How awareness, motivations, constraints, and organizational facilitators influence participation in campus recreation

by

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Author’s Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Participation in campus recreation provides an opportunity for students to improve their health and well-being, develop connections with other students and the university, engage in enjoyable and personally meaningful recreation, and enhance their academic performance. Despite the importance of recreation for university students, understandings of why only some students participate in recreation on campus are limited. Partnering with the Campus Athletic Recreation Network at the University of Waterloo, this study sought to develop theoretical and practical insights into participation and non-participation. Theoretically, the study draws on the Psychological Continuum Model which identifies awareness and attraction as preceding conditions to individuals reaching the stages of psychological attachment and loyal behaviour. Additionally, this study also draws on leisure constraint theory to further explain variations in levels of participation. The study explored the following research questions: (1) Is greater awareness of campus recreation opportunities associated with higher levels of participation? (2) What constraints reduce participation in campus recreation notwithstanding the effects of awareness? (3) What motivations are associated with participation in campus recreation notwithstanding the effects of awareness? and (4) What organizational strategies might increase an interest in participating in campus recreation? This study also explored how awareness, constraints, motivation, and organizational strategies differed based on gender and international vs domestic students. Data were collected from students using a cross-sectional survey during the spring and fall terms of 2018. A total of 314 usable surveys were returned. Multiple linear regression analysis was used to examine how awareness, motivations, and constraints were associated with varying levels of participation in three types of campus recreation (i.e., intramural sport, drop-in sport, fitness). ANOVAs were used to examine differences in awareness, motivation, constraints, and organizational strategies based on gender and student type. Results revealed that awareness of opportunities was significantly and positively associated with levels of participation in all three types of campus recreation. Furthermore, results indicate the effects of constraints and motivation differ based on the type of campus recreation activity and student characteristics. For example, constraints such as “takes too much of my time” and “don’t know enough people” had statistically significant associations with drop in sports participation but not for fitness centre participation. This study has important implications for practitioners seeking to increase campus recreation participation levels.

Keywords: awareness, motivations, constraints, organizational facilitators

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1.0 Introduction

According to the National Center for Education Statistics, roughly 19.9 million students attend college or university per year in the United States of America (NCES, 2019). Similarly, in Canada, the number stands at 1.4 million (Universities Canada, 2019). Not all students, however, finish their planned studies. As many as a quarter of high school graduates will drop out of their enrolled institution during the first year (Katz & Somers, 2015). This drop out is partially a consequence of the stress that is experienced throughout the transition period from high school to college or university. Some reasons for stress include increased academic expectations, changes in support systems, and exposure to new environments (Bray & Born, 2004). Although institutions offer many different programs and options to help students alleviate stress during this turbulent transition period, not all programs are equally effective.

One of the stress-relieving options that are highly beneficial for students is campus recreation, which takes place on a university campus. It consists of different forms of physical activity, such as intramurals, drop in sports and fitness centre. Intramurals is a form of campus recreation that involves organized team sports (e.g., basketball, hockey, volleyball). Applications to form a team are usually posted on the school website a few months before the season begins. Students are grouped into tiers that consist of participants with similar athletic abilities to promote competition and fun. Alternatively, while drop-in sports is similar to intramurals in that it involves team sports and collaboration with peers, it does not require a student to fill out an application. Instead, students find out when the gym has open availability through the campus recreation online application or website. Students then participate in their desired activity based on open availability and at no cost. And finally, the fitness centre in campus recreation is very different from intramurals and drop in sports such that it does not require any collaboration with

peers to participate. Similar to drop in sports, students find out when the gym has open availability through the campus recreation online application or website. Students then engage in their desired type of exercise.

Campus recreation is a great opportunity for students to not only have fun while on campus, but to also stay physically active, especially given that most Canadian college and university students are not meeting established PA recommendations (Colley, Butler, Garriguet, Prince, & Roberts, 2018). Students should stay physically active for a myriad of reasons. The scientific evidence shows that there is a link between vigorous PA and psychological well-being. That is, those who engage in vigorous PA are more likely to have lower levels of anxiety, depression, stress and negative mood (Bray & Born, 2004).

Another benefit of participating in PA is health related, including decreased risk of heart disease, better weight control and lower chances of developing illnesses (Bray & Born, 2004). This benefit is particularity important for the college and university population because of the phenomenon known as “freshman 15”, which is the idea that students will gain 15 lbs of weight in their first year of college or university (Vella-Zarb & Elgar, 2010). While this amount of weight gain may be an overestimation given that some researchers rely on self-reported data instead of measured weight, the realities of unhealthy eating and high consumption of alcohol should not be dismissed (Vella-Zarb & Elgar, 2010). Unhealthy behaviours have serious implications since it has contributed to approximately two-thirds of Canadians being overweight or obese in 2017 (Young, 2018).

As worldwide obesity rates nearly tripled between 1975 and 2016 (WHO, 2019), the national sport participation rates for Canadians age 15 years and older have been declining since 1992, and participation rates for young Canadian adults are declining at a faster rate than that of

older Canadians (Statistics Canada, 2010). As a result, colleges and universities are arguably expected to adopt a larger role in promoting healthy active living. This undertaking cannot be accomplished without obtaining a better understanding of factors that affect campus recreation participation, which is imperative if universities and policy makers plan to create programmes and marketing strategies aimed at increasing participation in campus recreation (Alexandris & Carroll, 1999).

Previous research found that participation in PA on-campus recreation was influenced by core factors such as awareness, constraints, motivations, and organizational facilitators. Lack of awareness of recreation opportunities was found to be associated with lower levels of participation (Funk & James, 2001). That is, undergraduate students who reported not to be aware of PA facilities were more likely to be significantly impacted in their ability to participate in campus recreation.

Lack of time was found to be one of the strongest constraints that predicted PA non-participation, which was more impactful for women compared to men (Butt et al., 2011). Other constraints including too tiring, too weak, and bad weather had a strong association with leisure time activity for both men and women (Lian, Gan, Pin, Wee, & Ye, 1999). Conversely, intrapersonal constraints such as personality needs and religiosity were reported to have low mean scores (Wood & Danylchuk, 2015).

Previous research found health reasons as a primary motivator for participation in PA, particularly motives that include weight management and weight loss (Morgan, et.al., 2003; Verkooijen, Nielsen, & Kremers, 2009). But particularly for women, it showed that they participated in PA due to perceived body image improvements (Butt et al., 2011). Other studies found the enjoyment of the activity to be a strong predictor of PA, which was consistent with

Self-Determination Theory (Iannotti, et al., 2012; Ryan & Deci, 2000). Cho and Beck (2016) examined motivational differences among international and domestic students and highlighted top motivators for international students as revitalization and strength and endurance, while competition was ranked as the least desired motivator for PA participation.

While there is previous evidence to show some of the correlates of PA on-campus recreation, the literature is absent of the different areas of campus recreation students are most interested to participate in. It also failed to provide strong evidence of the differences in the correlates of PA segmented based on gender and international versus domestic students in its association with different areas of campus recreation.

Furthermore, much of the previous research on participation in campus recreation has not been approached using a strong theoretical basis. This study is guided by Funk and James' (2001) Psychological Continuum Model (PCM). The PCM illustrates the socio-psychological shift from initial awareness of a sport or team to attraction then attachment and finally allegiance. Embedded within this model is the idea that at each stage an individual is more engaged with a sport or team and therefore more likely to engage in certain behaviors (e.g., participate in a sport, watch a sport, purchase merchandise). Despite the identification of this psychological progression for individuals as a way of explaining ongoing engagement with a sport or team, there remains a limited understanding of the factors that explain when those stages lead to participation behaviors.

This study draws on the concepts of awareness and motivation as explanatory factors within the first two stages of the model, respectively. This study also draws on leisure constraints theory to develop greater understandings of what prevents individuals from participating in different forms of campus recreation, even when they are aware of existing opportunities.

Results may also help campus recreation departments implement strategies to increase awareness of campus recreation opportunities, strategies to reduce constraints, and strategies to use structural facilitators to potentially increase participation rates. Thus, the purpose of this research is to (1) understand how awareness, motivation, and constraints are associated with varying levels of campus recreation participation, (2) understand what organizational strategies can facilitate an increased interest in campus recreation, and (3) how awareness, motivation, constraints differ based on key university student segments (i.e., gender, domestic vs international). Specifically, this study explores the following research questions:

1. Is greater awareness of campus recreation opportunities associated with higher levels of participation?
    a. How does awareness of campus recreation opportunities differ based on gender and/or international vs domestic students?
2. What constraints reduce participation in campus recreation?
    a. How do constraints differ based on gender and/or international vs domestic students?
3. What motivations are associated with participation in campus recreation?
    a. How do motivations differ based on gender and/or international vs domestic students?
4. What organizational strategies might increase an interest in participating in campus recreation?
    a. How do organizational strategies differ based on gender and/or international vs domestic students?

2.0 Literature Review

This chapter reviews literature on the benefits sought from physically active leisure, constraints that hinder participation, and negotiation strategies utilized to overcome constraints.

