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Innovation in Practice Feature

Informal Recreation's Relationship With College Student Stress and Anxiety

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In this study, 18 undergraduate college students were interviewed and identified academics, work, and relationships as primary sources of stress and anxiety. The students attributed their reduced stress and anxiety to their participation in informal recreation. Administrators in student affairs are encouraged to integrate informal recreational opportunities in their collaborative approach to students' mental and emotional well-being through marketing and promotion, easier access to open recreation, partnerships with external organizations, and continued integration of technology.

Angelica Wilson was a 22-year-old student at Northwestern University when she committed suicide in 2018, the ninth student suicide since 2013 (Rhodes, 2018). She was involved in Greek life, a dance group, and several community organizations on campus. Peers described Angelica as “supportive” (para. 4), “generous” (para. 4), “approachable” (para. 5), “open-hearted” (para. 5), and “thoughtful” (para. 5) (Byrne, 2018). Northwestern University added two full-time mental health positions and initiated several new initiatives in response to the suicides. Unfortunately, stress, anxiety, depression, and even suicide, among college students is not isolated to Northwestern, as mental health issues are occurring at higher rates on college campuses than ever before (American College Health Association, 2020; Rhodes, 2018).

College student visitations to university counseling centers are rapidly increasing each year (Millett-Thompson, 2017; Steinhardt & Dolbier, 2008), increasing by 173% from 2009 to 2013 (Beiter et al., 2015). In Fall 2019, 55% of college students visited their university's campus health or counseling center in the last 12 months (American College Health Association, 2020). The demands of college life (e.g., studying, working, and socializing) paired with other issues (e.g., family, relationships, work, and finances) result in 1 in 10 college students reporting extreme levels of stress, anxiety, and/or severe depression (Beiter et al., 2015). Stress is defined as an emotional reaction to an external force and anxiety is defined as constant and unwanted worry, resulting in irritability, anger, fatigue, and insomnia (American Psychological Association, 2020). Both can also lead to depression, a common mental disorder where individuals experience

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disinterest in everyday life, weight loss, lack of concentration, and suicidal thoughts (American Psychological Association, 2020). University officials must grapple with an ever-increasing challenge to provide adequate support to all students, and one way to do this is to provide opportunities for involvement on campus.

The National Survey of Student Engagement (2019) identified various indicators of engagement that higher education institutions provide to students in the form of involvement. Students answered various questions about their perception of how the institution emphasizes these services. Campus recreation, organizationally located in student affairs at many universities, is one service that provides involvement opportunities to support the cognitive, social, and physical aspects of student learning along with other positive outcomes, notably reducing stress and anxiety (Blumenthal, 2009; Henchy, 2011; Lindsey, 2012; Mayhew et al., 2016; National Survey of Student Engagement, 2019; Renn & Reason, 2013). One survey showed that 75% of college students utilize campus recreation facilities, services, and programs, and 80% of those participants engaged in the services and programs at least once per week (Forrester, 2015).

Several scholars identified the benefits of college students' participation in structured, or formal, recreational activities in which they participate with their peers (Henchy, 2011; Kim et al., 2016; Lower et al., 2013), yet few have explored the benefits of unstructured, or informal, recreational activities in which college students participate independently. Campus recreation was developed to reduce stress from the rigors of academic life through formal programming such as intramural sports or group fitness classes (Rockey & Barcelona, 2012). Health and wellness benefits associated with participation in formal campus recreation programs include an improvement of overall mental and physical well-being, health and fitness, and stress management (Forrester, 2015; Vassold et al., 2019). Some researchers indicated that informal recreational activities, like swimming, positively impact the mental and physical health among the general population (Glasper, 2017); however, the limited research on informal opportunities for college students is notable (Council for the Advancement of Standards in Higher Education, 2019; Forrester, 2015).

Although National Survey of Student Engagement (2019) identified recreation as a supportive environment engagement indicator, it does not delineate between structured or formal recreation and unstructured or informal recreation. Informal recreational activities such as running, swimming, and weightlifting are among the activities that college students participate in most frequently (Forrester, 2015). Activities such as swimming may reduce stress and increase emotional well-being (Glasper, 2017). Investigating the impact of informal recreational activities like swimming, running, and lifting weights on stress was a gap in the literature we sought to address.

