University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Promoting Social Connection Through Online Physical Activity Programming

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Prepared for:

Course Code: KIN 464

University of British Columbia

Date: 13 April 2021

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Promoting Social Connection Through Online Physical Activity Programming

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Group 3 (Project B): Promoting Social Connection Through Online Programming

KIN 464 - Health Promotion and Physical Activity

Assignment #3: Final Report

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April 13, 2021

Executive Summary

Between online classes, work from home, and virtual exercise programs, online activities are at an all-time high. As a result, many people are struggling to maintain social connections. Feelings of social connectedness are extremely important for the mental well-being of others; but the current pandemic and virtual lifestyles have increased feelings of loneliness, isolation, and sedentary behaviours. The goal of this study is to identify barriers to social connection through online physical activity programs for students at the University of British Columbia (UBC) Vancouver campus. In doing so, we aim to provide UBC Recreation (UBC REC) and SEEDS (Social Ecological Economic Development Studies) UBC with the necessary information to implement changes and increase the health and well-being of UBC students.

Existing research lacks data that is specific to social connection among undergraduate students and online physical activity programming. Furthermore, literature reviews do not indicate that social connection through physical activity increases motivation and mental well-being. Studies have shown that exercise patterns among university students are especially important due to students' predisposition towards unhealthy lifestyle habits such as having a poor diet or increasing alcohol consumption. Additionally, students' university years often set a foundation for the habits they maintain later in life. Driven to action by the lack of existing research, we examined the barriers to social connection in online physical activity platforms and the attitudes and habits of UBC undergraduate students through a Qualtrics survey.

The survey was designed to provide insight into participants' attitudes on social connection and online physical activity programming, factors that prevent participants from participating in online physical activity programs, and participant experiences with existing programs.

Based on a total of 78 responses, the findings indicate that social connection is important to university students, and 71.2% of respondents report enjoying social connection while being physically active. In addition, most participants indicate a decrease in their physical activity levels and an increase in social isolation due to COVID-19. Approximately, 64.1% of respondents have not participated in online physical activity classes, with participants naming awareness of existing programs as the number one barrier to participation in online physical activity programs. Findings also indicate a preference for synchronous physical activity classes, with a greater variety in the types of classes offered.

Based on these findings, we presented five recommendations for UBC REC to consider implementing in future online physical activity programs. The first recommendation is to increase awareness of existing programs through social media marketing and share information about UBC REC programs as part of the faculty resources for student well-being. The second recommendation suggests increasing the variety of online programs, such as incorporating different types of classes for students of varying fitness levels. The third recommendation is specific to online sport programming and the utilization of private group classes. The fourth recommendation focuses on increasing synchronous physical activity classes and utilizing Zoom as the delivery platform to allow for greater interaction among the participants. The final recommendation introduces outdoor settings to physical activity programming thereby increasing mental and physical well-being by decreasing social isolation.

Introduction

In light of the COVID-19 pandemic, the inability to organize in-person events has resulted in a dramatic decrease in the frequency of face-to-face interactions. Face-to-face interactions allow opportunities for social connection; however, the transition to virtual environments has made both physical activity participation and social connection more challenging at this time.

Social connection is defined as feeling close to others or a group (Lee et al., 2001). Supportive social interactions can have a direct impact on one's happiness and can even reduce blood pressure, heart rate, and stress hormones (Chan et al., 2018). Therefore, social connection plays an indispensable role in our daily lives, especially during province-wide lockdowns and restrictions where in-person interactions are minimized. According to the World Health Organization (WHO), physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure, such as walking, playing sports, or active recreation (WHO, 2020). The existing literature suggests that physical activity contributes to a healthy lifestyle and promotes social connection between individuals of different genders, races, and backgrounds (Chan et al., 2018). Thus, physical activity can be viewed as one of the most effective means of staying socially connected with others as well as, maintaining a healthy body, both physically and mentally.

Since the emergence of COVID-19, opportunities for social connection have decreased significantly due to social distancing, self-quarantining, and the closure of many sports facilities. In addition, the global pandemic has decreased individual's motivation to exercise at home, increasing one's susceptibility to depression, anxiety, and weight gain (Parrish, 2020). As such, this decrease in face-to-face activities has not only had a negative impact on an individual's

ability to socially connect with one another, but it has also impacted their involvement in physical activity. Due to the negative mental and physical consequences of a sedentary lifestyle resulting from this pandemic, it is important to examine methods of increasing both social connection and physical activity through the use of online platforms.

Literature Review

Social Connection Through Physical Activity

Social connection plays an important role in sport and exercise, be it involvement in team sports, group competitions, or training with gym partners. Oftentimes, social connection in the context of physical activity occurs in the form of online communication to discuss past or upcoming workouts, or in the capacity of a supporting or encouraging role to motivate others to partake in exercise. A 2014 (Zhang et al.) study conducted with Northeastern University students examined the impact of social connection via online platforms for participation in in-person physical activity initiatives. Participants were divided into four groups: control (individual alone), social support (team support), social comparison (individual competition), and combined (team competition), with an online platform, SHAPE-UP, serving as a sign-up and organization system for classes, as well as a communication tool for members in each group (Zhang et al., 2014). Results indicate that the SHAPE-UP platform increased participation in physical activity across all groups, and there was a statistically significant increase in attendance rates among the social comparison and combined groups (Zhang et al., 2014). Furthermore, data concluded that these two groups also had the highest number of messages among participants through SHAPE-UP (Zhang et al., 2014).

A recent qualitative study conducted with adult participants (18 years and older), who maintained a weekly exercise schedule prior to COVID-19 lockdowns, identified six major

themes contributing to a decrease in physical and mental well-being associated with physical activity (Kaur et al., 2020). A decrease in motivation due to the lack of support and social connection (such as "gym buddies" or group classes) is noted as a major theme contributing to an overall decrease in well-being (Kaur et al., 2020). This study recommends utilizing social media platforms for home workouts to increase social connection and thereby combat lack of motivation felt by the participants (Kaur et al., 2020). This study also highlights that social connection can be fostered through physical activity outside of traditional social sports like team or recreation sports, and is, in fact, a critical component of motivation to engage in any type of exercise.

