anxiety. Therefore, the findings of this qualitative study demonstrated the effectiveness and the beneficial mechanisms of a peer-assisted, self-selected physical activity program on depression and anxiety in college students.

References

American College Health Association [ACHA]. (2022). *American College Health Association National College Health Assessment III: Reference Group Executive Summary Spring 2022.* https://www.acha.org/documents/ncha/NCHA-III_SPRING_2022_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf

Anxiety and Depression Association of America. (2022, October 28). *Anxiety disorders: Facts & statistics*. https://adaa.org/understanding-anxiety/facts-statistics

Bandura, A. (1997). Self-efficacy. *Harvard Mental Health Letter, 13*(9), 4–6.

Basudan, S., Binanzan, N., & Alhassan, A. (2017). Depression, anxiety and stress in dental students. *International Journal of Medical Education*, *8*, 179–186. https://doi.org/10.5116/ijme.5910.b961

Cai, S. (2000). Physical exercise and mental health: A content integrated approach in coping with college students' anxiety and depression. *Physical Educator*, *57*(2), 69–76. https://www.proquest.com/docview/233005480

Center for Collegiate Mental Health. (2023, January). *2022 Annual Report*. https://ccmh.psu.edu/assets/docs/2022%20Annual%20Report.pdf

Centers for Disease Control and Prevention. (2022, December 15). *Exercise or physical activity.* https://www.cdc.gov/nchs/fastats/exercise.htm

Charmaz, K. (2006). *Constructing grounded theory*: *A practical guide through qualitative analysis*. Sage Publications.

Craft, L. (2005). Exercise and clinical depression: Examining two psychological mechanisms. *Psychology of Sport & Exercise*, *6*(2), 151–171. https://doi.org/10.1016/j.psychsport.2003.11.003

Daley, A. (2008). Exercise and depression: A review of reviews. *Journal of Clinical Psychology in Medical Settings*, *15*(2), 140–147. https://doi.org/10.1007/s10880-008-9105-z

Deci, E., & Ryan, R. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology*, *49*(3), 182–185. https://psycnet.apa.org/doi/10.1037/a0012801

Duffy, M. E., Twenge, J. M., & Joiner, T. E. (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among U.S. undergraduates, 2007–2018: Evidence from two national surveys. *Journal of Adolescent Health*, *65*(5), 590–598. https://doi.org/10.1016/j.jadohealth.2019.04.033

Edmunds, J., Ntoumanis, N., & Duda, J. (2007). Adherence and well-being in overweight and obese patients referred to an exercise on prescription scheme: A self-determination theory perspective. *Psychology of Sport & Exercise*, *8*(5), 722–740. https://doi.org/10.1016/j.psychsport.2006.07.006

Ensari, I., Greenlee, T. A., Motl, R. W., & Petruzzello, S. J. (2015). Meta-analysis of acute exercise effects on state anxiety: An update of randomized controlled trials over the past 25 years. *Depression and Anxiety*, *32*, 624–634. https://doi.org/10.1002/da.22370

Fletcher, J., & Banasik, J. (2001). Exercise self-efficacy: Clinical excellence for nurse practitioners. *The International Journal of NPACE, 5*(3), 134–143. https://doi.org/10.1054/xc.2001.24203

Fuhr, D., Salisbury, T., De Silva, M., Atif, N., van Ginneken, N., Rahman, A., & Patel, V. (2014). Effectiveness of peer-delivered interventions for severe mental illness and depression on clinical and psychosocial outcomes: A systematic review and meta-analysis. *Social Psychiatry and Psychiatric Epidemiology*, *49,* 1691–1702. https://doi.org/10.1007/s00127-014-0857-5

Gadermann, A. M., Alonso, J., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2012). Comorbidity and disease burden in the National Comorbidity Survey Replication (NCS-R). *Depression and Anxiety*, *29*(9), 797–806. https://doi.org/10.1002/da.21924

Gladwell, V. F., Brown, D. K., Wood, C. R., Sandercock, G. L., & Barton, J. (2013). The great outdoors: How a green exercise environment can benefit all. *Extreme Physiology and Medicine*, *2*(1), 1–7. https://doi.org/10.1186/2046-7648-2-3

Gold, S. M., Köhler-Forsberg Ole, Moss-Morris, R., Anja, M., Jaime, M. J., Monika, B., Steptoe, A., Whooley, M. A., & Otte, C. (2020). Comorbid depression in medical diseases. *Nature Reviews: Disease Primers, 6*(1), 1–22. https://doi.org/10.1038/s41572-020-0200-2