The two research questions that framed the project were: (a) What factors do college students that participate in weekly individual and informal recreational activities identify to be the most stressful in their lives? (b) How does weekly individual and informal recreational participation help to reduce stress in college students? Understanding the sources of stress (e.g., academics, work, relationships, and finances) and how informal recreation (e.g., running, swimming, and weightlifting) helps to mitigate stress in students' lives can assist higher education administrators in working together to provide additional support for college student mental health.

Literature Review

College Student Stress and Anxiety

Stress and anxiety are rising among today's college students, and prolonged stress and anxiety leads to depression, which undermines student success (Beiter et al., 2015; Millett-Thompson,

2017). According to the American College Health Association (2020), 49% of college students reported feeling moderately stressed and 28% reported feeling high stress. Steinhardt and Dolbier (2008) stated that "Exposure to these stressors [of college] coupled with students' developmental gaps in coping ability make this population [college students] particularly vulnerable to resultant psychological and physical health problems" (p. 445). The lack of development of coping abilities can lead to unhealthy behaviors.

College students are highly susceptible to stress and anxiety, and the underdevelopment of stress management skills contributes to serious mental, physical, and social health issues. Some students tend to seek out maladaptive coping strategies, such as higher levels of drinking, which can lead to significant mental health problems and inability to manage academic stress (Metzger et al., 2017). Stress, anxiety, and depression can also be the result of personal and interpersonal facets of daily life including sleep quality, personal relationships, overall health, body image, and self-esteem (Beiter et al., 2015) as well as financial stressors (Millet-Tompson, 2017).

Darling et al. (2007) investigated college student stress among 596 college students at a southern university and found that relationships such as friendships, love relationships, parent relationships, and family relationships influence stress, emotional health, and mental health in college students. As relationships build and students spend longer in college, student stress levels can continue to increase. Increases in stressful life events are also associated with anxiety and depression, and the level of stress experienced by college students is tied to suicidal ideation, loneliness, and hopelessness (Deckro et al., 2002). Therefore, increases in stress can result in behaviors that compromise students' overall health, including physical health disparities: headaches, sleep disturbances, and the common cold (Deckro et al., 2002). Stress and anxiety can extend into the classroom, resulting in decreased attentiveness and responsiveness, and students with poor psychological well-being are less likely to participate in class (Carton & Goodboy, 2015).

College students reported that friendships and relationships are the strongest predictors of feeling as if they matter in both their own lives and to their friends (Byrd & McKinney, 2012; Darling et al., 2007). Suicidal tendencies, work and life responsibilities, negative perceptions of the campus climate, and limited perceived faculty interaction are related to negative mental health outcomes (Byrd & McKinney, 2012). Furthermore, there is a strong relationship between stress, depression, and suicide. In fact, 9% of undergraduate students reported having thoughts about killing themselves twice, 4.5% thought about killing themselves 3–4 times, and 4.7% thought about killing themselves 5 or more times within the past year (American College Health Association, 2020). Interventions such as participation in recreation and taking advantage of other university sponsored programs have been found to help individuals manage their stress and anxiety (Henchy, 2011; Lindsey, 2012).

Stress Reduction

Participation in structured, formal recreational activities are effective strategies to minimize stress and anxiety. These strategies make students feel in control, especially related to academics (Byrd & McKinney, 2012; Carton & Goodboy, 2015). Anxiety and depression have been found to be highest in persons of high stress levels, and sports participation was lowest among individuals who have high stress levels. Sports participation and physical exercise can be beneficial in individuals with high stress levels (Wijndale et al., 2007). Deckro et al. (2002) introduced six, 90-minute mind and body training sessions to college students and found that the sessions reduced students' perceptions of stress and anxiety. Sharp and Barney (2016)

investigated the effects of a required physical activity course on college students' stress and found that students' stress reduced and their confidence in their ability to cope with stress increased after each class. Simply put, these types of physical activity opportunities tend to improve the college student experience.