Social Connection in Online Physical Activity Programs with Older Adults

Participating in regular physical activity is important to reducing the risk of chronic diseases and mortality; however, due to the COVID-19 pandemic, many individuals have been left to engage in solitary physical activity at home or outdoors. Researchers in one study looked at older adults who transitioned their modes of physical activity from gym or group environments to at-home, online settings using home fitness apps (Nyenhuis et al., 2020). Home fitness apps allow users to engage in real-time fitness classes, connect socially with other users, and be motivated by their peers (Nyenhuis et al., 2020). In another study, the authors examined the changes in physical activity levels of older adults during the COVID-19 pandemic (Wilke et al., 2020). The authors implemented a four-week virtual training program for the intervention group and compared how their physical activity levels differed from participants in the control group, who were not assigned to the virtual training program (Wilke et al., 2020). The findings suggested that following a virtual training program encouraged users to engage in physical activity at home more than individuals who did not partake in a virtual training program (Wilke

et al., 2020). The literature establishes the importance of social connection as a source of motivation to participate in physical activity and in turn, improves one's overall quality of life. It is critical to understand the potential benefits of technology on social connection and physical activity, so that more individuals can improve their mental and physical health free of barriers and deterrents.

Social Connection in Online School

With the emergence of COVID-19, the transition from in-person instruction to online learning has had detrimental effects on the well-being of students, including increased loneliness and social isolation (Kaufmann & Vallade, 2020). To mitigate these effects, Kaufmann & Vallade (2020) explored the impact of rapport between students, (student-student rapport) and the rapport between instructors and students (instructor-student rapport) on reported levels of student loneliness among graduate students enrolled in online education programs. This quantitative study by Kaufmann & Vallade (2020) found that both student-student rapport and instructor-student rapport effectively improved student perceptions of loneliness, connectedness, and classroom participation (Kaufmann & Vallade, 2020). Positive instructor communication, such as being "approachable, supportive, respectful, engaging, understanding, and responsive," was also an important factor in mitigating students' feelings of loneliness during online learning (p.4, Kaufmann & Vallade, 2020). The similarities between online learning and online recreation programs provide a critical comparison of how online recreation programs can adapt to increased perceived loneliness during online classes.

In another study by Cairns et al. (2020), factors within online learning environments were examined to create a more meaningful and connected learning atmosphere. Cairns et al. (2020) found that face-to-face interactions using live video platforms were more meaningful, facilitating

an environment where students were able to converse with each other and informally get to know their instructors and peers (Cairns et al., 2020). Further, students seemed to respond better to synchronous learning, wherein they learned content at the same time and could view other students' facial expressions in real-time, rather than asynchronous learning, wherein students learned content on their own time (Cairns et al., 2020). The utilization of breakout rooms in Zoom was also an interactive strategy that enabled students to "hang out" and connect with one another (p.286, Cairns et al., 2020). Instructors that demonstrated empathy, concern, flexibility, and an acknowledgement of COVID-19 positively impacted the online learning environment by making students feel more connected (Cairns et al., 2020). Thus, the findings from these studies show that online platforms can be used to effectively promote learning while fostering a sense of connectedness among students.

Research Gaps

The existing literature suggests that there is insufficient data regarding social connection and online physical activity among young adults (ages 18-24). Although Zhang et al. (2014) highlighted the important role of social networks in exercise settings, the study does not explore the relationship between social connection and increasing online physical activity participation. Furthermore, Zhang et al. (2014) is one of the very few studies examining university-aged students, as this age group is often overlooked or added to a generalized 18+ grouping in the existing literature. While the Kaur et al. (2020) research draws on the importance of social connection as a means of promoting participation and motivation in physical activity, it does not specifically focus on university-aged students. University students belong to a sub-group within the category of adults; "emerging adults," a term coined to best describe those between the ages of 18 and 25 (p. 107, Bjorklund & Earles, 2020). This niche group is more likely to be the first to

display age-related mental health issues and to seek out social interactions with others as part of their personality development (Bjorklund & Earles, 2020). Due to their unique life stage and lifestyle, it is important to examine emerging adults as a separate category instead of generalizing the findings of adults in the 18+ age category. Thereby, the existing literature fails to examine the experiences of social connection and online physical activity programming among university students aged 18-24.

On the other hand, there is existing research on social connection, isolation, and loneliness among university-aged students with regard to the online delivery of academics. These studies provide insight into how university-aged students socially connect online; however, these findings do not draw on the important component of online physical activity. Moreover, Nyenhuis et al. (2020) noted a widespread increase in activity due to various physical activity apps and tracking programs; however, the sample for their study only examined older adults. The transferability of research conducted on older adults brings into question its applicability to a younger age group, especially when factors like free time, financial status, and general preferences can vary widely between these age groups. There is a clear gap in the existing body of literature that does not specifically target social connection through online physical activity programs among university-aged people.

Purpose Statement

Our research study aims to identify factors that inhibit social connection in online recreation programs for university-aged students and in doing so find ways to enhance their participation, motivation, and social connection.

Research Question

What are the barriers to social connection in online recreation programming and how can these barriers be addressed to increase social connection in online physical activity programs for undergraduate students?