Greenberg, P., Fournier, A., Sisitsky, T., Pike, C., & Kessler, R. (2015). The economic burden of adults with major depressive disorder in the United States (2005 and 2010). *The Journal of Clinical Psychiatry*, *76*(2), 155–162. https://www.psychiatrist.com/read-pdf/5356/

Greenberg, P., Fournier, A., Sisitsky, T., Simes, M., Berman, R., Koenigsberg, S. H. & Kessler, R. C. (2021). The economic burden of adults with major depressive disorder in the United States (2010 and 2018). *Pharmacoeconomics*, *39*(6), 653–665. https://doi.org/10.1007/s40273-021-01019-4

Greenberg, P., Kessler, R., Birnbaum, H., Leong, S., Lowe, S., Berglund, P., & Corey-Lisle, P. (2003). The economic burden of depression in the United States: How did it change between 1990 and 2000? *The Journal of Clinical Psychiatry*, *64*(12), 1465–1475. https://www.psychiatrist.com/read-pdf/5373/

Greenberg, P., Sisitsky, T., Kessler, R., Finkelstein, S., Berndt, E., Davidson, J., Ballenger, J. C., & Fyer, A. (1999). The economic burden of anxiety disorders in the 1990s. *The Journal of Clinical Psychiatry*, *60*(7), 427–435. https://www.psychiatrist.com/read-pdf/5363/

Hoffman, D., Dukes, E., & Wittchen, H.-U. (2008). Human and economic burden of generalized anxiety disorder. *Depression and Anxiety*, *25*, 72–90. https://doi.org/10.1002/da.20257

Hwang, S. (2008). Utilizing qualitative data analysis software: A review of Atlas.ti. *Social Science Computer Review*, *26*(4), 519–527. https://doi.org/10.1177/0894439307312485

Keeler, L. A., Clifford, D. E., August, B., Kowalski, P., & Morris, M. N. (2013). Examination of a peer-led, non-diet nutrition and exercise adherence pilot program on a college campus: FitU. *California Journal of Health Promotion*, *11*(1), 84–96.

Keeler, L. A., Skidmore, B, Leenstra, T., MacDonald, J. R, & Stewart, D. (2021). Treating university students' depression using physical activity with peers: Two field-based quasi-experiments grounded in the self-determination theory. *Journal of College Student Psychotherapy, 35*(3), 205–223. doi:10.1080/87568225.2019.1660293

Kessler, R. (2012). The costs of depression. *The Psychiatric Clinics of North America*, *35*(1), 1–14. https://doi.org/10.1016/j.psc.2011.11.005

Kessler, R., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., Rush, A. J., Walters, E. E., & Wang, P. S. (2003). The epidemiology of major depressive disorder: Results from the national comorbidity survey replication (NCS-R). *Journal of the American Medical Association*, *289*(23), 3095–3105. https://doi.org/10.1001/jama.289.23.3095

Kessler, R., Berglund, P., Demler, O., Jin, R., & Walters, E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry*, *62*(6), 593–602. https://doi.org/ 10.1001/archpsyc.62.6.593

Kirsch, D., Pinder-Amaker, S., Morse, C., Ellison, M., Doerfler, L., & Riba, M. (2014). Population-based initiatives in college mental health: Students helping students to overcome obstacles. *Current Psychiatry Reports, 16*(12), 1–8. https://doi.org/10.1007/s11920-014-0525-1

Konnopka, A., & König, H. (2020). Economic burden of anxiety disorders: A systematic review and meta-analysis. *PharmacoEconomics, 38*(1), 25–37. https://doi.org/10.1007/s40273-019-00849-7

Kvam, S., Kleppe, C. L., Nordhus, I. H., & Hovland, A. (2016). Exercise as a treatment for depression: A meta-analysis. *Journal of Affective Disorders, 202*, 67–86. https://doi.org/10.1016/j.jad.2016.03.063

Leenstra, T., Keeler, L. A., Arthur-Cameselle, J., & Russell, K. (2019). The peer mentor experience in a physical activity intervention for mental health. *Journal of Mentoring and Tutoring: Partnership in Learning, 27*(1), 68–87. doi: 10.1080/13611267.2019.1583410

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health Promotion Practice*, *16*(4), 473–475. https://doi.org/10.1177/1524839915580941

Martin, L., Williams, S., Haskard, K., & Dimatteo, M. (2005). The challenge of patient adherence. *Therapeutics and Clinical Risk Management*, *1*(3), 189–199. https://www.tandfonline.com/doi/epdf/10.2147/tcrm.s12160382