2.1 Physically active leisure benefits

Over the past few decades, Canadians have reported a drop in PA and fitness levels, while there has been a spike in overweight and obesity rates (Colley et al. 2011a, 2011b; Shields et al. 2010; Tremblay et al. 2010b). This trend is concerning given overwhelming evidence that shows participation in physical activity provides a myriad of benefits, such as psychological well-being, body weight regulation, academic success, and socialization (Bray & Born, 2004). However, just because someone participates in PA, defined as "bodily movement produced by the skeletal muscles, resulting in increased energy expenditure" (Rödjer, et al., 2012, p. 2), it does not mean that benefits automatically accrue. Factors such as age, body mass, gender, body surface area (Cunha, Midgley, Montenegro, Oliveira, & Farinatti, 2013) need to be considered to help individuals engage in the recommended levels of PA.

According to The Canadian Society for Exercise Physiology, ParticipACTION, and the Public Health Agency of Canada, it is highly recommended that adults (18-64 years old) engage in at least 150 minutes of moderate-to-vigorous intensity aerobic PA per week, in periods of 10 minutes or more (Tremblay, et al., 2011). Examples of moderate-to-vigorous intensity aerobic exercises include bicycling, tennis, hiking and basketball.

2.1.1 Psychological well being. Psychological well-being "is about lives going well. It is the combination of feeling good and functioning effectively" (Huppert, 2009, p. 137). However, humans do not feel good and function effectively all the time. People go through difficult periods

in their life that involves burnout, bursts of anger, depression, and so on. If these negative feelings are sustained for an extended period, the psychological well-being of an individual is at risk (Huppert, 2009). College/university students are particularly at risk for developing symptoms of stress and depression because of the transition from adolescence into adulthood. Increased workload, a new environment, and trying to fit in, among many other reasons, contribute to 30% of undergraduate students who experience depression (Ibrahim et al. 2013).

The prevalence of depression among university students is increasing around the world (Sarokhani, et al., 2013), and for this reason, colleges/universities strive towards implementing different programs to help reduce that number. One of the best ways for students to cope with depression and negative mood is by engaging in PA since it is closely linked to psychological well-being (Haworth & Lewis, 2005). Merely participating in PA, however, does not mean that students will see improvement in psychological well being. If students want to improve feelings of positive mental health, defined by the World Health Organization "as a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO, 2001), it is highly recommended that they participate in 150 minutes of moderate-to-vigorous intensity aerobic PA per week, in periods of 10 minutes or more (Tremblay, et al., 2011). Therefore, as a part of meeting overall PA targets, university students can engage in campus recreation frequently along with other activities off campus.

Moreover, engaging in PA is more effective for mood regulation compared to the other programs that campuses' offer, such as music clubs or social events (Yanoa & Oishi, 2018), because participating in PA activates neurotransmitters in the monoamine system that increases serotonin and dopamine levels, which is useful to decrease depressive tendencies (e.g.,

Chaouloff, Elghozi, Guezennec, & Laude, 1985; Nutt, 2008). Additionally, it has been shown that the more frequently a person engages in physical exercise, the better mental health obtained (Endo, Kanou, & Oishi, 2012; Hassmén, Koivula, & Uutela, 2000).

2.1.2 Bodyweight regulation. Obesity is one of the world's greatest health concerns (Hurt, Kulisek, Buchanan, & McClave, 2010). It is defined as a condition in which excess body fat has accumulated to such an extent that a person's health may be affected (Statistics Canada, 2019). Body Mass Index (BMI) is the most common method to measure obesity (CDC, 2017), which is calculated by dividing a person's weight by height. Based on medical standards, if BMI is 30.0 or higher it falls within the obese range (NIH, 2015), and therefore individuals should receive medical advice because it can lead to serious health problems, such as coronary artery disease, stroke, cancer and premature death (Yaemsiri, Slining, & Agarwal, 2011).

Students at colleges/universities are highly susceptible to these health problems because of what the college/university experience entails. While there are plenty of factors that help explain why students gain weight, such as genetics, behavioral or environmental, three common behaviors students engage in during their college/university days that need to be addressed are unhealthy eating, high consumption of alcohol and sedentary behavior. Unhealthy eating is not unusual given that the college/university experience consists of eating out a lot with friends and not having enough time to prepare healthy meals. Students must eat healthy because most research shows a consistent association between unhealthy eating and weight gain (Chan, 2019). Canadian university students consume higher levels of alcohol than the general population (Adlaf, Demers, & Gliksman, 2005; Arbour-Nicitopoulos, Kwan, Lowe, Taman, & Faulkner, 2010; Kwan, Faulkner, ArbourNicitopoulos, & Cairney, 2013), and this is problematic as the research on the link between high alcohol consumption and weight gain has been extensively

studied (Traversy & Chaput, 2015). And finally, in a cross-sectional study conducted in Canada, it revealed that university students spend an average of 11.65 hours of self-reported sedentary time per weekday (Prapavessis, Gaston, & DeJesus, 2015).

Addressing these problems is important because evidence shows that college/university students suffer from obesity (Peltzer, et al., 2014). One study looked at obesity rates with a sample of 800 undergraduate university students around the world and found that 22% were overweight or obese (Peltzer, et al., 2014). If overweight students want to see improvement in weight loss, calorie restriction and a reduction in alcohol consumption alone are not enough to see any dramatic change. Students must also engage in 150 minutes of moderate-to-vigorous intensity aerobic PA per week, in periods of 10 minutes or more (Tremblay, et al., 2011). For overweight students to achieve any substantial weight loss, it is highly recommended that they perform exercise greater than the recommended levels (Ross, et al., 2000).

In a randomized, controlled trial of 52 obese men, Ross et al (2000) found that participants in the exercise-only group witnessed a bodyweight decrease of 7.5 kg over 3 months, compared to the calorie-restricted group (Ross, et al., 2000). Those who participated in this experiment were exercising for roughly 60 minutes per day with a daily 700-calorie energy expenditure (Ross, et al., 2000), above the recommended levels by The Canadian Society for Exercise Physiology. Considering that (1) the student population is expected to increase, and (2) universities represent a large portion of the young adult population (Dragoescu, 2013; Universities, 2017), institutions must encourage students to participate in campus recreation and PA. Moreover, students develop behavioral patterns during this transitory period that predicts future behaviors (Bungum & Vincent, 1997; Irwin, 2004), and as a result, if students who are

overweight do not engage in PA during their college/university years, the likelihood of them exercising when they get older diminishes.

2.1.3 Academic success. Although many factors help explain students' academic success at college/university, such as genetics, socioeconomic status, and so on, researchers have particularly focused on the relationship between PA and academic success (Vasold, Deere, & Pivarnik, 2019). There is a significant amount of scientific literature that shows that engaging in the recommended level of PA leads to better brain health and cognition (Mandolesi, et al., 2018), which is a strong predictor of academic success (McPherson, Mackay, Kunkel, & Duncan, 2018).

One recent study in Germany asked participants to complete questionnaires about their health and lives and conducted a two-minute walk test to determine aerobic fitness levels (Opel, et al., 2019). The researchers also measured their cognitive abilities before and after exercise using a battery of cognitive tests to see how well they could reason. The study found that the unfit participants performed worse on the memory tests, and also showed brain scans that had white matter slightly weaker compared to the brain scans of participants who walked farther in the two-minute walk test (Opel, et al., 2019). Although the findings of this study do not mean that exercise directly causes better brain health and cognition, it does illustrate the importance of PA and its impact on cognitive ability. Researchers have also found this to be true with animals. In a study conducted by Mandolesi, et al. (2018), it revealed that rodents given access to running wheels were less impaired than the control group on memory tests that involve the hippocampus. While better brain health and cognitive abilities help students with achieving a strong Grade Point Average (GPA), there are other methods to measure academic success that deserves some attention.

Astin's Theory of Student Involvement (Astin, Student Involvement: A Development Theory for Higher Education, 1984) and Tinto's Model of Student Departure (Tinto, 1993) are popular models that highlight the importance of persistence and involvement as another set predictors of academic success (Astin, 1984; Tinto, 1993). Persistence and involvement are two factors that help students finish their planned studies, and as such, it is important to also consider academic success in terms of students graduating from their enrolled institution given that a quarter of high school graduates will drop out from their enrolled institution during the first year (Katz & Somers, 2015). Astin (1984) defines involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, Student Involvement: A Development Theory for Higher Education, 1984, p. 518).

Intramural sports are a good example of allowing students to get involved on campus, whereby students are also allowed to create a personal attachment with their institution. When students create a personal attachment with the institution, it allows them to find purpose and meaning in their educational experience, thus reducing the likelihood of dropping out. Moreover, by participating in intramural sports, they are also taught the importance of persistence that is often used as a transferrable skill in their educational endeavors. A longitudinal study that explored the theory of student involvement of college dropouts (Astin, 1975), showed that students who participate in sports are less likely to drop out since it has a positive effect on persistence. These are important considerations for administers, students and parents to take note of.

2.1.4 Socialization. Students who build strong friendships during high school do not always carry those friendships into emerging adulthood. For some students, building new friendships in college/university could be difficult due to many reasons, such as traveling to a

new country to study for the first time, or abandoning former social networks. It is not uncommon for students to experience loneliness during their first few years at college/university. In a 2015 study of Canadian University students who were surveyed for the National College Health Assessment, it was found that more than 66 percent reported feeling "very lonely" (Beaudette, 2016). This finding is a dire problem for administrators, parents, and students to tackle because Nordenmark (2004) suggests that having a strong social circle and building friendships creates a feeling of personal worth and satisfaction, in addition to finding emotional support in times of difficulty.