Campus recreation also provides stress management and reduction for college students. Participation in formal campus recreation programs and facilities have been found to improve college students' overall health and their ability to manage stress (Henchy, 2011). Kim et al. (2016) explored the benefits of formal campus recreation on college student well-being using a sample of 940 students from a large public southwestern university. Participation improved students' quality of life and increased overall health, including a reduction in stress. Formal recreational activities like group fitness classes, intramural sports, and sport clubs benefit social and intellectual aspects of college student life, including stress management (Lower et al., 2013).

There are positive outcomes and benefits from participation in formal campus recreation programs (Henchy, 2011; Lindsey, 2012). The studies cited previously either investigated formal participation or failed to specify which participation they were researching. This gap in the research further supports the need to examine the effects from informal recreation participation among undergraduate college students. Thus, the purpose of this research was to examine the relationship between college students' stress and their participation in unstructured or informal recreational activity. We were particularly interested in college students' perceptions of their informal recreation participation and any relationships they identified to stress and anxiety.

Methods

Our work is grounded in a constructivist worldview that acknowledged participants had varying motivations for participation and experiences in their chosen activities that were attributed to differential outcomes as opposed to one finite truth (Creswell, 2013; Denzin & Lincoln, 2011; Hatch, 2002). Our qualitative approach utilized semi-structured interviews to collect students' perspectives on participation in informal recreational activities at a public, mid-sized, suburban university in the southeastern United States (Hatch, 2002). A qualitative constructivist approach aligned with the researchers' orientations to the fields of student affairs and campus recreation in higher education, and privileged participants' voices in examining the effects of informal recreation on stress and anxiety in their everyday lives.

Following the tenets of constructivist qualitative inquiry, the researchers assumed the role of the research instrument, but recognized that they were required to, at all times, interrogate their positionality within the study's context. The researchers have experience collaborating on the investigation of various aspects of college students' experiences, including the impact of recreational participation on student experiences in higher education. Both researchers were employed by the institution at the time of data collection, one of whom was a professional in the field of higher education campus recreation (Eubank) and the other as a professor of higher education (DeVita). The researchers both identify as cisgender, white, males who often participate in informal recreational activities (e.g., running, weightlifting) as a way to manage work-related stress, improve focus and attentiveness. While the researchers acknowledged their inherent biases and attempted not to lead participants in the research process, they also recognized that according to standpoint epistemology, their critical personal narrative and first-hand knowledge of the research context served as an interpretive lens (Denzin & Lincoln, 2011).

Participants

Participants were recruited using criterion sampling (Creswell, 2013) and had to meet the following criteria: (a) enrolled as a full-time student at the site institution, (b) participated in an informal activity on their own such as running, swimming, or weightlifting, and (c) participated in their respective activity at least once per week while enrolled. The recruitment process, which included e-mail invitations distributed through campus recreation, yielded 18 participants who had indicated they participated in running ($n = 13$), swimming ($n = 7$), and/or weightlifting ($n = 16$) at least once per week ($n = 18$). Participants included 10 males and 8 females. The sample was predominantly White with 16 participants who self-identified as White and only 2 as students of Color: 1 self-identified as Hispanic, and 1 as Asian. The majority of participants (12 of 18, or 67%) reported an undergraduate grade point average (GPA) of 3.5 or higher with only 1 participant reporting below a 3.0 (i.e., 2.5). Participants represented some other notable aspects of identity: 12 reported to be traditional aged (18–24 years old), 3 reported to be transfer students, and 2 reported to be first-generation students. Thirteen participants stated that they ran at least once per week, 7 stated that they swam at least once per week, and 16 stated that they lifted weights at least once per week. Notably, 13 of 18 participants stated that they engaged in more than one of the activities at least once per week: 5 participated in all three activities, 5 participated in running and weightlifting, 2 participated in swimming and weightlifting, and 1 participated in running and swimming. Table 1 provides a summary of participants.