McFadden, T., Fortier, M. S., & Guérin, E. (2017). Investigating the effects of physical activity counseling on depressive symptoms and physical activity in female undergraduate students with depression: A multiple baseline single-subject design. *Mental Health and Physical Activity, 12*, 25–36. https://doi.org/10.1016/j.mhpa.2017.01.002

Mead, S., Hilton, D., & Curtis, L. (2001). Peer support: A theoretical perspective. *Psychiatric Rehabilitation Journal*, *25*(2), 134–141. https://doi.org/10.1037/h0095032

Merom, D., Phongsavan, P., Wagner, R., Chey, T., Marnane, C., Steel, Z., Silove, D., & Bauman, A. (2008). Promoting walking as an adjunct intervention to group cognitive behavioral therapy for anxiety disorders: A pilot group randomized trial. *Journal of Anxiety Disorders*, *22*(6), 959–968. https://doi.org/10.1016/j.janxdis.2007.09.010

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health: Results from the World Health Surveys. *The Lancet*, *370*(9590), 851–858. https://doi.org/10.1016/S0140-6736(07)61415-9

National Institute of Mental Health [NIMH]. (2023a, April). *Anxiety disorders.* https://www.nimh.nih.gov/health/topics/anxiety-disorders

National Institute of Mental Health [NIMH]. (2023b, April). *Depression*. https://www.nimh.nih.gov/health/topics/depression

Olafsdottir, G., Cloke, P., & Vögele, C., (2017). Place, green exercise and stress: An exploration of lived experience and restorative effects. *Health and Place*, *46*, 358–365. https://doi.org/10.1016/j.healthplace.2017.02.006

Olatunji, B., Cisler, J., & Tolin, D. (2007). Quality of life in the anxiety disorders: A meta-analytic review. *Clinical Psychology Review*, *27*(5), 572–581. https://doi.org/10.1016/j.cpr.2007.01.015

Pope, C., Ziebland, S., & Mays, N. (2000). Analysing qualitative data. *British Medical Journal*, *320*(7227), 114–116. https://doi.org/10.1136/bmj.320.7227.114

Post, S. G. (2005). Altruism, happiness, and health: It's good to be good. *International Journal of Behavioral Medicine*, *12*(2), 66–77. https://doi.org/10.1207/s15327558ijbm1202_4

Revell, S., & McLeod, J. (2016). Experiences of therapists who integrate walk and talk into their professional practice. *Counseling and Psychotherapy Research*, *16*(1), 35–43. https://doi.org/10.1002/capr.12042

Rieck, G. A., Todd, T. A., Keeler, L. A., Stewart, D., & Roberts, S. O. (2012, October). *Evaluating Wellcat Fit: A peer-assisted physical activity program for college students with depression*. Paper presented at the 2012 Biennial Conference of the North American Federation of Adapted Physical Activity. Doi:10.1094/PDIS-11-11-0999-PDN

Ryan, M. (2008). The antidepressant effects of physical activity: Mediating self-esteem and self-efficacy mechanisms. *Psychology & Health*, *23*(3), 279–307. https://doi.org/10.1080/14768320601185502

Ryan, R., & Deci, E. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*(1), 141–166. https://doi.org/10.1146/annurev.psych.52.1.141

Sabourin, B., Hilchey, C., Lefaivre, M., Watt, M., & Stewart, S. (2011). Why do they exercise less? Barriers to exercise in high-anxiety-sensitive women. *Cognitive Behaviour Therapy*, *40*(3), 206–215. https://doi.org/10.1080/16506073.2011.573572

Shally-Jensen, M. (2013). *Mental health care issues in America: An encyclopedia* (Gale virtualreference library). ABC-CLIO.

Smith, A. (2003). Peer relationships in physical activity contexts: A road less traveled in youth sport and exercise psychology research. *Psychology of Sport & Exercise*, *4*(1), 25–39. https://doi.org/10.1016/S1469-0292(02)00015-8

Stanton, R., & Reaburn, P. (2014). Exercise and the treatment of depression: A review of the eexercise program variables. *Journal of Science and Medicine in Sport*, *17*(2), 177–182. https://doi.org/10.1016/j.jsams.2013.03.010

Stonerock, G. L., Hoffman, B. M., Smith, P. J., Blumenthal, J. A. (2015). Exercise as treatment for anxiety: Systematic review and analysis. *Annals of Behavioral Medicine*, 49(4), 542–556. https://doi.org/10.1007/s12160-014-9685-9

Ströhle, A. (2009). Physical activity, exercise, depression and anxiety disorders. *Journal of Neural Transmission*, *116*(6), 777–784. https://doi.org/10.1007/s00702-008-0092-x

Teixeira, P., Carraça, E., Markland, D., Silva, M., & Ryan, R. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *The International Journal of Behavioral Nutrition and Physical Activity*, *9*(1), 78–108. https://doi.org/10.1186/1479-5868-9-78

Weinberg, R. S., & Gould, D. (2019). *Foundations of sport and exercise psychology* (7th ed.). Human Kinetics.