Having a strong social structure, that is, being able to feel good about oneself, helps to regulate behavior (Cohen, 2004). One way for students to socialize and build new friendships is by participating in campus recreation because participation in organized athletic activities promotes the maintenance and formation of friendships over time (Schaefer, Simpkins, Vest, & Price, 2011). Moreover, socialization theories suggest that friends become more similar in terms of their health over time due to shared activities, modeling of habits, or shared norms (Harrison et al., 2011). Popularity is also associated with PA (Ommundsen, Gundersen, & Mjaavatn, 2010). Scholars posit that students who participate in campus recreation are more inclined to appear popular and liked by their peers, and popular peers are more influential and receive more offers of friendship than less popular friends (Cohen & Prinstein, 2006).

2.2 Theoretical Framework

This study is guided by the PCM (Funk & James, 2001), which illustrates the socio-psychological shift from initial awareness of a sport or team to allegiance. This model consists of four stages along a vertical psychological continuum that helps explain the processes by which an individual develops a psychological connection with sports or teams. The four stages in

ascending order are: awareness, attraction (motivation), attachment, and allegiance. Similar to previous research, specific attention is paid to certain stages to develop nuanced understandings (Filo, Funk, & O'Brien, 2008). Specifically, this study focuses on the first two stages of awareness and attraction (which includes as an outcome engagement in physical activity behaviours). There have been limited investigations of awareness as the majority of samples have involved existing participants (Alexandris, Du, Funk, & Theodorakis, 2017). This study includes both participants and non-participants, and considers the factors that attract and constrain participation in campus recreation after considering the effects of awareness. This inclusion of constraints along with awareness and attraction has received minimal attention from scholars (Alexandris et al., 2017). Typically, awareness is considered as a constraint, yet the PCM suggests that awareness precedes other motivations and constraints, meaning awareness must be considered before other factors. Attachment and allegiance are not the focus of this study. Furthermore, progression from one stage to the next is not the purpose of this research. This section reviews literature on awareness, attraction to physically active leisure, constraints that hinder participation, and negotiation strategies utilized to overcome constraints.

2.2.1 Awareness of recreation opportunities. Lack of awareness of recreation opportunities can be associated with lower levels of participation. Funk and James (2001) describes awareness as "when an individual first learns that certain sports, and/or teams exist, but does not have a specific favourite" (p. 121). Research has investigated different socialising agents that motivate individuals to participate in sports (Sage, 1974; Snyder & Spreitzer, 1974). The studies showed that individuals become more aware and therefore are motivated to participate in sports as a consequence of the influence of significant others – such as parents, teachers, coaches, and co-workers (Kenyon & McPherson, 1973). In particular, studies found

that the traditional role of promotion helps adults become more aware of sports and teams (Funk & James, 2001). According to Funk and James (2001), “awareness marks the initial introduction to sports and teams, and can occur at different points in life” (p.126).

The university experience is a point in life for many students that causes stress and anxiety, whereby it fosters a culture of academic success without paying attention to the other elements of university culture, such as campus recreation. In a study published in the Journal of American College Health, it showed a large percentage of male and female undergraduate students were not aware of PA facilities on campus (Reed, 2007). The lack of awareness of PA facilities significantly impacted their participation in campus recreation (Reed, 2007). In another study conducted by Humpel, Owen, and Leslie (2002), it was found that not all environmental factors had a statistically significant association with participation in PA, but did find a positive association between awareness of recreational facilities and participation in PA. As a result, researchers recommended the promotion of public facilities to increase participation in PA (Reed, Ainsworth, Wilson, Mixon, & Cook, 2004).

2.2.2 Motivation to participate. Motivation is defined as influences that initiate, direct, or sustain behaviors (Iso-Ahola, 1999). The leisure motivation scale (LMS) created by Beard and Ragheb (1983) grouped motivations for participating in leisure activities into four categories: intellectual, social, competence-mastery, and stimulus-avoidance. This scale is commonly used in exploring the motivations of leisure participation (Beggs, Stitt & Elkins, 2004; Hsieh, 1998; Kanters & Forrester, 1997; Lounsbury & Polik, 1992; Murray & Nakajima, 1999; Ryan & Glendon, 1998; Starzyk, Reddon, & Friel, 2000; Wickham, Hanson, Shechtman, & Ashton, 2000), and has also been used in the context of campus recreation (Beggs, Stitt, & Elkins, 2004).

In one study that used the LMS scale which sampled 631 students from two universities, Beggs et al. (2014) found competency mastery as the top motivator for students to participate in intramural sport. Competency mastery is known as motivation in terms of competition and challenge. This finding was also consistent with what Donaldson (2013) found in her research. Using the LMS scale to collect data from students in a Midwestern University, Donaldson discovered that students were highly motivated to participate in intramural sport to seek competition and challenge. Dweck (1999) argued that individuals are motivated by the goals they set and vary in the way they define accomplishment, otherwise known as Goal Orientation theory, which helps explain the reasons why students are primarily motivated by competition and challenge while participating in intramural sports.

Understanding motivations for PA participation is not only limited to the LMS scale. Ryan and Deci's Self Determination Theory (SDT) grouped motivations into intrinsic and extrinsic factors. In a recent study that used the SDT, Snyder, Lee, Bjornsen, and Dinkel (2017) discovered a similar finding to Donaldson (2013). Their mixed methods study revealed that intrinsically motivated participants look for challenges of the activity, which is what Beard and Ragheb (1983) described as competency mastery in the LMS. However, in another study conducted by Cooper, Schuett, and Phillips (2012) who used SDT, it showed that Enjoyment/Interest was the highest motivator for PA participation.

While seeking competition and enjoyment rank as top motivators for students to participate in campus recreation, it does not hold for all market segments. For instance, while both men and women were reported to be motivated by physical fitness, the results showed that men were more inclined to participate in campus recreation due to social factors, while women were reported to be motivated to gain a sense of achievement (Donaldson, 2013). Another

market segment that found results contrary to the popular motivators were among international students. Cho and Beck (2016) examined motivational differences among international and domestic students and highlighted top motivators for international students as positive health, ill-health avoidance, revitalization, strength and endurance, and weight management, while competition was ranked as the least desired motivator for PA participation. Moreover, in another market segmentation study that investigated the motivational differences among first year, second year, third year, and fourth-year students, the need to seek competition and challenge was identified as the strongest motivators only among the first year and second-year students (Cooper et al.).

2.2.3 Constraints to leisure. Before the term "constraints" in the leisure literature was developed, researchers and practitioners commonly used the term "barriers." The term barriers was problematic because it did not examine other reasons for leisure nonparticipation (Jackson, 1988; Jackson & Scott, 1999). For this reason, the conceptual classification of constraints emerged in the early 1980s when Francken and Raaij (1981) and Jackson and Searle (1985) categorized constraints into "internal" and "external." However, this categorization was also problematic because it reduced leisure nonparticipation into an item-by-item basis. Identifying an opportunity to improve our conceptual understanding of constraints, Crawford and Godbey (1987) categorized constraints into three categories: intrapersonal, interpersonal, and structural. Intrapersonal constraints include factors that exist within the individual, such as personality needs, body image, religiosity, perceived reference group attitudes, and perceived skills (Jun & Kyle, 2011). Interpersonal constraints are factors that discourage leisure participation due to social interactions with others, such as family commitments (e.g. Hudson, 2000; Samdahl &

Jekubovich, 1997). And structural constraints are identified as factors intervening between leisure preferences, such as time, transportation, and lack of awareness (Jun & Kyle, 2011).

There is an assumption in the leisure constraints literature, although not explicitly stated, that constraints inhibit leisure participation (Shaw, Bonen, & McCabe, 1991). However, constraints do not necessarily mean less leisure participation for four reasons. Firstly, it purports a causal relationship because it suggests removing constraints leads to an increase in participation (e.g., Searle & Jackson, 1985). While this assumption has dominated the constraints leisure literature (Shaw, Bonen, & McCabe, 1991), practitioners and policymakers should be aware that some constraints are easier to overcome compared to others. For example, Shaw et al. (1991) discovered that there was a weak correlation between intrapersonal and interpersonal constraints and leisure participation, while it highlighted a strong correlation between structural constraints and lower levels of leisure participation. However, their findings cannot be generalized to all types of leisure activities as Walker, Jackson, and Deng (2007) found that when participating in campus recreation, international students were more prone to interpersonal and intrapersonal constraints, while domestic students were more prone to structural constraints.

Secondly, Shaw et al. (1991) argued that theories about social structures such as gender, class, race, and age (e.g., Bourdieu, 1977; Giddens, 1981, 1984) illuminates the difficulties affecting students' choices and access to resources. Parry and Johnson (1989) argued that it is not necessarily the social structures that present itself as constraints, "rather it is the individual's location in relation to social structures, and how that relational position is experienced, that may constrain leisure" (Shaw et al., 1991, p. 288).