Table 1

Participant Identities, Characteristics, and Activities (N = 18)

Pseudonym	Gender	Race/Ethnicity	GPA	Type of Student	Activity
Jim	Male	Caucasian	2.70	First Gen.	Run/Weightlift
Katara	Female	Caucasian	3.80	Traditional	Run/Weightlift
Andrew	Male	Caucasian	3.70	Traditional	Run/Swim
Will	Male	Caucasian	3.50	Transfer	Weightlift
Lisa	Female	Caucasian	3.70	NR	Run/Swim/Weightlift
Glenn	Male	Caucasian	3.80	Traditional	Weightlift
Derek	Male	Caucasian	3.40	Traditional	Run/Swim/Weightlift
Christopher	Male	Caucasian	3.80	Traditional	Swim/Weightlift
Mick	Male	Caucasian	3.10	Traditional	Run/Swim/Weightlift
John	Male	Hispanic	3.80	Traditional	Run/Swim/Weightlift
Brian	Male	Caucasian	3.30	Transfer	Weightlift
Tobias	Male	Caucasian	3.70	Traditional	Swim/Weightlift
Sarah	Female	Caucasian	3.80	Traditional	Weightlift
Alice	Female	Asian	3.30	Traditional	Run/Weightlift
Trainer	Female	Caucasian	3.80	Transfer	Run/Swim/Weightlift
Doris	Female	Caucasian	3.80	Traditional	Run
Rachel	Female	Caucasian	3.70	Traditional	Run/Weightlift
Jill	Female	Caucasian	3.50	First Gen.	Run/Weightlift

Note. NR = Not Reported; First Gen. = First Generation.

Data Collection

Participants completed a biographical data form and selected a pseudonym prior to starting the interview. Interviews were approximately 45 to 60 minutes in length and were audio recorded for accurate transcription and analysis. A semi-structured interview protocol was used that included open-ended questions regarding participants' participation in an informal recreational activity and how they thought that activity influenced their experience within the university. Example questions included: "What role does this activity play in your college experience?" "What have you experienced in terms of participating in an informal recreational activity?" and "What motivates you to participate in it rather than any other activity?" Interviews were conducted until we reached saturation by "gathering data that will lead to a textual and structural description of the experiences, and ultimately provide an understanding of the common experiences of participants" (Creswell, 2013, p. 81). Additionally, researchers' field notes were collected for analysis. Field notes allowed the researchers to track the demonstration of repetitive words as well as pauses and non-verbal reactions.

Data Analysis

Data analysis started with the verbatim transcription of all interviews, which was completed by the primary researcher. Once transcribed, the researchers engaged in a multiphase approach to analysis that started with inductive coding. During this initial phase, the researchers read and re-read transcripts multiple times in order to identify significant words and concepts (i.e., codes) that were shared by the participants. We then met to discuss our initial codes, "argue out" differences among codes, and to identify frames of analysis (Hatch, 2002). Hatch defined frames of analysis as a unit of meaning or "a segment of text that is comprehensible by itself and contains one idea, episode, or piece of information" (p. 163). Although multiple frames of analysis were identified in our initial phase of analysis, the focus of this publication relates to codes about participants' stress, anxiety, and depression that were identified during analysis.

The first phase of data analysis most closely resembled an open coding process where data were separated into distinct categories to be compared for similarities and differences. This process allowed us to identify emerging categories early in the analysis process (Hatch, 2002). In the second phase of analysis, we engaged in a constant comparative process (Glaser & Strauss, 1999) that allowed us to reexamine the prevalence of codes related to stress, anxiety, and depression across all interviews. The second phase of data analysis allowed us to refine our frames of analysis, compare differences and similarities in the ways in which concepts were discussed by our participants, and to identify themes that reflect participants' experiences. Stress, anxiety, and depression emerged as codes that aligned with a meaningful frame of analysis.

Trustworthiness and Reliability

Following analysis, we e-mailed findings to each participant to verify the researchers' interpretations. Member checking reduced the potential influence of research bias by involving participants in confirming the results (Lincoln & Guba, 1985). Twelve of 18 participants responded to the e-mail, with 11 confirming the findings; 1 participant corrected only the activities in which he participated. Due to limitations of semi-structured interviews, qualitative analysis relied on "shared conversation and construction" (Denzin & Lincoln, 2011, p. 108) among participants and the researchers. Our collaborative process helped keep participants' voices central to the findings shared during this project.