Methods

Participants

The inclusion criteria for the participants in this study were based on age and academic status. All the participants were between the first and sixth year of their undergraduate degree (18-24 years old) and enrolled as full- or part-time students at UBC. These parameters would ensure that the data would be applicable to the student population most impacted by the studies' partners, UBC Recreation and SEEDS Sustainability Program. In addition, all participants were required to be active students so that the data gathered would provide relevant information for the development and improvement of social connection through online physical activity programming. While UBC alumni might have also provided informative data, this study values the responses of current UBC students, those currently enrolled during this pandemic. To obtain a sample population that is representative of UBC's student population, we strived to obtain diversity in participant demographics such as gender and faculty enrollment. Experience with online physical activity programs was an inclusion criteria because the goal of the survey was to obtain insight into why individuals may not partake in online physical activity programming and identify potential barriers to online physical activity participation.

Examining social connection and participation in physical activity for university-aged students is an important topic for health promotion because university-aged students are at risk of adopting poor coping mechanisms, including smoking, drinking, eating nutrient-deficient diets,

and participating in limited exercise (Deasy et al., 2015). It is critical that researchers examine social connection and physical activity among undergraduate students, as these are important aspects of increasing an individual's overall health and well-being (Umberson & Montez, 2010).

Participants were recruited through various social circles and communities within the UBC campus. For example, the campus communities recruited included members of UBC Sororities and Fraternities, UBC Kinesiology students. Recruitment mainly took place through social media platforms like Facebook and Instagram, as well as by word of mouth. Members of the research team shared the scope of the research study and survey with friends through personal conversations aimed at gaining a better understanding of how social connection can be fostered through online recreation programming.

Research Design

Our team collected data using an online Qualtrics survey consisting of 35 questions. The survey period took place from March 18 to 26, 2021 and the survey method was used as a means of obtaining the data. Given the current pandemic and the target population, the research team recognized both the limitations of personal contact and the time constraints often associated with a student population; thus, the survey method was utilized to increase overall participation. The target goal was to obtain 70 responses, with a minimum of 40 and a maximum of 100 participants. The number of participants was limited to 100 so that data analysis would not be overwhelming but would still allow for proper methodological analysis when accounting for potential outliers and errors. The data collection was completed through the Qualtrics survey and then transferred into an Excel spreadsheet for analysis. The figures and tables were created using the Qualtrics Reports function.

To obtain useful data to improve social connection through online physical activity programs, data collection consisted of open-ended and Likert scale-type questions to allow for both quantitative and descriptive qualitative analysis. The survey began with a set of demographic questions to gather information on age, gender, living space, current location of residence, ability to be active at home, faculty of enrollment, and academic year of standing. These demographic questions provided information that could be quantified and analyzed to identify possible trends in barriers to social connection through online physical activity to specific students. The survey did not ask for personal information that could identify a participant, such as name, date of birth, or UBC student number. The data collection process was strictly anonymous.

Open-ended questions were utilized to gather participants' opinions and recommendations on the topic of social connection and physical activity. Descriptive data analysis is a useful tool for gaining an in-depth, more robust understanding of the impact various obstacles may have on social connection through online physical activity, as well as providing information on the unique methods that could be used to reduce these barriers (Sandelowski, 2010). Likert scale and multiple-choice questions were utilized for quantitative data analysis to identify the factors that hinder social connection through online physical activity programming, as well as participants' attitudes regarding these programs. The quantitative questions were analyzed through descriptive statistics to identify trends and averages for the purpose of comparing barriers to social connection through online physical activity. The open-ended and Likert scale questions gathered information detailing participants' attitudes towards online physical activity programs, exercise habits, and means of connecting socially with others. While the process of data analysis was different for the open-ended and Likert scale questions, the

nature of the questions was similar. As identified in the literature review, previous studies regarding social connection and physical activity used participation and number of classes attended as the variable rather than participant opinions (Zhang et al., 2014). The purpose of utilizing both quantitative and qualitative questions in the survey was to obtain a thorough understanding of participants' attitudes towards social connection through online physical activity programs for a well-supported research conclusion.

Results

Demographic Analysis

The survey obtained 81 responses. Adjusting for the responses that only matched the inclusion criteria, 78 completed responses were analyzed, including male (n = 10), female (n = 67) and non-binary/third gender (n = 1) (see Table 1). 62.8% of the respondents (n = 49) were upper-year (3rd/4th) UBC students (see Table 2). Around 60.3% of respondents indicated currently living in their family home, and 23.8% reported living on campus (see Table 3). 83.5% of respondents (n = 65) indicated having the space to be physically active in their place of residence (see Table 4). The mean number of hours per week spent on physical activity was 4.7 (see Table 5).

Quantitative Analysis

These results indicate that 96.2% of all respondents (n = 75) view social connection as important to them, with 67.0% 'strongly agreeing' (n = 54) and 36.5% 'agreeing' (n = 21) (see Table 6). In addition, 96.2% of all respondents (n = 75) indicated a decrease in social connection since the start of the COVID-19 pandemic; with 52.6% stating 'strongly agree' (n = 41) and 43.6% stating 'agree' (n = 34) (see Table 7). 71.2% of respondents (n = 56) enjoy socially connecting with others while being physically active (see Table 8). Furthermore, 62.8% of

respondents (n = 49) believe that participating in the same exercise programs as their friends helps them stay socially connected (see Table 9). The most frequently noted method of socially connecting during physical activity was 'catching up with friends,' followed by 'talking to friends to set up times to exercise together' (see Figure 1).

Additionally, 64.1% of respondents (n = 50) had no prior experience with online physical activity programming, while 35.9% of all respondents (n = 28) had participated in some form of online physical activity (see Table 10). The most frequently utilized method of online programming was pre-recorded exercise classes (YouTube videos, monthly subscriptions, etc.) (see Figure 2). Of those who had not participated in online programming, the most frequently noted barrier to participation was a lack of knowledge of existing programs (see Figure 3).

Among all respondents, the option for synchronous online physical activity programming had the greatest frequency (see Table 11) and Zoom was the most frequently noted online platform as an accessible and efficient method of socially connecting with others (see Figure 4). 33 participants 'agreed' to being interested in getting to know other participants in their online exercise classes (see Table 12). The majority of respondents indicated that the ideal synchronous class size to foster social connection was 10-20 participants (see Figure 5).