Thirdly, the hierarchical constraints model introduced by Crawford, Jackson, and Godbey (1991) helps explain why constraints reported do not always lead to less leisure. In this model,

Crawford, Jackson, and Godbey (1991) posited that for people to negotiate through constraints, constraints need to be dealt with hierarchically. This process begins at the intrapersonal level. During this stage, leisure preferences are formed “when intrapersonal constraints are absent or their effects have been confronted through some combination of privilege and exercise of the human will” (Crawford et al., 1991, p. 313). The next stage through the negotiation process of the hierarchical model is when individuals negotiate constraints at the interpersonal level. After individuals overcome these constraints, they may take on the structural constraints that influence participation or nonparticipation.

And lastly, leisure non-participation could also be a consequence of an absence of facilitators, defined as “factors that are assumed by researchers and perceived or experienced by individuals to enable or promote the formation of leisure preferences and to encourage or enhance participation” (Raymore, 2002, p. 39).

Therefore, this study will be mindful of the different reasons why less constraints do not always lead to more leisure participation by investigating the different market segments concerning PA participation and constraints, given that past studies highlight the constraints to PA participation without a strong focus on examining the differences in gender and international versus domestic students.

2.2.4 Negotiation Strategies. Although leisure constraints hold the potential to reduce engagement in leisure, they are not insurmountable. As individuals are rarely faced with no leisure constraints, “leisure participation is heavily dependent on negotiating through an alignment of multiple factors, arranged sequentially, that must be overcome" (Crawford et al., 1991, p. 314). Simply put, leisure constraints are not impossible to overcome because there are

ways to negotiate through them. Strategies are used to negotiate through constraints and participate in sport (Hubbard & Mannell, 2001; Son, Mowen, & Kerstetter, 2008).

The types of constraints most commonly experienced in a campus recreational setting include perceptions of oneself, money, time availability, transportation and facility availability (Wood & Danylchuk, 2015). However, these commonly experienced constraints differ based on market segments. For example, international students are more prone to experience interpersonal constraints (Shifman et al., 2012; Walker et al., 2007) since they face challenges to cultural differences, social relationships, economic factors, and a lack of language competency. Domestic students are more likely to experience structural constraints, such as lack of time, and lack of awareness of the available activities (Beggs et al., 2005; Elkins et al., 2007; Walker et al., 2009; Wood & Danylchuk, 2015; Young et al, 2003). Moreover, Reed (2007) said that a lack of awareness and proximity are major constraints impacting students' ability to participate in campus recreation. Reed (2007) also emphasized that access to campus facilities encourages students to be physically active. Moreover, in a study conducted by French, Story, and Jeffery (2001), it was found that 51% of adult respondents reported that having flexible availability of campus facilities influence PA patterns.

Some negotiation strategies that have been recommended to help international students overcome the cultural barriers of participating in campus recreation are: (1) partnering with University administrators to increase intramural sport programs' attractiveness and accessibility, (2) provide opportunities for domestic and international students to network and advertise the benefits of participation, and (3) changing the structure and availability of intramural sport offerings (Cho & Price, 2018).

Additionally, in another study by Wood and Danylchuk (2015), it was found that time management strategies were most often used by domestic students to overcome constraints. Elkins, Forrester, and Noël-Elkins (2011) also found that popular negotiation strategies adopted by college students were interpersonal relations, physical fitness, and skill acquisition.

Lee and Scott (2009) and Mannell and Loucks-Atkinson (2005) posited that the type of negotiation strategy used depends on the type of constraint. For example, if lack of time is considered an obstacle students face when participating in campus recreation, then time management strategies would be used as a type of negotiation strategy to help overcome this constraint (Lee & Scott, 2009; Mannell & LoucksAtkinson, 2005). However, the relationship between the type of constraint and negotiation strategy employed should also consider different levels of involvement. In one study by Alexandris, Kouthouris, Funk, and Tziouma (2013) who investigated the relationship between negotiation strategies, constraints, and leisure involvement levels among recreational swimmers, statistically significant differences were found between recreational swimmers with low, medium, and high levels of involvement. Negotiation strategies that were studied within this population were (1) improve swimming knowledge (e.g. learn how to swim), (2) adjust lifestyle (e.g. improve physical condition), (3) obtain information about swimming pools (e.g. location, schedules), (4) time management (e.g. organize daily activities), and (5) find partners (e.g. find others to participate with). Recreational swimmers with high levels of involvement reported having a stronger association with these negotiation strategies than the other two groups.

Despite these contributions that identify the use of negotiation strategies, these findings disregard the importance of facilitators. Raymore (2002) argued the constraints literature is fixed on the idea that if someone does not participate in leisure, it is because they cannot, and therefore

non-participation equals constraints, while if someone does participate in leisure, it must be because they have overcome or "negotiated" constraints, and therefore participation equals negotiated constraints.

Raymore believed it was a problem for us to be fixed on this interpretation of the constraints literature because it assumed that "the patterns of all lives should equate to the same leisure opportunities and interests" (Raymore, 2002, p.38). For this reason, she suggested using facilitators, or in other words, using resources that could help people access and experience leisure. However, while facilitators play a critical role in leisure participation, its mere presence does not insinuate that an equivalent constraint has been overcome, as commonly understood in the case of negotiation strategies (Raymore, 2002). For instance, suppose that two students interact with each other for the first time while walking their dogs on campus. These two students slowly become friends and plan leisure activities together. In this scenario, their pets have been used as a facilitator. There was no constraint that was overcome given that it is uncommon to find all households with pets.

Facilitators help people experience leisure, and as a result, campus recreation programmers and policy makers should be sanguine about the possibility of increasing leisure participation levels by using facilitators despite a failure to reduce constraints or develop successful negotiation strategies. To effectively implement facilitators that promote physically active leisure participation, a facilitator must be perceived as such, and that perception hinges on interpersonal and structural influences (Raymore, 2002). For example, Sallis et al., (1990) found that physically active individuals were more likely to reside near exercise facilities compared to sedentary individuals. These exercise facilities are not viewed by everyone as a facilitator because our society ostracizes some members of society on the basis of race, gender,

socioeconomic status, and so on. Therefore, it is highly recommended for organizations to incorporate structural facilitators while being mindful of the structural inequalities experienced at the macro level of society.

3.0 Method

A cross-sectional survey methodology was utilized to explore the participation rates, awareness, motivations, constraints, and interest in negotiation strategies of students at the University of Waterloo.

3.1 Data collection

Data were collected by the Campus Athletic Recreation Network (CARN) at the University of Waterloo. Undergraduate students in the following programs and courses were surveyed during the Spring 2018 and Fall 2018 terms: Applied Health Sciences (Health 102 and KIN 202), Arts (PSCI 100 and PSYCH 211), and Science (CHEM 383). (See appendix A for the recruitment script).

3.1.1 Sample characteristics. The sample in this study consisted of 32.6% males and 67.4% females; 8.9% international students and 91.1% domestic students. Students in the sample reported the following level of awareness in terms of campus recreation opportunities: 21.3% indicated that they know nothing, 35.5%; indicated that they only know a little, 35.5% indicated that they know some, and 7.8% indicated that they know a lot.

3.1.2 Study context. The sample in this study was obtained from the University of Waterloo (UW), a large university in Ontario, Canada. UW's athletics and recreation facilities offer two major venues for undergraduate and graduate students to participate in called Physical Activities Complex and Columbia Icefield. These two venues offer recreation programs such as

intramurals, drop-in sports, fitness centre, workshops, archery, and many more. The mission statement of UW's athletics and recreation is: to provide exceptional service and diverse programming through sport, to enrich the student experience, promote wellness, and inspire all Warriors to reach their full potential.

3.2 Survey Measures

Five types of variables were measured on the questionnaire, including demographics, motivations, constraints, interest in negotiation strategies and campus recreation participation. This section describes these variables in greater detail.

3.2.1 Demographics. Demographic information collected in this study included gender, age, enrollment status, and academic term status. Gender was measured by asking, "What gender do you identify with?"; age was measured by asking, "What is your age?"; enrollment status was measured by asking, "Are you an undergraduate or graduate student?"; and term status was measured by asking, "If undergraduate student, what academic term are you in?" (e.g., 2B, 3A, etc.). (See appendix B for the full questionnaire used).

3.2.2 Motivations. Measures of motivations were based on Godin, Shephard, and Colantonio (1986). These variables were measured using a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree) to identify the type of motivations experienced by University students in a campus recreation setting (see appendix B for the full questionnaire used). Respondents were asked to rate their level of agreement with a series of statements that consisted of motivations, such as "I value being active to be healthy", "I value being active to relieve stress", "I value being active to challenge myself".

3.2.3 Constraints. Measures of intrapersonal, interpersonal, and structural constraints were adapted from Wood and Danylchuk (2015). These variables were measured using a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree) to identify the type of constraints experienced by university students in a campus recreation setting. Respondents were asked to rate their level of agreement with a series of statements that consisted of intrapersonal, interpersonal, and structural constraints (see appendix B for the full questionnaire used). Examples of intrapersonal constraint statements included, "I do not know how to properly use the equipment" and "takes up too much of my time". Examples of interpersonal constraints included, "I do not know enough people who participate" and "my friends/family do not encourage me". Examples of structural constraints included, "Warrior Recreation facilities do not have convenient schedules for me" and "I do not know how to get involved in Warrior Recreation". An average of the subscale items scores will be used to form an aggregate measure of each of the three types of constraints used in this study. The higher the mean score for each measure, the higher the levels of perceived constraints.