Findings

Interviews revealed that participants connected stress and feeling overwhelmed to their opportunities to reduce stress through informal recreation participation, which was not initially anticipated. Although the participants in this study identified similar stressors to other college students, the participants also identified feelings of “control,” “focus,” and even “tranquility” that appear to suggest a relationship between stress reduction and participation in unstructured, informal activities. John expressed, “I think it really can turn, I don’t want to say anger, but almost anger into tranquility, I would say even happiness.” Informal recreational activities that participants identified for this study were swimming, running, and weightlifting by themselves and on their own time, without facilitation or instruction. Most participants described concepts like stress and anxiety, even when asked other topics, which led us to probe about stress in their lives. Participants attributed their stress reduction to their motivation to participate in their chosen informal recreational activity.

Expressions of Stress and Anxiety

All 18 participants shared information about stress they encountered throughout their daily lives, including stress due to academics, employment, relationships, family, and time management. Tobias summarized his daily stressors as “Definitely friends, roommates, school, work, exams, keeping grades up.” Sarah described her daily stresses as “Mostly school sometimes, it’s just everyday conflict type stuff with work, roommates, whatever.” Participants alluded there are many causes of stress they experience. Glenn was more animated in his discussion of the various stressors he encounters:

I usually get really stressed when it seems like it’s all coming down at me at the same time. Like I’ve got school coming down on me, I’ve got work coming down on me, I’ve got friends coming down on me, I’ve gotta do this, and this.

Participants alluded there are many causes of stress they experience. One profound source of stress among the interviewees was academics.

Daily Stressors

Jim indicated that academics are a source of stress:

School always really bothered me. I was not the best studier or test taker. I know I have to go home and study this amount or write this paper or I got to take that test tomorrow. It’s more of that stress that always bothered me.

Similarly, John described his academics as a daily frustration: “Specifically I can be frustrated with certain circumstances, so maybe I didn’t do as well on like an assignment or test as I hoped might be a little frustrating.” As a nursing student, Jill felt stress from her academics: “Academics, nursing school is really stressful.” Significant others, friends, roommates, and family members were other stressors described by participants.

Relationships with family and friends were prevalent throughout the interviews. For example, Jim stated:

My parents have been divorced, and my dad I feel like causes me stress. It’s definitely a family issue, but it’s just one person in my life, it’s a little bit of added stress every now and then that you don’t want to deal with.

Alice stated “My father-in-law makes me stressed that I should be doing certain things,” while John noted that “I guess sometimes like in a personal relationship you know drama might overwhelm me at points.” Although stress was a prevalent topic and related to everyday stressors, some participants also identified stressors specific to engagement in informal recreation.

Stress on Time to Participate in Informal Recreation. Participants indicated that not having enough time to visit the student recreation center was a stressor for them. Because weightlifting was the favorite part of Will’s day, it adds stress if he is too busy for it:

Sometimes weightlifting puts more stress on me because I want to make sure I get to the gym, and with a tight schedule, like today for instance, I had to help a friend move first thing in the morning, then class, then here, then another friend of mine needed tutoring, and then I have to work.

Alice expressed that when there was too much schoolwork piling up that she cannot weightlift that it is “Stressful, because I feel like I should be here,” alluding to the recreation center. She also noted the pressure she puts on herself to ensure she weightlifts because it is an important source of fun and relaxation for her. Glenn shared his stress during exam time, which detracts from his ability to participate in informal recreation activities:

I have a really hard time working out over exam time because I get super stressed out and I like to think that I handle stress well, but I know that I don’t handle it well at all. I literally shut down. So when I shut down, I have to choose the parts of my life that I can’t neglect. I can’t not do my homework or study. I can’t not come to work and do that, but I can forego those workouts that day, or forego hanging out with my friends, and things like that. So definitely stress is a big influence on it. I work out to de-stress, but when it’s too much I feel like I don’t have the time to do it.

Glenn and Alice were motivated to participate in order to reduce stress but indicated that their schedules did not always permit them to do so. Jill stated:

It stresses me out sometimes to have to make time to go. Some days I know I need to go are worth making sure that I’m getting my heart rate up and giving myself a little break for a minute.

Although exercise and recreational participation were connected to stress reduction, scheduling those activities into participants’ already busy schedules appeared to be a stressor, too.