Qualitative Analysis

The findings of the qualitative analysis suggest that "spending time with others" was the most frequent response to the survey question "How would you define social connection?" In addition, certain respondents defined social connection as "genuine" interactions with others, "bonds with friends, family, and significant others," and "quality time." Furthermore, some respondents defined social connection as participating in "face-to-face interaction" or "inperson" interaction, while a few noted "online" connections or "engaging with others in any

capacity." Grouping the open-ended survey responses together, the findings suggest that there are three main methods of enticing people who responded 'No' to participate in online physical activity programs. The first method would be to incorporate a greater variety of classes to accommodate those who suggested "pilates," "fun cycling classes" or "online dance classes." Respondents also indicated the importance of sport related group programs rather than exercise-only classes. The delivery of more sport related programs could encourage increased participation from individuals who indicated that they "[wanted] more competitive physical activities." Finally, participants indicated a preference for outdoor activities. One respondent stated, "I tried indoor cycling on Zwift but would much rather ride outdoors." Another participant suggested an "outdoor online class" as a means of enticing them to participate in online physical activity programming.

Discussion

Significance of Findings

The emergence of COVID-19 has disrupted the daily lives of millions of individuals. Our responsibility to maintain a safe distance from others and don a face mask has significantly impacted our ability to socially connect with others, impacting the ways in which we try to keep physically active through fitness routines (Kaur et al., 2020). Our research study found that most participants felt that social connection was important to them and that their patterns of social connection had decreased since the start of the pandemic (see Table 6). These findings are congruent with the previous research suggesting that social interactions are essential for many individuals to feel connected with one another (Delahunty et al., 2012; Kaur et al., 2020).

Additionally, Kaur et al. (2020) found that the lack of face-to-face interactions during COVID-19 was a source of decreased social connection, a claim also supported by our findings. Thus, the

combined results from Kaur et al. (2020) and our research study suggest that UBC students are also experiencing a decrease in social connection since transitioning from in-person to online instruction. Participants remarked that partaking in physical activity was a source of genuine social connection. Kaur et al. (2020) found that socially connecting with gym partners was one of the main aspects that contributed to physical activity participation for many individuals. Findings from Kaur et al. (2020) and our research study support the notion that "people like the company of others" and reflects one of the main reasons why individuals participate in physical activity (p. 7).

From the Qualtrics survey, participants expressed that synchronous online physical activity programming using the Zoom online video conferencing platform would make social connection easiest for them. Our findings support previous literature that explored social connection on online platforms and found that synchronous connection, wherein participants learned content at the same time, was preferable to asynchronous connection, wherein participants learned content at different times (Cairns et al., 2020). Furthermore, Cairns et al. (2020) found that Zoom was the preferred online video conferencing platform because it promoted an interactive face-to-face environment where participants could view and respond to the facial expressions of other individuals in real time (Cairns et al., 2020). These findings are important to consider in the context of UBC students since the transition from in-person to online instruction has increased the prevalence of Zoom online video conferencing and asynchronous connection. Therefore, the incorporation of synchronous Zoom online instruction is a feasible and realistic approach to consider when thinking about potential strategies to increase social connection in online instructional programs, both recreational and educational.

Social connection, as defined by the participants, suggests that interpersonal interactions are the most important component of participants' understanding of social connection. A common understanding of social connection, as demonstrated by the participants, includes spending quality time and genuinely interacting with friends, family, and significant others. These varied understandings of social connection illustrate the complex nature and individual dependent experiences of the participants. Despite these varied experiences, the participants' understanding of social connection reflects an underlying theme: social connection means feeling a sense of belonging to others (Lee et al., 2001). These overarching understandings of social connection by the participants suggests that strategies to increase social connection in online recreational programs can be implemented effectively and broadly.

Applicability to Our Partners

These research findings directly connect to the problem presented by our UBC partners because they identify avenues that could increase social connection within the existing online recreation programming. Participants indicated a particular interest in online physical activity programming that promoted participation among friends, facilitated online programming synchronously via Zoom, and allowed opportunities for genuine connection with others.

Moreover, this study identified facilitators and barriers to social connection in online recreation programs, which can be utilized to better support our partners in addressing both short-and long-term approaches to increasing social connection.

Additional Contributions and Barriers

The findings of this study enhance our understanding of the issue by providing insight into how undergraduate students have experienced changes in their opportunities to socially connect with others since the transition to online instruction. Prior to this, there was very limited

literature exploring undergraduate students' experience of social connection during online recreation programming. As a result of our research, we have now gained a better understanding of how undergraduate students value social connection and what factors facilitate or hinder their opportunities for social connection during online recreational programming. Furthermore, our study identified various barriers to participation in online recreational programming, including not knowing which recreation programs were available, lack of available equipment at home, and lack of available space to participate in online recreation programs (see Figure 9). These findings will also assist our partners in implementing future online recreation programs that will ultimately enhance participation in online recreation programs. As a result of the increased participation in online recreation programming, there will also be more opportunities to foster social connection among university student populations.

Study Limitations

The limitations of this study include finding a representative data set, creating an explorative yet concise survey, and analyzing the survey data succinctly. The recruitment poster for this research study was posted on UBC Facebook pages such as UBC KIN Classes 2021/2022/2023/2024, UBC Sororities and Fraternities, and personal Facebook accounts with the intention of establishing a representative data set of participants which varied in gender, undergraduate standing, and area of study. Despite our best efforts to capture a representative data set, 86% of our participants identified as female. Our data set does indicate that the participants are from different undergraduate years and study in diverse disciplines, allowing our findings to more closely represent the general UBC population.