3.2.4 Organizational strategies to facilitate increased interest. Respondents were asked to rate the degree to which potential strategies created by campus recreation (i.e., organizational facilitators) would increase their interest in participating more in campus recreation (see appendix B for the full questionnaire used). A 5-point Likert type scale was used ranging from 1 (disagree) to 5 (agree). Items were created for this study in collaboration with the campus athletic department. Some potential strategies that were studied within this population were (1) longer hours for facilities on weekdays, (2) Incentives to join, (3) more accessible programs for individuals with impairments, and (5) extramurals. Extramural sports are similar to that of intramural sports, the difference being that teams have the opportunity to represent their

university/college while competing against other university/college teams (University of Illinois, 2019).

3.2.5 Campus recreation participation. In collaboration with the campus athletic department, a participation scale was administered ranging from 0 to 7. Respondents were asked to indicate the number of times per week they had participated in (1) intramurals, (2) drop-in sports, and (3) fitness centre.

3.3 Data Analysis

First, data were explored for missing values and when a small number of cases were missing, the values were estimated using the nearest point method. Next, variables were assessed for normality (skewness, kurtosis) to assess their suitability for subsequent analyses. No issues were found. Mean scores and standard deviations were calculated and reported for each of the study variables. Multiple linear regression was conducted to analyze the relationships among awareness, motivations, and constraints and participation levels in the three types of campus recreation. Multiple analysis of variance (MANOVAs) were used to assess differences on awareness, motivation, and constraints based on gender and domestic vs international.

4.0 Results

The results in this chapter are represented in 16 tables that highlight the core constructs: awareness, constraints, motivations, organizational strategies, and participation in campus recreation. The first section describes the overall sample by identifying the means and percentages of students who participated in the different areas of campus recreation (intramurals, drop in sports, and fitness centre). The second section describes the means and percentages of

awareness of opportunities and participation in campus recreation, examines the association between the two constructs, and finally identifies the group differences of awareness by gender and type of student. The third section describes the means and percentages of constraints, describes the association between constraints, awareness, and participation in campus recreation segmented based on intramurals, drop in sports, and fitness centre, and finally identifies the group differences among constraints by gender and type of student. The fourth section describes the means and percentages of motivations, describes the association between motivations, awareness, and participation in campus recreation segmented based on intramurals, drop in sports and fitness centre, and finally identifies the group differences among motivations by gender and type of student. The final section in this chapter describes the means and percentages of organizational strategies to increase interest in campus recreation and identifies group differences among this construct by gender and type of student.

4.1 Descriptive Statistics of Physical Activity

An inspection of Table 1 shows that university students in the sample primarily participate in organized/non-organized PA off campus averaging one and a half times per week. Among the activities on campus, fitness centre participation was highest with just over 1 day per week of use on average. Participation in intramural sports on campus and drop-in sports was very low among the study's sample.

Table 1. Means and Percentages of Physical Activity

Variables	*M*	*SD*
Physical Activity		
Fitness centre	1.26	1.93
Drop in sports	0.43	1.03
Intramurals	0.34	0.91

n = 314

4.2 Correlation Analysis and One-Way Analyses of Variance of Awareness of Opportunities and Participation

RQ1: Is greater awareness of opportunities in campus recreation associated with higher levels of participation?

The correlation analysis identified in Table 2 showed that greater awareness of opportunities in campus recreation was positively associated with higher levels of participation. Specifically, greater awareness of opportunities was significantly moderately correlated with participation in the campus fitness centre. Awareness of opportunities was also correlated with other aspects of campus recreation, such as intramurals, drop in sports, organized/non organized PA off campus, organized/non-organized PA on campus unrelated to warrior rec; however these correlations were below 0.3, which can be classified as low.

Table 2. Correlation of awareness of opportunities and participation in campus recreation

	Variables	Correlations					
		1.	*2.*	*3.*	*4.*	*5.*	*6.*
1.	How many times have you participated within the last semester in the fitness centre per week?	--					
2.	How many times have you participated within the last semester in intramurals per week?	0.26**	--				
3.	How many times have you participated within the last semester in drop in sports per week?	0.36**	0.48**	--			
4.	How many times have you participated within the last semester in organized/non-organized PA off campus per week?	0.15**	0.10	0.07	--		
5.	How many times have you participated within the last semester in organized/non-organized PA on campus unrelated to warrior rec per week?	0.27**	0.08	0.05	0.23**	--	
6.	Awareness of opportunities	0.34**	0.23**	0.18**	0.12*	0.18**	--

** $p < .05$, ** $p < .01$, *** $p < .001$*

a. How does awareness of campus recreation opportunities differ based on gender and/or international vs domestic students?

In Table 3, it shows there was no significant difference between men and women in terms of being aware of campus recreation opportunities.

Table 3. Means, Standard Deviations, and One-Way Analyses of Variance for Awareness of Opportunities based on Gender

Measure	Men (n=118)		Women (n=242)		*F*
	M	*SD*	*M*	*SD*	
Awareness of campus recreation	2.19	0.08	2.35	0.06	2.46

*p<.05, **p<.01, ***p<.001

In Table 4, it shows a significant difference between international and domestic students in terms of being aware of campus recreation opportunities. Specifically, domestic students were more likely to be aware of campus recreation opportunities compared to international students.

Table 4. Means, Standard Deviations, and One-Way Analyses of Variance for Awareness of Opportunities based on Type of Student

Measure	International (n=31)		Domestic (n=329)		*F*
	M	*SD*	*M*	*SD*	
Awareness of campus recreation	1.97	0.71	2.33	0.90	4.79*

*p<.05, **p<.01, ***p<.001

4.3 Descriptive Statistics of Constraints

RQ2: What constraints reduce participation in campus recreation?

An inspection of Table 5 shows that university students in the study's sample are primarily constrained to participate in campus recreation for two reasons: "it takes too much of their time" and "they do not know enough people who participate in campus recreation". Alternatively, they are least constrained by a lack of encouragement from family and friends.

Table 5. Means and Percentages of Constraints

Variables	*M*	*SD*
Constraints		
Takes too much of my time	3.41	1.32
I do not know enough people who participate	2.70	1.41
Does not have convenient schedules for me	2.65	1.30
I do not know how to get involved	2.63	1.39
I feel uncomfortable working out in public	2.60	1.48
I do not know how to properly use the equipment	2.56	1.40
Tires me	2.51	1.36
I'm not interested in the types of programs offered	2.28	1.23
I do not feel the facilities are accessible	2.02	1.14
Programs are too hard	1.80	1.00
Takes too much time away from family relationships	1.71	0.98
Friends/family don't encourage me	1.69	1.00

n = 314

4.4 Regression and One-Way Analyses of Variance of Constraints

Intramural participation

The results of the regression analysis identifying the association of constraints, awareness of opportunities, and intramural participation appears in Table 6. In Table 6, Model 1, it showed that awareness of opportunities was significantly associated with intramural participation. In Model 2, it showed that awareness of opportunities remained significant even after the facets of the constraints variable were added to the model. Most of the facets of the constraints variable were negatively associated with intramural participation, while none of the facets had a significant association. Overall, a small amount of variance in intramural sport participation was explained by awareness and constraints.

Table 6. Unstandardized regression coefficients for regression models examining the association among awareness of opportunities, constraints, and intramural participation

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.15	0.13	0.26	0.58*	0.26	0.02
Awareness of opp.	0.21***	0.05	0.00	0.13*	0.06	0.03
Takes too much of my time				-0.06	0.04	0.09
Not interested in the programs				-0.01	0.04	0.85
Inconvenient schedules				0.02	0.04	0.72
Don't know enough people				-0.04	0.04	0.36
Facilities are not accessible				0.02	0.05	0.66
Don't know how to get involved				-0.08	0.04	0.06
Uncomfortable working out in public				0.04	0.04	0.31
Don't know how to use the equipment				-0.08	0.04	0.09
Adjusted R^2	0.04*			0.06*		

**p < 0.05, **p < 0.01, ***p < 0.001.*

Drop in Sports

The results of the regression analysis identifying the association of constraints, awareness of opportunities, and drop in sports participation appears in Table 7. In Table 7, Model 1, it showed that awareness of opportunities was significantly associated with intramural participation. In Model 2, it showed that awareness of opportunities does not remain significant after the facets of the constraints variable were added to the model. Facets such as "takes too much of my time" and "don't know enough people" had a statistically significant association with drop in sports participation. Overall, awareness of opportunities accounts for 3% of the variation in drop-in sports participation, but when the constraints variable is added in Model 2, it accounted to a total of 6%.