Anxiety from Informal Recreational Participation. In addition to stress from making time to participate in informal recreational activities, participants described anxiety related to the student recreation center because of social groups and perceived lack of acceptance. Derek described having anxiety “because the gym crowd holds a very bro-ish atmosphere, a very masculine atmosphere, and traditionally I’ve just not been in that kind of environment.” The student recreation center seemed to cause stress and anxiety for several participants. As a first-year female weightlifter, Katara felt timid and shy because she had done it only within a class: “I just didn’t know, you know what I mean? I didn’t want to look stupid, I didn’t want to look silly, I didn’t want to do something wrong.” For some students, like Derek, the atmosphere made them feel anxious; for others, making time in their busy schedules to participate contributed to stress.

Effects of Informal Recreational Participation on Stress and Anxiety

Stress Relief

While participants described their causes of stress, they also discussed the key role that informal recreation participation played in their stress relief. When asked about her participation in informal recreational activities, Jill replied, “They’ve been a stress relief for sure.” For Glenn,

weightlifting “definitely helps with my daily stresses. It helps me feel more in control of those stresses.” Sarah shared that “It’s a stress reliever for sure. If I have a bad day I want to go in there and do something I’m good at and it makes me feel really good about myself regardless of whatever happened.” Similarly, Lisa indicated that “Exercising has always been a stress reliever for me, running especially, it’s easy to unwind.” Mick explained that if he misses a day of exercise it results in trouble sleeping and feeling more anxious:

It’s mainly kind of a key de-stressor for me. If I don’t work out in a day I’ll be way more amped up and I have trouble going to sleep and kind of feel more anxious. I use it as a way to decompress really.

Every other participant described their informal participation as playing a key role in stress relief.

Happiness

Participants made an explicit connection between informal recreation and a feeling of happiness following their participation. Jill stated that “Usually when I go out, I’m in a better mood than when I came in. I guess, I don’t know what the word would be for it, but I guess just happy in general is good.” Glenn described his morning exercise as getting “The dopamine flowing through my brain; it makes me more alert and awake and happier in the morning.” Alice shared that “It makes you feel good, you get a boost of self-esteem when you achieve a goal, or you finished a good rep set.” Rachel is able to improve her mood through her informal participation:

Sometimes if I come here with a sense of, not anger, like feeling mad, but pretty close to anger. Typically, once I’m done working out, that’s usually gone. Sometimes I feel a sense of happiness and enthusiasm after working out.

The feeling of happiness and positive feelings following participation in the activities was prevalent throughout the interviews, showing potential value for addressing concerns about stress and anxiety, and the importance of informal campus recreation participation on college student life.

Participants also used alternative words and phrases for “happy,” such as “putting them in a better mood” or “making their day better.” Sarah stated:

I get frustrated pretty easily with some things. Sometimes it’s really hard for me to work on things I’m not good at. If I have a bad day, I want to go to the gym and I want to do something that I know I can do well at, and that’ll make me feel better about my day.

Derek stated, “Once I have a feeling of feeling sweating, like I had done something, it increases my good feelings for the day.” Jim made a similar comment and stated, “If I feel like I’m running really fast, it always puts me in a good mood for the rest of the run and I feel like that makes the run overall better.” Regardless of the participants’ specific word choices, they made it clear that positive feelings followed participation in informal recreation.

Self-Reflection, Spirituality, and Religion

Some participants stated that they were motivated to engage in informal activities for self-reflection, spirituality, and religion. Participation in informal recreation activities provided an opportunity for students to self-reflect and meditate. Will stated that “People talk about this is the best way to meditate or there’s this way, weightlifting is a way for me to meditate. It’s kind of like a self-reflection of what’s been going on.” For Katara “Running is mostly just a personal thing. It kind of just keeps me centered and kind of calm.” Participation in informal recreation

activities gave participants an opportunity to focus on themselves and self-reflect, which connects to their overall health and well-being.

Two participants also discussed religious and spiritual benefits of participation in informal recreation activities. Will emphasized “I’m a Christian, and it helps me with my walk with God where it’s like that’s part of my time to reflect with God.” Trainer commented that “It’s really, not to be too crazy spiritual, but it’s a good time for me to pray, and think about where I’m at, I dream about where I could be.” Although only 2 of 18 participants discussed religion and spirituality, it was a notable finding, particularly in relation to implications for students’ overall health and well-being.