Another challenge our research team encountered was creating an explorative yet concise survey that would address our partners' research purpose. Our research team experienced

obstacles in developing a survey that flowed in a logical manner. To mitigate this challenge, our research team communicated with our research assistant to better achieve a survey that flowed logically while aiming to address the research purpose. The survey began with a demographic section that allowed the research team to identify if the sample was truly representative of the university population. Thereafter, we explored facilitators and barriers to social connection to better understand the experiences of the participants. The survey concluded with an all-inclusive, open-ended question that encouraged participants to express any additional comments regarding social connection and online recreation programs. By structuring the survey in this manner, participants were able to easily follow the survey, and our research team was better able to translate the survey data efficiently.

An additional challenge our team faced was deciding which survey questions to analyze for this final research report. Since some of the questions explored similar topics, our research team decided to combine the findings into a few coherent themes instead of discussing the results for each survey question individually. By organizing the results in this way, we could succinctly translate and disseminate the findings to our partners in a more coherent manner.

Implications for Future Research

The findings from this research study can provide guidance to future researchers by identifying the barriers that hinder social connection in existing online recreation programs.

These identified barriers can be a starting point for future research that explores social connection and online recreation programming. Moreover, the current research findings can support future online recreation programs in their efforts to create a socially connected environment for their participants. By identifying factors that inhibit online recreation participation and social connection in online recreation programming, both short- and long-term

strategies can be implemented to increase online recreation program participation and thereby increase opportunities to connect socially with others. Our research study emphasizes the importance of social connection within the UBC community, especially during a time where COVID-19 has brought about so much change in the way we work, learn, and interact with others. To conclude, our research study hopes to impact future research by highlighting the importance of and implementing more online recreation programs that foster social connection.

Recommendations

After analyzing the data, the findings clearly identify the barriers that UBC students face with regards to their participation in online physical activity programming. The suggestions provided by the participants' helped outline steps that can be taken to address the issues with the present online recreation programming. All five recommendations were grounded in the Social Ecological Model, whereby behaviours and activities take place within the environment and, as such, the context must be considered (Cottrell et al., 2015). The nature of online physical activity programs suggest that individuals should take it upon themselves to be active; however, the Social Ecological Model helps to elucidate the complex interaction between internal and external factors that contribute to promoting online physical activity.

Recommendation 1: Increase Awareness of Program Offerings

As previously identified, the respondents indicated that a lack of knowledge of existing online physical activity programs was the number one reason for not participating in online exercise programs. As such, our first recommendation for our UBC partners is to increase awareness of both existing and upcoming online recreation programming. To increase awareness, marketing strategies should be the first course of action. Based on the target population, we recommend utilizing social media for marketing purposes. Overwhelming

research suggests that platforms like Facebook, Instagram, Snapchat, and TikTok are the preferred marketing sites for younger generations (Appel et al., 2020). In addition, a variety of tactics can be utilized to increase awareness of online physical activity programs, including paid ads on Facebook or Instagram, creating new pages or accounts specifically dedicated to online recreation programs, and posting online exercise class links on social media.

Another method of increasing students' awareness of online recreation programs is soliciting the help of other academic departments at UBC. By contacting different faculties, professors could be encouraged to share links or resources to UBC REC's online physical activity programming. Since most professors already share information about UBC Wellness Centre and counselling services with their students, including an additional link to information regarding online recreation programming would be a reasonable recommendation. Furthermore, a link or schedule to online programs through a Canvas announcement or on the course syllabus would ensure that the UBC student population has ample opportunities to familiarize themselves with the resources offered by UBC REC. Sharing information on online recreation programming within a group setting, such as during a lecture, has the potential to inspire students to participate in online exercise classes together, thus increasing opportunities for social connection. Although social connection within online physical activity programming is not the primary focus of this recommendation, given that 64.1% (see Table 10) of our respondents had never participated in online programming, our concern is to ensure that the majority of students can overcome the barrier of not knowing about the opportunities to participate in online recreation programming. While this recommendation can easily be implemented in the short term as a means of increasing the awareness of existing programs, the usefulness of this recommendation can ultimately only be assessed in the future.

Recommendation 2: Variation in Type of Online Physical Activity Programming

The second recommendation for our partners is to incorporate different types of online programs to increase the variety of the current offerings. Certain fitness studios specialize in specific types of exercise, such as yoga, spin, or Pilates. However, since UBC REC oversees a wide variety of physical activity programs and services, from workout classes to Storm the Wall, intramurals and more, there are no limitations as to what types of online programs they can offer. Lack of interesting programs was noted as one of the reasons why respondents had not previously participated in online recreation programming (see Figure 3). Furthermore, our openended questions revealed that a number of respondents wanted a greater variety in recreational program selection. Some participants indicated specific types of programs, such as HIIT, cycling classes, or dance classes. The variation of exercise classes should incorporate differing levels of intensity and expertise for a wider appeal. Respondents suggested classes for beginners, as some people would be less inclined to try a new activity on their own if the level of difficulty seemed too challenging. Variation of classes can be organized based on the type of activity (i.e., yoga, HIIT, cycling) and level (i.e., beginner, intermediate, and advanced) so individuals feel more comfortable participating and can easily connect with peers who share a similar level of experience. To increase participation, classes should also be available for individuals who have access to home equipment as well as those who do not. Overall, this recommendation focuses on providing a variety of online recreation classes which addresses the barrier of 'lack of interest' in online recreation programming.

Recommendation 3: Online Programming with Sports and Private Groups

The third recommendation is an extension of our second proposal, whereby we suggest increasing the variations in the type of classes offered to include specific sports and dedicated

groups. Respondents noted that they would be interested in more sport-based classes rather than exercise and workout classes. As mentioned in the results, one respondent indicated enjoying participating in sports more than working out, and another respondent suggested incorporating private group classes. The utilization of private group classes would increase social connection by allowing students to be physically active around those with whom they are already comfortable. For example, we suggest the option of allowing groups of friends to reserve a set time for online recreation classes. These private classes would heighten social connection between groups of people who already have a pre-established relationship, while also enjoying the benefits of staying physically active. Furthermore, this option could be utilized for private bookings of certain on-campus groups, like various AMS clubs. There may be a period of trial and error to determine which classes are favoured, but this recommendation provides a starting point to decrease the current barriers that limit UBC students' social connection through online recreation programming.