Table 7. Unstandardized regression coefficients for regression models examining the association of constraints, awareness of opportunities, and drop in sports

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.42	0.15	0.78	0.80**	0.29	0.01
Awareness of opp.	0.21***	0.06	0.00	0.12	0.07	0.08
Takes too much of my time				-0.09*	0.04	0.05
Not interested in the programs				-0.02	0.05	0.73
Inconvenient schedules				0.03	0.05	0.49
Don't know enough people				-0.13***	0.05	0.01
Facilities are not accessible				0.07	0.06	0.25
Don't know how to get involved				-0.04	0.05	0.41
Uncomfortable working out in public				-0.03	0.05	0.60
Don't know how to use the equipment				-0.01	0.05	0.89
Adjusted R^2	0.03*			0.06*		

**p < 0.05, **p < 0.01, ***p < 0.001.*

Fitness Centre

The results of the regression analysis identifying the association of constraints, awareness of opportunities, and fitness centre participation appears in Table 8. In Table 8, Model 1, it showed that awareness of opportunities was significantly and positively associated with fitness centre participation. In Model 2, it showed that awareness of opportunities remained significant after the facets of the constraints variable were added to the model. The facets "uncomfortable working out in public" and "takes too much of my time" had statistically significant associations with fitness centre participation. Overall, awareness of opportunities accounts for 11% of the variation in fitness centre participation. When the constraints variables were added in Model 2, the variation increased to 19%.

Table 8. Unstandardized regression coefficients for regression models examining the association of constraints, awareness of opportunities and fitness centre

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.42	0.27	0.12	1.68***	0.51	0.01
Awareness of opp.	0.73***	0.11	0.00	0.56***	0.12	0.01
Takes too much of my time				-0.21***	0.08	0.01
Not interested in the programs				-0.13	0.09	0.12
Inconvenient schedules				0.01	0.08	0.94
Don't know enough people				-0.11	0.08	0.18
Facilities are not accessible				0.06	0.10	0.59
Don't know how to get involved				0.07	0.09	0.43
Uncomfortable working out in the public				-0.25***	0.09	0.01
Don't know how to use the equipment				-0.02	0.09	0.80
Adjusted R^2	0.11*			0.19*		

**p < 0.05, **p < 0.01, ***p < 0.001.*

a. How do constraints differ based on gender and/or international vs domestic students?

In Table 9, it shows there were some constraints that were significantly different among men and women in the study's sample. Specifically, women were more likely to report experiencing constraints such as "takes too much of my time", "uncomfortable working out in public", and "don't know how to use the equipment" compared to men.

Table 9. Means, Standard Deviations, and One-Way Analyses of Variance for Constraints based on Gender

Measure	Men (n=115)		Women (n=236)		*F*
	M	*SD*	*M*	*SD*	
Takes too much of my time	3.18	1.35	3.52	1.30	5.06*
Not interested in the programs	2.30	1.15	2.26	1.26	0.06
Inconvenient schedules	2.68	1.27	2.63	1.32	0.76
Don't know enough people	2.54	1.42	2.78	1.40	0.13
Facilities are not accessible	2.03	1.10	2.03	1.17	0.10
Don't know how to get involved	2.60	1.41	2.65	1.38	0.73
Uncomfortable working out in the public	2.37	1.41	2.70	1.50	3.90*
Don't know how to use the equipment	2.30	1.30	2.69	1.43	6.17**

**p < 0.05, **p < 0.01, ***p < 0.001.*

In Table 10, it shows a significant difference between international and domestic students in terms of two types of constraints. Specifically, International students were more likely to experience constraints of not knowing how to use equipment and not feeling as though the facilities were accessible compared to domestic students.

Table 10. Means, Standard Deviations, and One-Way Analyses of Variance for Constraints based on Type of Student

Measure	International (n=30)		Domestic (n=319)		*F*
	M	*SD*	*M*	*SD*	
Takes too much of my time	3.13	1.33	3.43	1.32	1.35
Not interested in the programs	2.20	1.19	2.29	1.23	0.15
Inconvenient schedules	3.03	1.35	2.61	1.29	2.92
Don't know enough people	2.73	1.26	2.69	1.43	0.03
Facilities are not accessible	2.57	1.17	1.97	1.13	7.62*
Don't know how to get involved	2.70	1.26	2.62	1.40	0.09
Uncomfortable working out in the public	2.63	1.10	2.60	1.51	0.02
Don't know how to use the equipment	3.07	1.23	2.52	1.41	4.24*

**p < 0.05, **p < 0.01, ***p < 0.001*

4.5 Descriptive Statistics of Motivation

RQ3: What motivations are associated with participation in campus recreation?

An inspection of Table 11 shows that university students are primarily motivated to participate in campus recreation as a consequence of "striving to be healthy" and "to be physically fit". Alternatively, they are least motivated by the desire to "impress a health care professional" and "to fill in their time".

Table 11. Means and Percentages of Motivations

Variables	*M*	*SD*
Motivations		
Be healthy	4.45	0.85
Be physically fit	4.21	1.03
Feel good/personal enjoyment	4.17	1.08
Relieve stress	4.17	1.10
Improve my physical appearance	4.16	1.04
Live longer	4.05	1.13
Be more energetic	4.04	1.06
Control my body weight	3.82	1.26
Challenge myself	3.51	1.28
Improve my grades	3.06	1.29
Build relationships	3.04	1.30
Improve my university experience	3.03	1.36
Fill my time	2.98	1.64
Please a health care professional	1.83	1.14

$n = 314$

4.6 Regression and One-Way Analyses of Variance of Motivations

The results of the regression analysis identifying the association of motivations, awareness of opportunities, and intramural participation appears in Table 12. In Table 12, Model 1, it showed that awareness of opportunities was significantly associated with intramural participation. In Model 2, it showed that awareness of opportunities remained significant after the facets of the motivations variable were added to the model. Some facets of motivations that had a statistically significant association with intramural participation were “to be more energetic” and “improve university experience”. Overall, awareness of opportunities and intramural participation relationship accounts for 4% of the variation, but when the motivations variable was added in Model 2, the variation increased to 8%.

Intramural participation

Table 12. Unstandardized regression coefficients for regression models examining the association of motivations, awareness of opportunities, and intramural participation

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.16	0.13	0.23	0.05	0.29	0.87
Awareness of opp.	0.22***	0.05	0.00	0.15**	0.06	0.01
Fill my time				0.02	0.04	0.57
Control my body weight				-0.06	0.05	0.24
To be healthy				0.02	0.08	0.77
Live longer				-0.01	0.07	0.81
Relieve stress				-0.01	0.07	0.87
To be more energetic				-0.21***	0.07	0.01
Improve physical appearance				0.02	0.06	0.75
Feel good				0.03	0.06	0.69
Build relationships				0.04	0.05	0.45
To be physically fit				0.04	0.07	0.54
Improve my grades				-0.04	0.05	0.39
Challenge myself				0.06	0.05	0.29
Please a health care professional				0.01	0.05	0.84
Improve university experience				0.12**	0.05	0.01
Adjusted R^2	0.04*			0.08*		

**p < 0.05, **p < 0.01, ***p < 0.001.*

Drop in Sports

The results of the regression analysis identifying the association of motivations, awareness of opportunities, and drop in sports participation appears in Table 13. In Table 13, Model 1, it showed that awareness of opportunities was significantly associated with drop in sports participation. In Model 2, it showed that awareness of opportunities remained significant after the facets of the motivations variable were added to the model. Facets such as “Improve physical appearance” and “improve university experience” had a statistically significant

association with drop in sports participation. Overall, awareness of opportunities and drop in sports participation relationship accounts for 3% of the variation, but when the motivations variable was added in Model 2, the variation increased to 7%.

Table 13. Unstandardized regression coefficients for regression models examining the association of motivations, awareness of opportunities, and drop in sports

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.04	0.15	0.80	0.03	0.33	0.92
Awareness of opp.	0.20***	0.06	0.00	0.16*	0.07	0.02
Fill my time				-0.01	0.05	0.86
Control my body weight				-0.01	0.05	0.84
To be healthy				-0.17	0.10	0.08
Live longer				0.03	0.06	0.69
Relieve stress				-0.01	0.08	0.85
To be more energetic				-0.02	0.07	0.81
Improve physical appearance				0.12*	0.07	0.05
Feel good				-0.06	0.07	0.43
Build relationships				-0.04	0.06	0.45
To be physically fit				-0.04	0.08	0.61
Improve my grades				-0.00	0.07	0.99
Challenge myself				0.10	0.06	0.09
Please a health care professional				-0.04	0.05	0.47
Improve university experience				0.18***	0.05	0.01
Adjusted R^2	0.03*			0.07*		

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

Fitness Centre

The results of the regression analysis identifying the association of motivations, awareness of opportunities, and fitness centre participation appears in Table 14. In Table 14, Model 1, it showed that awareness of opportunities was significantly associated with fitness centre participation. In Model 2, it showed that awareness of opportunities remained significant

after the facets of the motivations variable were added to the model. Motivations that had a significant, positive association with fitness centre participation include “challenge myself” and “improve university experience”. Conversely, “build relationships” and other variables were not significant predictors of fitness centre participation. Overall, awareness of opportunities accounts for 12% of the variation in fitness centre participation, and when the motivations were added in Model 2, the variation increased to 17%.