Discussion

One of the most meaningful findings was the prevalence of stress relief associated with participation in informal campus recreation activities. Seventeen of 18 participants interviewed (94%) attributed stress relief to their activity. Students often used words such as “stress relief,” “decompress,” “de-stress,” and “stress management.” In contrast, participants discussed feeling anxious and had trouble sleeping on days they were unable to participate in their informal recreational activities. Multiple authors indicated that a reduction of stress and improved stress management in undergraduate students was attributed to campus recreation participation (Henchy, 2011; Lindsey, 2012; Sharp & Barney, 2016); however, no other studies were uncovered that connected stress relief to informal recreational activities. The rise in stress and anxiety in college students makes the confirmation of the relationship between informal participation and stress relief noteworthy for campuses to consider.

This research aimed to explore the dynamics of informal recreational participation and relationships to perceived stress, anxiety, and depression in college students. Of the 18 students that participated in the study, 10 (56%) specifically mentioned feeling “happy” after participating in their activity. Participants were in a better mood following their participation, expressing feelings of “happiness” and “tranquility,” especially after participation in the morning. These findings are similar to those discussed by Deckro et al. (2002) and Sharp and Barney (2016), which indicated stress reduction in students from participation in formal recreational activities. Henchy (2011) found that participation in campus recreation programs and facilities improved overall health and stress management, and Kim et al. (2016) concluded that participation improved students’ quality of life.

The previous studies only suggest that the reduction to stress, anxiety, and depression is due to participation in formal recreational activities. Henchy (2011) suggested there are various social benefits to participating in formal campus recreation programs and services. Perhaps there is something occurring beyond the physiological benefits of physical activity for those participants who are participating informally. In line with student involvement and engagement research (e.g., Renn & Reason, 2013), although they are participating alone, informal participants may be experiencing the same social benefits by simply being present in the student recreation center, among their peers, and within the higher education setting. The duration of each session and frequency of sessions per week may also impact the extent of changes in stress, anxiety, and depression occur.

Deckro et al. (2002) was the only study in the previous research that introduced recreational activities to participants over a specific amount of time, 90 minutes, at a weekly frequency, once per week for 6 weeks. Similarly, the criteria for the current study included individuals who participated in running, swimming, or weightlifting at least once per week, but we did not ask how long they participated in each session. Further research is needed to assess if specific

thresholds for duration and frequency of these types of informal recreation are needed to yield benefits such as stress reduction and improved quality of life.

Finally, although an unanticipated finding, some participants connected their informal recreation to self-reflection and meditation; two participants directly connected their participation to religion and spirituality. While this connection has not been discussed in the literature on recreation participation, when considering the overall health of students these potential outcomes should not be ignored.

Implications for Practice

College students are presented with numerous opportunities to engage on campus, including campus recreation. Campus recreation developed to become an “administrative structure” (Taylor et al., 2003, p. 74), and is often organized within student affairs where more than 75% of campus recreation programs report (Blumenthal, 2009). Campus recreation offers an array of recreational opportunities through both formal and informal programming in which students can swim in the aquatics facility, run around the track, or lift weights in the fitness center (Council for the Advancement of Standards in Higher Education, 2019). These informal activities are available to students based on a limited schedule, and thus some students may not have an opportunity to participate or may seek additional ways of engaging on campus. Results from the current study suggest the need to continue to expand campus offerings to meet the diverse interests of students who may engage in groups, which are more likely in formal activities, or individually, which is more likely in informal activities. Campuses need to provide explicit opportunities for students to select their engagement preferences in order to maximize access to stress reduction and other aspects of wellness.

As rates of college student stress and anxiety continue to rise (Beiter et al., 2015), informal recreation could be a potential source for students to relieve stress and improve their overall health. Our findings demonstrate that students feel less stressed, happier, and more confident after participating in informal recreation activities. Institutions should implement programs to encourage student participation in informal activities in the same ways that they encourage participation in formal recreation experiences such as intramural sports. For example, group fitness programs, club sports, and other structured, formal experiences are often marketed as engagement opportunities for students, while unstructured, informal experiences (e.g., running, weightlifting, swimming) may be available but are not marketed or widely promoted to students. Some simple steps that institutions can take are to ensure that (a) marketing and promotion of recreation opportunities includes informal recreation and (b) facilities are scheduled to allow for easy access during peak times. Free and open recreational hours give students the opportunity to freely express themselves in an open environment and participate in their own form of recreation to alleviate the stresses of college life. Expanded hours may even help to reduce stress that students experience when their daily schedules limit their recreational participation. Where institutions lack their own or adequate facilities (e.g., urban communities and community colleges), students could be encouraged to engage in outdoor activities, and/or institutions should seek partnerships with private gyms or other facilities that students could access.