Recommendation 4: Regular Synchronous Online Physical Activity Programs with Zoom

The fourth recommendation focuses on offering regularly scheduled synchronous online physical activity programs. Of the 28 respondents who had participated in online physical activity programming, only 13 had tried synchronous classes (see Figure 2), but 52.6% of all 78 respondents indicated a preference for synchronous physical activity classes (see Table 11). Interactions between instructors and participants or among participants themselves are essential to fostering social connection as noted by 33 participants (see Table 12). However, this cannot be accomplished in asynchronous programs. In addition, 74 of the participants indicated that Zoom was the easiest platform to use to socially connect with others (see Figure 4). Therefore, we recommend utilizing Zoom for the programming of synchronous physical activity classes. In

addition, we recommend keeping the classes to 10-20 participants as our data indicates this is an ideal size (see Figure 5). Since UBC already has access to Zoom for its academic classes, it would be relatively straightforward to utilize Zoom for online physical activity classes. By using the unmute function in Zoom and speaking in a synchronous class, students could talk and bond with others through the chat function. Moreover, Zoom can be utilized to separate individuals into smaller breakout rooms to foster more intimate opportunities to socially connect with others. For example, in a HIIT workout class that uses circuits, the instructor could demonstrate the exercises and utilize breakout rooms for the participants to complete the circuit activities in smaller groups. This recommendation can be implemented in both the short- and long-term. While online physical activity classes offered through Zoom serve as beneficial placeholders during this pandemic, they have the ability to not only increase physical activity for people once life returns to normal, but also provide an easier way to access classes without having to leave the comforts of one's home environment.

Recommendation 5: Physical Activity Programming and the Outdoors

Our final recommendation looks at incorporating outdoor online physical activity programming. Lawton et al., (2017) suggests that there are many added psychological benefits of exercising outdoors and many of our respondents indicated a preference for outdoor activity, especially when the weather permits. Interestingly, most online physical activity programming is not conducted outside, nor does it incorporate an element of the outdoors. Since university students spend a great deal of their time indoors, especially with classes currently being offered online, there is no dedicated outdoor time spent walking to and from classes. As such, there may be limited opportunities to interact with others. Therefore, we recommend that certain aspects of online recreation programming be offered in outdoor settings. This may include outdoor

synchronous yoga or HIIT classes and pre-recorded audio guides for outdoor walks and runs, much like the new programs being offered on Apple Fitness. This final recommendation can be implemented as a short-term measure and one that can be offered seasonally in the spring or fall, when weather is more conducive to outdoor physical activity.

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Data Tables and Figures

Table 1 *Gender Identity of Respondents*

Gender	%	Count
Male	12.82%	10
Female	85.90%	67
Non-Binary / Third Gender	1.28%	1
Queer	0.00%	0
Two Spirit	0.00%	0
Prefer not to say	0.00%	0
Other	0.00%	0
Total	100%	78

Table 2Distribution of Academic Year Level

Year Level	%	Count
1	15.38%	12
2	12.82%	10
3	33.33%	26
4	29.49%	23
5	7.69%	6
Other (6)	1.28%	1
Total	100%	78

Table 3Distribution of Place of Residence

Place of Residence	%	Count
UBC residence	10.26%	8
Other on-campus housing	12.82%	10
Housing off-campus	16.67%	13
Family home	60.26%	47
Other	0.00%	0
Total	100%	78

Table 4 *Ability to be Physically Active in Place of Residence*

Answer	%	Count
Yes	83.33%	65
No	16.67%	13
Total	100%	78

Table 5

Average Hours Per Week Spent Being Physically Active

Minimum	Maximum	Mean	Std Deviation	Variance	Count
0.00	22.00	4.65	3.83	14.65	78

Table 6Perception of the Importance of Social Connection

Answer	%	Count
Strongly agree	69.23%	54
Agree	26.92%	21
Neutral	3.85%	3
Disagree	0.00%	0
Strongly disagree	0.00%	0
Total	100%	78

Table 7Perception of Decrease in Social Connection Since COVID-19

Answer	%	Count
Strongly agree	52.56%	41
Agree	43.59%	34
Neutral	2.56%	2
Disagree	0.00%	0
Strongly disagree	1.28%	1
Total	100%	78

Table 8 *Importance of Social Connection Through Physical Activity*

Answer	%	Count
Strongly agree	28.21%	22
Agree	43.59%	34
Neutral	21.79%	17
Disagree	5.13%	4
Strongly disagree	1.28%	1
Total	100%	78

Table 9Participation in Similar Exercise Programs as Friends for Social Connection

Answer	%	Count
Strongly agree	16.67%	13
Agree	46.15%	36
Neutral	21.79%	17
Disagree	14.10%	11
Strongly disagree	1.28%	1
Total	100%	78

Table 10 *Experience with Participation in Online Physical Activity Programming*

Answer	%	Count
Yes	35.90%	28
No	64.10%	50
Total	100%	78

Table 11Preference to Live (synchronous) Online Physical Activity Programming

Answer	%	Count
Strongly agree	25.64%	20
Agree	26.92%	21
Neutral	20.51%	16
Disagree	21.79%	17
Strongly disagree	5.13%	4
Total	100%	78

Table 12 *Interest in Getting to Know Other Participants in Online Classes*

Answer	%	Count
Strongly agree	11.54%	9
Agree	42.31%	33
Neutral	28.21%	22
Disagree	16.67%	13
Strongly disagree	1.28%	1
Total	100%	78