Table 14. Unstandardized regression coefficients for regression models examining the association of motivations, awareness of opportunities, and campus fitness centre

Independent Variables	Model 1			Model 2		
	coeff.	SE	*p*	coeff.	SE	*p*
Constant	-0.48	0.27	0.07	-2.11***	0.58	0.01
Awareness of opp.	0.75***	0.12	0.00	0.61***	0.12	0.01
Fill my time				-0.06	0.08	0.49
Control my body weight				-0.01	0.10	0.89
To be healthy				0.11	0.17	0.51
Live longer				-0.05	0.11	0.67
Relieve stress				-0.06	0.13	0.67
To be more energetic				0.01	0.13	0.92
Improve physical appearance				0.18	0.12	0.14
Feel good				0.04	0.13	0.73
Build relationships				0.05	0.10	0.63
To be physically fit				-0.17	0.14	0.23
Improve my grades				-0.04	0.10	0.72
Challenge myself				0.29**	0.11	0.01
Please a health care professional				0.10	0.10	0.32
Improve university experience				0.20*	0.09	0.04
Adjusted R^2	0.12*			0.17*		

**p < 0.05, **p < 0.01, ***p < 0.001.*

a. How do motivations differ based on gender and/or international vs domestic students?

In Table 15, it showed a significant difference between men and women in terms of being motivated to participate in campus recreation. Specifically, women were more likely to be motivated by "control my body weight" compared to men, but men are more likely to be motivated by "improve university experience" compared to women.

Table 15. Means, Standard Deviations, and One-Way Analyses of Variance for Motivations based on Gender

Measure	Men (n=114)		Women (n=238)		*F*
	M	*SD*	*M*	*SD*	
Fill my time	2.97	1.42	3.00	1.74	0.04
Control my body weight	3.57	1.36	3.95	1.19	6.85**
To be healthy	4.37	0.90	4.49	0.82	1.67
Live longer	3.98	1.15	4.10	1.10	0.80
Relieve stress	4.02	1.15	4.23	1.07	3.17
To be more energetic	3.92	1.13	4.10	1.02	2.22
Improve physical appearance	4.16	1.09	4.16	1.02	0
Feel good	4.22	1.07	4.15	1.09	0.33
Build relationships	3.13	1.30	3.00	1.30	0.78
To be physically fit	4.27	0.99	4.18	1.05	0.53
Improve my grades	3.02	1.30	3.08	1.28	0.21
Challenge myself	3.58	1.28	3.49	1.29	0.43
Please a health care professional	1.74	1.09	1.87	1.16	1.07
Improve university experience	3.29	1.39	2.92	1.34	5.69*

*p<.05, **p<.01, ***p<.001

In Table 16, it showed a significant difference between international and domestic students in terms of certain motivations. For example, international students were more motivated than domestic students to build relationships, improve grades and their university experience, and domestic students were more motivated to be healthy through campus recreation participation.

Table 16. Means, Standard Deviations, and One-Way Analyses of Variance for Motivations based on Type of Student

Measure	International (n=30)		Domestic (n=321)		*F*
	M	*SD*	*M*	*SD*	
Fill my time	2.93	1.44	2.98	1.66	0.02
Control my body weight	3.63	1.47	3.84	1.24	0.75
To be healthy	4.13	1.28	4.48	0.79	4.67*
Live longer	3.97	1.13	4.06	1.13	0.17
Relieve stress	4.10	1.03	4.17	1.11	0.11
To be more energetic	3.97	1.17	4.05	1.05	0.17
Improve physical appearance	3.94	1.15	4.17	1.03	1.48
Feel good	4.10	1.11	4.17	1.08	0.13
Build relationships	3.23	1.30	3.01	1.30	0.79
To be physically fit	3.97	1.22	4.23	1.01	1.86
Improve my grades	3.39	1.36	3.02	1.28	2.28
Challenge myself	3.50	1.11	3.52	1.30	0
Please a health care professional	2.53	1.36	1.77	1.09	12.94***
Improve university experience	3.29	1.24	3.01	1.38	1.18

*p<.05, **p<.01, ***p<.001

4.7 Descriptive Statistics for Organizational Strategies

RQ4: What organizational strategies might increase interest in participating in campus recreation?

In Table 17, it showed that university students overall were most interested in longer hours for facilities on weekends, getting more information, incentives to join, and more/different programs to enhance their desire to participate in campus recreation. Alternatively, very few students believed more accessible programs for individuals with impairments and more help from staff and athletic trainers could enhance their desire to participate in campus recreation.

Table 17. Means and Percentages of organizational facilitators

Variables	*M*	*SD*
Organizational Facilitators		
Longer hours for facilities on weekends	3.74	1.31
More information	3.68	1.23
Incentives to join	3.62	1.15
More/different programs offered	3.61	1.17
Longer hours for facilities on weekdays	3.53	1.30
More programs during the night-time	3.38	1.31
More programs during the day-time	3.05	1.27
Extramurals	2.99	1.39
More help from staff and athletic trainers	2.88	1.31
More accessible programs for individuals with impairments	2.53	1.29

n = 339

4.8 One-Way Analyses of Variance for Organizational Strategies

a. How do organizational strategies differ based on gender and/or international vs domestic students?

In Table 18, it showed a statistically significant difference between men and women in terms of interest for organizational strategies. Specifically, women were more interested by "more/different programs offered" compared to men.

Table 18. Means, Standard Deviations, and One-Way Analyses of Variance for Organizational Strategies based on Gender

Measure	Men (n=115)		Women (n=227)		*F*
	M	*SD*	*M*	*SD*	
More information	3.57	1.24	3.74	1.23	1.31
More programs during the day-time	2.96	1.25	3.10	1.28	0.94
More programs during the night-time	3.30	1.27	3.42	1.33	0.58
More/different programs offered	3.32	1.20	3.76	1.13	11.13***
Incentives to join	3.68	1.14	3.59	1.16	0.41
Longer hours for facilities on weekdays	3.49	1.31	3.55	1.31	0.16
Longer hours for facilities on weekends	3.64	1.29	3.78	1.32	0.88
Extramurals	3.17	1.39	2.91	1.37	2.85
More accessible programs for individuals with impairments	2.54	1.32	2.52	1.27	0.01
More help from staff and athletic trainers	2.72	1.27	3.00	1.32	2.74

*p<.05, **p<.01, ***p<.001

In Table 19, it showed a significant difference between international students and domestic students. Specifically, international students were more likely to be interested in "more accessible programs for individuals with impairments" compared to domestic students and

"More help from staff and athletic trainers", but no differences were found in terms of "More/different programs offered" between the two groups.

Table 19. Means, Standard Deviations, and One-Way Analyses of Variance for Organizational Strategies based on Type of Student

Measure	International (n=114)		Domestic (n=238)		*F*
	M	*SD*	*M*	*SD*	
More information	4.03	1.03	3.64	1.25	2.74
More programs during the day-time	3.37	1.33	3.02	1.26	2.11
More programs during the night-time	3.40	1.33	3.38	1.31	0.01
More/different programs offered	3.87	1.11	3.59	1.17	1.58
Incentives to join	3.80	0.89	3.60	1.17	0.84
Longer hours for facilities on weekdays	3.60	1.22	3.52	1.31	0.11
Longer hours for facilities on weekends	4.07	1.01	3.70	1.33	2.13
Extramurals	3.07	1.08	2.98	1.41	0.11
More accessible programs for individuals with impairments	3.07	1.16	2.47	1.28	5.79*
More help from staff and athletic trainers	3.59	1.12	2.80	1.30	9.68**

*$p<.05$, **$p<.01$, ***$p<.001$

5.0 Discussion

The purpose of this study was to explore the associations among awareness, constraints and motivations and three different types of campus recreation participation, as well as how these variables differed based on gender and student type (domestic vs international). The results of this study have several theoretical and practical implications.

Results suggest that awareness of opportunities was significantly associated with campus recreation participation. This is consistent with findings from previous studies focusing on different forms of physical activity (Humpel, Owen, & Leslie, 2002; Trost, Owen, Beauman, Sallis, & Brown, 2002). Specifically, the results suggest that greater awareness of opportunities was most predictive of participation in the campus fitness centre compared to other campus recreation opportunities, including intramurals and drop-in sports. Previously, research did not identify which areas of campus recreation university students were more prone to engage in as a result of an increased awareness of opportunities. Therefore, this finding demonstrates awareness of campus recreation opportunities can vary across activities. Furthermore, awareness was consistently more predictive of variations in participation compared to motivation and constraints.

Similar to previous research that found a large percentage of students were not aware of PA facilities on campus (Reed, 2007), this study also found the same and also identified that there was no significant difference between men and women in the study's sample. However, this study did find a significant difference in the type of students involved on campus in terms of awareness. That is, domestic students were more likely to be aware of campus recreation opportunities compared to international students, which has not been found before.

The mean scores of the results suggest that students are primarily constrained to participate in campus recreation due to intrapersonal constraints such as "the activity taking away too much of their time" and interpersonal constraints such as "they do not know enough people who participate in campus recreation." This finding is surprising given that previous studies demonstrated a higher susceptibility for students to experience structural constraints to campus recreation participation (e.g., Walker et al., 2007). Students who reported, "the activity

taking away too much of their time" is a concern since research shows that engaging in moderate to vigorous physical activity can help students with psychological well-being, body weight regulation, academic success, and socialization (Bray & Born, 2004). While it is true that the transition from adolescence to young adulthood brings an increased level of responsibility, workload, and therefore less time to engage in PA, it is nevertheless imperative for students to build strong PA behavioral patterns during their university years as it sets the foundation for future PA behaviors (Bungum & Vincent, 1997; Irwin, 2004).