World Health Organization [WHO]. (2023, March 31). *Depressive disorder (depression)*. https://www.who.int/en/news-room/fact-sheets/detail/depression

Appendices

Participants from all three groups were told that all questions were to be answered on a voluntary basis and they were free to pass on any questions they did not wish to answer. They were also instructed to not identify other participants by name.

Appendix A: Interview Questions for Participants

1. Overall, how would you rate the quality of your experience in the WellFit Program? On a scale of 1 (poor) to 5 (excellent). Explain your rating above.
2. What worked well for you during the WellFit Program?
3. What about the program did not work for you, and/or what could be done to improve your experience?

4. Please rate the quality of your physical activity buddy in the following areas: On a scale of 1 (poor) to 5 (excellent) and please feel free to share your reasoning about any of these scores: Knowledge of physical activities. Understanding of your thoughts, feelings, and experiences. Availability. Approachability. Compassion.
5. How did the WellFit Program impact your life overall?
6. Did your anxiety and/or depression change over the course of the WellFit Program?
   a. If so, how much? What factor/s do you think had the biggest effect?
7. Did your physical activity levels increase during the WellFit Program?
   a. Do you think you will continue to be physically active after the WellFit Program?
8. Has your knowledge about exercise and/or comfort levels participating in physical activities changed throughout the WellFit Program? Please explain.
9. How important was it to be able to choose and select your own physical activities and why?
10. Were there any ongoing themes or recurring topics or ideas that came up for you over the course of the WellFit Program?
11. Please share any additional information you would like to add.

Appendix B: Interview Questions for Physical Activity Buddies

1. Why did you sign up to participate in the WellFit Program?
2. Describe your overall experience of participating in the WellFit Program.
   a. What are some aspects that worked well for you?
   b. What are some things that did not work well for you?
3. At the beginning of the WellFit Program, how much self-efficacy with physical activity and/or experience with exercise did your participants have? (Self-efficacy can be defined as the belief that an individual can successfully perform a specific behavior or task)
   a. Do you think their self-efficacy and/or knowledge of physical activities changed throughout the WellFit Program? If so, in what ways?
4. Did any of your participants talk with you about their anxiety or depression?

a. If so, what did they share?
5. Do you think this program was beneficial for your participants?
   a. If so, how beneficial? What do you think were the most beneficial aspects?
6. Did you notice any changes (e.g., physical, emotional, psychological) in your participants over the course of the WellFit Program (not already mentioned above)?
7. How did the WellFit Program impact your life?
8. What did you learn or gain from this experience and did you learn anything unexpected? Please explain.
9. What did you learn about working with people with depression and anxiety?
10. Did you have any prior experience in your life (either in yourself or friends/family) with anxiety and/or depression?
11. Overall, how would you rate the quality of your experience in the WellFit Program? On a scale of 1 (poor) to 5 (excellent). Explain your rating above.
12. What could be done to improve the WellFit Program not already discussed?
13. Were there any ongoing themes or recurring topics or ideas that came up for you over the course of the WellFit Program?
14. Please share any additional information you would like to add.

APPENDIX C: Interview Questions for Health Care Providers

1. How many students did you refer to participate in the WellFit Program?
2. What were the main reasons/motivations/criteria for referring those students to the WellFit Program?
3. Describe your overall sense of the experience of the program for the participants.
   a. What do you think worked well for them? What do you think did not work well for them?
4. Do you think this program was beneficial for the participants in reducing depression and/or anxiety? If so, how beneficial?
5. Which aspects do you think were the most beneficial (e.g. self-efficacy, autonomy, competence, relatedness)?
6. Did you notice any changes (e.g., physical, emotional, psychological) in the participants that you think was likely directly related to the WellFit Program (not already mentioned above)?

7. Overall, how would you rate the quality of the experience in the WellFit Program for the participants? On a scale of 1 (poor) to 5 (excellent). Explain your rating above.
8. How likely would you be to refer students to the WellFit Program in the future? On a scale of 1 (not at all) to 5 (very likely)
9. In your professional opinion, what could be done to improve the WellFit Program (not already discussed in your responses above)?
10. Were there any ongoing themes or recurring topics or ideas that came up for your patients over the course of the WellFit Program?
11. Please share any additional information you would like to add.