Figure 1
Distribution of Usual Ways to Socially Connect During Physical Activity

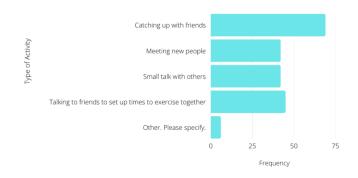
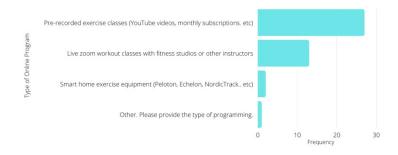
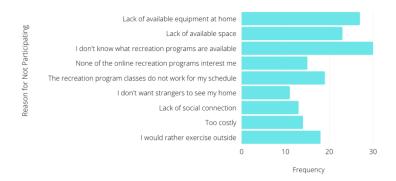


Figure 2Distribution of Type of Online Physical Activity Programming



Note: This figure only includes data from respondents who indicated 'Yes' to having experience with online physical activity programs.

Figure 3
Barriers to Participating in Online Physical Activity Programming



Note: This figure only includes data from respondents who indicated 'No' to having prior experience with online physical activity classes.

Figure 4
Preferred Online Platforms to Increase Social Connection

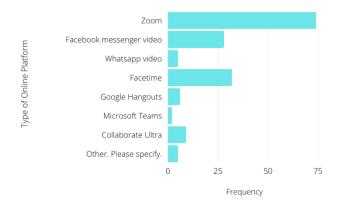
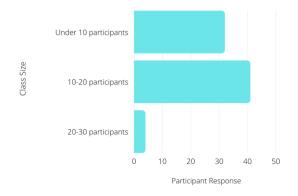


Figure 5 *Ideal Class Number of Participants for Online Classes*



Appendix A

Forms and Recruitment Materials

Figure A.1 – Consent Forms



CLASS PROJECT: Health Promotion and Physical Activity (KIN 464)

Participant Consent Form

Social Connection Through Online Physical Activity Programming Group #3 (Project B)

Dr. Andrea Bundon (Assistant Professor, School of Kinesiology, Faculty of Education)

The purpose of the class project:
To gather knowledge and expertise from community members on how online recreation programs can increase social connection for their participants during COVID-19.

With your permission, we are asking you to participate in a survey. You may only complete the survey once. With the information gathered, students will critically examine how different individuals understand or engage in health promoting activities or health promotion initiatives.

Project outcomes:

February 22, 2021

The information gathered will be part of a written report for the class project. The written report will be shared with campus partners involved with the project. Summaries of findings will also be posted on the following websites. No personal information or information that could identify participants will be included in these reports or shared with campus partners.

UBC SEEDS Program Library: https://sustain.ubc.ca/courses-degrees/alternative-credit-options/seeds-sustainability-prog ram/seeds-sustainability-library

Potential benefits of class project: There are no explicit benefits to you by taking part in this class project. However, the survey will provide you with the opportunity to voice your opinion on your experiences with health promoting activities or initiatives in a broad sense and will provide the students with an opportunity to learn from your experiences.

Project ID: H17-03560

Confidentiality:
Maintaining the confidentiality of the participants involved in the research is paramount, and no names of participants will be collected.

At the completion of the course, all data (i.e. notes) and signed consent forms will be stored on a secure electronic drive by Dr. Bundon. All data and consent forms will be destroyed 1 year after completion of the course.

Risks:The risks associated with participating in this research are minimal. There are no known physical, economic, or social risks associated with participation in this study. You should know that your participation is completely voluntary and you are free to withdraw from the study and there will not be negative impacts related to your withdrawal. If you withdraw from the study, all of the information you have shared up until that point will be destroyed.

Contact for information about the study:

If you have any questions about this class project, you can contact Andrea Bundon by phone at 604-822-9168 or by email at andrea.bundon@ubc.ca

Research ethics complaints:

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or e-mail RSIL@ors.ubc.ca . or call toll free 1-877-822-8598.

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

February 22, 2021 Project ID: H17-03560

Figure A.2 – Recruitment Materials for Social Media



KIN 464: Health Promotion and Physical Activity Class-based Project

If you are an active UBC student and miss socially connecting,

we want you!

As part of a course-based research project (KIN 464), we are conducting a study on social connection in online recreational classes. If you are a physically active UBC student and miss socially connecting, we would love for you to complete a survey. More information email candace.i.chau@gmail.com.

Please note that this post is public and anyone who likes, comments or shares the link will, by doing so, be associated with the study. The Principal Investigator on this project is Dr. Andrea Bundon (andrea.bundon@ubc.ca).



January 11, 2020

Project ID: H17-03560

Appendix B

Data Collection Materials

Data Collection Materials B.1 – Qualtrics Link to Survey

 $https://ubc.ca1.qualtrics.com/jfe/form/SV_03pg4t2Fu6PmZ1k$

Data Collection Materials B.2 - Survey Design		
Q1 What is your current status as a student? o Full-time (1) o Part-time (2) o (3)		
Q2 What faculty are you in?		
o Applied Science (1)		
o Science (2)		
o Arts (3)		
o Commerce (4)		
o Education (5)		
o Land and Food Systems (6)		
o Kinesiology (7)		
o Forestry (12)		
o Economics (13)		
o Other (14)		
Q3 What academic year of your undergraduate degree are you currently in?		
0 1 (1)		
0 2 (2)		
0 3 (3)		
0 4 (4)		
0 5 (5)		
Other (6)		

Q4 What gender do you identify as?
o Male (1)
o Female (2)
o Non-Binary / Third Gender (3)
o Queer (4)
o Two Spirit (5)
o Other (7)
o Prefer not to say (6)
Q5 Is English your first language?
o Yes (1)
o No (2)
Q6 Where do you currently live?
o UBC residence (1)
o Other on-campus housing (2)
o Housing off-campus (3)
o Family home (7)
Other (8)
Q7 Does your residence allow you the space to be physically active at home?
o Yes (1)
o No (2)
Q8 In a typical week, how many hours do you spend engaging in moderate-vigorous physical activity?
0 1 (1)
Q9 How would you define social connection?