Institutions also need to utilize technology to encourage participation in informal recreation activities. Online applications like MapMyRun (<https://www.mapmyrun.com/us/>) or Runkeeper (<https://runkeeper.com/running-app>) could be used to encourage students to track their participation in activities like running. Similar applications that combine challenges and games with exercise, known as “exergames,” have been found to motivate individuals to engage in physical activity, further enhancing their experience (Lindberg et al., 2016). Online resources could provide information such as suggested

safe running routes near campus, swimming workouts, educational information on weightlifting, nutritional information about campus dining options, and alternative activities for students with limited schedules. An online application could assist with rewarding students' engagement. Partnerships with campus units could help to support and scale the implementation of health and wellness campaigns that encourage participation in informal recreation activities. Units within student affairs, such as residence hall and student activities staff members, could encourage competitions among groups to accumulate informal recreation hours. Campus dining services or bookstores could provide rewards to students who meet certain participation thresholds. A collaborative approach that integrates support from units across campus could help to promote participation in informal recreation by acknowledging the benefits of and tracking engagement with all types of informal recreation including not only running, swimming, and weightlifting, but also activities like yoga and mindfulness exercises.

Outside of higher education, some companies pay their employees to exercise (Kohll, 2019). Kohll includes several reasons why companies invest in exercise, including stress relief, increased energy, and enhanced productivity. While institutions of higher education could not sustain a monetary compensation for exercise, students could be rewarded with course credit for their participation. Physical education course credits, which are typically awarded as elective credits, could be accumulated through participation in informal recreation activities. Faculty and instructors who currently teach physical education could be retained in those roles by helping to track student participation. Additionally, instructors could engage participants in reflection about their experiences to encourage understanding about the benefits of their participation.

One unanticipated finding was the stress some participants noted from simply entering the student recreation center as an informal recreation participant. Prevalent among participants that lifted weights, students discussed feelings of being watched, or judged, by other participants. Anxieties such as making a mistake or looking "stupid" existed in some of the interviews. One student expressed feeling anxious from what he considered to be an intimidating, "bro-ish" atmosphere. Campuses should be cognizant of issues with body image that are faced by students and implement programming on campus that targets healthy body image for all college students. Interventions that focus on developing healthy body image have been shown to be successful for adolescent groups (e.g., Dea & Abraham, 2000). Campuses could utilize partnerships between student affairs services and on-campus health centers, recreation centers and faculty members, particularly those with expertise in health and wellness fields, to develop and deliver programming that targets healthy body image. As part of this work, campus recreation professionals should regularly assess their facilities to determine how to promote inclusion and maintain a welcoming atmosphere for all students, and specifically for engagement in both formal and informal activities.

Limitations

Several limitations existed in this study. The first limitation was the small number of participants included in the sample ($n = 18$). Future research with a larger sample size is recommended to further explore the relationship between informal recreation and college student stress and anxiety. Second, the institution at which the study took place consists of a primarily Caucasian student population and the sample in this study reflected that. We recommend conducting a similar study with a more diverse sample, and also at a minority-serving institution. Third, a majority of the students in the sample (12 of 18) reported having a GPA of 3.5 or higher. A future research study that includes college students who participate in informal (unstructured) recreation at least once per week with varying GPAs might paint a broader picture for student affairs professionals.

Conclusion

During our examination of college students' engagement in informal recreational activities (e.g., swimming, running, and weightlifting), we found a meaningful relationship between students' participation in informal activities and their stress and anxiety. The participants described informal recreation as beneficial to their well-being. Thus the findings suggest that it could be an effective intervention to support students' mental health. Administrators in higher education, and particularly within student affairs, should intentionally integrate informal recreation into their health and wellness planning, programming, and promotion. The use of existing technology (e.g., apps) and development of partnerships across campus could assist with encouraging participation in informal recreation and improving students' mental health.

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