Q10 Social connection is important to me.	
o Strongly agree (1)	
o Agree (2)	
o Neutral (3)	
o Disagree (4)	
o Strongly disagree (5)	
Q11 Since the emergence of COVID-19, socially connecting with others has decreased for me.	
o Strongly agree (1)	
o Agree (2)	
o Neutral (3)	
o Disagree (5)	
o Strongly disagree (6)	
Q12 Fostering social connection both in-person and online is important to me.	
o Strongly agree (1)	
o Agree (2)	
o Neutral (3)	
o Disagree (4)	
o Strongly disagree (5)	
Q13 I enjoy socially connecting with others while being physically active.	
o Strongly agree (1)	
o Agree (2)	
o Neutral (4)	
o Disagree (5)	
o Strongly disagree (6)	
Q14 Participating in similar exercise programs as my friends helps me stay socially connected.	
o Strongly agree (1)	
o Agree (2)	
o Neutral (3)	

	o Disagree	: (4)		
	o Strongly	disagree (5)		
Q	15 The trans	ition to online classes has increased my level of loneliness.		
	o Strongly	o Strongly agree (1)		
	o Agree (2)		
	o Neutral	(3)		
	o Disagree	: (4)		
o Strongly disagree (5)				
_	•	participated in online recreation programming? If you answered YES, please -21 and then resume at Q24. If you answered NO, please skip to Q22.		
Q	17 What typ	e of online recreation programming have you participated in? Click all that apply.		
		Pre-recorded exercise classes (YouTube videos, monthly subscriptions. etc) (1)		
		Live zoom workout classes with fitness studios or other instructors (2)		
		Smart home exercise equipment (Peloton, Echelon, NordicTrack etc) (3)		
		Other. Please provide the type of programming. (4)		
_	o Before the	participate in online physical activity programming prior to the COVID-19 only once the pandemic started? the COVID-19 pandemic started (1) the COVID-19 pandemic started (2)		
0				
Q19 My participation in online physical activity is a source of social connection.				
	o Strongly agree (1) o Agree (2)			
	o Neutral			
	o Disagree			
	Disagice	(T)		

o Strongl	y disagree (5)		
` .	pate in the same online physical activity programs with friends as a source of and to stay connected.		
o Strongl	o Strongly agree (1)		
o Agree	(4)		
o Neutral	(5)		
o Disagree (6)			
o Strongl	y disagree (7)		
Q21 What aspects do you enjoy in online recreation programming? Following this Question, please skip the next page and resume at Q24. Q22 What factors prevent you from participating in online recreation programs? Click all that apply.			
	Lack of available equipment at home (1)		
	Lack of available space (2)		
	I don't know what recreation programs are available (3)		
	None of the online recreation programs interest me (4)		
	The recreation program classes do not work for my schedule (5)		
	I don't want strangers to see my home (6)		
	Lack of social connection (7)		
	Too costly (10)		
	I would rather exercise outside (12)		
	Other. Please specify. (11)		
Q23 What programs or services would entice you to take part in online physical activity programs?			

Q24 Have y COVID-19	our exercise levels increased, decreased, or stayed the same since the start of the pandemic?				
o Increased (1)					
o Decreased (2)					
o Stayed the same (3)					
Q25 What of Click all that	loes being socially connected through physical activity normally look like to you? at apply.				
	Catching up with friends (1)				
	Meeting new people (2)				
	Small talk with others (3)				
	Talking to friends to set up times to exercise together (4)				
	Other. Please specify. (5)				
Q26 My par	ticipation in in-person physical activity is a source of social connection.				
o Strong	gly agree (1)				
o Agree	(2)				
o Neutra	al (3)				
o Disagree (4)					
o Strongly disagree (5)					
o N/A	(6)				
Q27 What fall that appl	format of online physical activity would make social connection easier for you? Click y.				
	Live video (synchronous) (1)				
	Recorded video (asynchronous) (2)				
	Live question and answer (3)				
	Interaction between the instructor and participant (you) (4)				
	Introduction of class participants (5)				
	Online discussion forum (asynchronous) (6)				

	Other. Please specify. (7)				
Q28 Wh	Q28 What online platform would make social connection easier for you? Click all that apply.				
	Zoom (1)				
	Facebook messenger video (2)				
	Whatsapp video (3)				
	Facetime (4)				
	Google Hangouts (5)				
	Microsoft Teams (6)				
	Collaborate Ultra (7)				
	Other. Please specify. (8)				
Q29 What aspects of a video conferencing platform would make social connection easier for you? Click all that apply.					
	Easy to navigate (1)				
	Good video quality (2)				
	Compatible with my electronic devices (3)				
	Most of the people I know also use the same video conferencing platform (4)				
	I am most familiar with this video conferencing platform (5)				
	Other. Please specify. (6)				
Q30 I prefer live (synchronous) exercise classes as opposed to pre-recorded (asynchronous) videos.					
o Str	o Strongly agree (1)				
o Ag	o Agree (2)				
o Ne	o Neutral (3)				
o Dis	o Disagree (4)				
o Str	o Strongly disagree (5)				

Q31 What do you think is the optimal class size for online recreational programming and fostering social connection?
o Under 10 participants (1)
o 10-20 participants (2)
o 20-30 participants (3)
o Other. Please specify. (4)
Q32 I would be interested in getting to know the other participants in an online recreation class
o Strongly agree (1)
o Agree (4)
o Neutral (5)
o Disagree (6)
o Strongly disagree (7)
Q33 What are some negative aspects of online recreation programs that you would like to see change?
Q34 What are some of your suggestions to improve online recreation programs?
Q35 Do you have any other comments or feedback pertaining to your involvement, or lack of involvement, in online recreation programs?