Moreover, students who reported "they do not know enough people who participate in campus recreation" is understandable considering that some students travel to a new country to study, while other students abandon former social networks during the transition from high school to university. Although these circumstances are customary for the majority of the student population, it is also a phenomenon that exists in other settings irrespective of age, race, gender, and so on, which underscores the urgency that is needed to offer students and individuals the opportunity to build meaningful relationships. Conversely, it was found that university students were least constrained by a lack of encouragement from family and friends, which was expected given that many of them live independent lives and therefore do not depend on their family and friends for their daily survival.

In terms of gender differences for constraints, some notable results were found. Women were more likely to experience the constraint of "uncomfortable working out in public" compared to men, which corroborates the past evidence that shows many women are physically inactive over insecurities about body image (Olmsted & McFarlane, 2004; The Lancet Public Health, 2019). Moreover, the facet "uncomfortable working out in public" had a statistically significant association with fitness centre participation. That is, students who reported this

constraint were less likely to participate in the fitness centre. Although the interpretation of "uncomfortable working out in public" is manifold, it may be the case that students felt uncomfortable working out in public as a consequence of insecurities with body image, especially since past studies have extensively studied this construct and highlighted that students with a negative body image engage in recommended levels of PA less often than others. However, there is also considerable research to show that adolescent boys and young men are less likely to participate in recommended levels of PA when they have poor body image (Kopcakova, et al., 2014). Thus, it is important to provide a comfortable setting for both genders to exercise in public.

Contrary to expectations, the regression analyses did not find any of the constraints facets to have a statistically significant association with intramural participation compared to drop-in sports and fitness centre. One possible explanation is that each campus recreation activity differs based on a multitude of factors, and therefore the differences in the associations between constraints with each of these campus recreation activities are not unexpected. Future research might consider other factors that were not measured in this study as stronger predictors of intramural sport participation such as past PA participation and students' proximity to campus.

Study results also showed that facets such as "takes too much of my time" and "don't know enough people" had a statistically significant association with drop-in sports participation but not for fitness centre participation. That is, students who experienced these constraints were less likely to participate in drop-in sports, but they were not factors that influenced their participation at fitness centre. It is possible to hypothesize that since fitness centre participation does not require additional time to find peers and organize a team and also has greater flexibility of open hours, it makes it easier for students to participate with less constraints compared to

intramurals and drop-in sports. This finding should be interpreted with caution given that past studies have yet to investigate these relationships, warranting further investigation in future research.

The mean scores of the results suggest that students are primarily motivated to participate in campus recreation due to health reasons (be healthy and be physically fit), which was consistent with past studies (Morgan, et.al., 2003; Verkooijen, Nielsen, & Kremers, 2009). Specifically, the Self Determination Theory developed by Ryan and Deci (2000) argued that people are motivated by health reasons because growth tendencies and innate psychological needs serve as the foundation for people's self-motivation. As such, this finding is important because it presents an opportunity for campus recreation administrators to promote areas of campus recreation with a "health focus", with the hope that other students who are currently inactive may also be motivated to participate for this reason. Conversely, the mean scores revealed that students were least motivated by "please a health care professional", which is not an issue because there is a dearth of evidence in the literature that demonstrates how policymakers, campus recreation administrators, and other stakeholders can increase PA participation levels grounded in this type of motivation.

In terms of gender differences for motivation, women were more likely to be motivated by "control my body weight" compared to men, which casts new light on the opportunity for campus recreation administrators to implement changes by making women feel more comfortable working out in public so that they can fulfill their motivation to control their body weight.

In contrast to earlier findings, the regression analyses found only one of the facets of the motivation construct, which is "improve university experience", to have a statistically significant

association with all three areas of campus recreation. One possible explanation is that all three areas of campus recreation in the study provide the opportunity for students to improve their university experience, while other motivations depend on the nuances of the activity that generate a specific type of motivation. For example, the regression analyses also found that "to be more energetic" had a statistically significant association with intramural participation. Students who were motivated by "to be more energetic" were more likely to participate in intramural participation, but this was not true for drop-in sports and the fitness centre. Perhaps the required intensity of intramural participation is far greater than the required nature of the other forms of campus recreation, which have less pressure from others to exert high levels of energy.

The regression analyses found the facet "improve physical appearance" to have a statistically significant association with drop-in sports. That is, students who were motivated by this facet were more likely to particiapte in drop-in sports. This is surprising because the other areas of campus recreation can also help students improve their physical appearance. There is nothing particular about drop-in sports that helps students fulfil this motivation compared to intramurals or the fitness centre, and for this reason, these findings should be interpreted with some level of caution.

Furthermore, the regression analyses found the facet "challenge myself" to have a statistically significant association with fitness centre participation levels. This finding contributes to the existing literature because previously Beard and Ragheb (1983) grouped motivations into four categories: intellectual, social, competence-mastery, and stimulus-avoidance. Researchers used their leisure motivation scale that consisted of these four categories and found competency mastery as the top motivator for students to participate in campus

recreation (Beggs et al., 2014; Donaldson, 2013). However, there was no evidence of whether students were motivated by competency mastery in one area of campus recreation over others. Therefore, this finding is important because it suggests that students value the fitness centre and its uniqueness to fulfill a sense of challenge. Given that participation in the fitness centre does not rely on peers and there is a consistent measure of challenge (i.e. weights) compared to drop-in sports and intramurals where everyone's skill level is different, this finding has implications for stakeholders.

And lastly, the mean scores showed that university students were most interested in organizational facilitators, such as receiving more information about campus recreation opportunities, receiving more/different programs during the night-time, and receiving incentives to join that may enhance their desire to participate in campus recreation. Past studies did not explore the likely facilitators that could increase campus recreation participation, making the results of this study noteworthy.

In terms of gender differences for organizational facilitators, the results showed that women were more interested in "more/different programs offered" compared to men. This finding was unexpected and suggests that campus recreation administrators need to do a better job at offering different programs to women. The results also showed international students were more likely to be interested in "more accessible programs for individuals with impairments" and "more help from staff and athletic trainers" compared to domestic students. It is unclear as to why international students are more likely to be interested in "more accessible programs for individuals with impairments", but one possible explanation as to why international students are interested in "more help from staff and athletic trainers" compared to domestic students could be a result of differences in culture and environment that makes campus recreation a novel

experience. Therefore, campus recreation administrators should heed to the difficulties some international students encounter, and thus develop a mechanism to identify these students and be proactive in their service.

5.1 Practical Implications

The study has important implications for university and college campus administrators. In a recent 2019 ParticipACTION report card on PA for adults, it showed that adults received an "F" on moderate-to-vigorous PA, a "D" on overall PA - finding most spend far too much time sitting and not enough time getting heart-pumping exercise, and "B-" on the government's role in promoting PA (ParticipACTION, 2019). These findings are particularly concerning for university and college administrators given that previous evidence shows major decreases in moderate-to-vigorous PA when students transition from adolescence to young adulthood (Malina, 2001). As such, the pressure on university and college administrators to find different ways to increase PA participation levels intensifies. While campus recreation continues to experiment with offering different promotions and programs to help students stay physically active, this study suggests it is inadequate to offer different promotions and programmes without understanding the reasons why students are reluctant to participate in campus recreation. Consequently, this study may help improve the basic understanding as to why some students are reluctant to participate in campus recreation.

For instance, the university examined in this study had new promotional posters about campus recreation in each departmental building. However, the findings of this study suggest that students are less constrained by a lack of awareness of campus recreation opportunities compared to them believing that it "takes away too much of their time". Therefore, campus

recreation administrators need to dedicate their time to implementing changes that could potentially make a difference, such as using time management strategies.

According to Wood and Danylchuk (2015), it was found that time management strategies were most often used to overcome this constraint, and for this reason, campus recreation administrators should provide personal consultation sessions – either electronically or in-person – to arrange a methodological schedule for students dealing with distractions, time wasters, or so on to incorporate physical activity in their daily lives.

Findings in the present study are consistent with findings of past studies that suggest students' former social networks are usually abandoned during the transition from high school to university. For this reason, while participating in campus recreation helps form new social bonds, many feel they do not know enough people to initiate the participation process, and so campus recreation administrators could do more to help students build relationships. Some recommendations to close this gap is by using technology to assist in students finding peers who also do not know anyone to participate for drop in sports and the fitness centre. It should be noted that the university investigated in this study currently employs an online application and website to help find a team to join for intramurals, but the same could be implemented for drop in sports and the fitness centre.

Moreover, this study found that university students were most interested in (1) getting more information, (2) more/different programs during the night-time, and (3) incentives to join that may enhance their desire to participate in campus recreation. Thus, campus recreation administrators should be mindful of these desired facilitators when implementing programs and initiatives in the future, making it important for managers to focus on particular areas of campus recreation when developing strategic planning mechanisms.

5.2 Limitations and Future Research

Some limitations of this study should be noted. The data presented in this study is cross-sectional, which means that it does not allow for causal claims. Also, the results of this study were limited to only one large university in Ontario, Canada, and as a result, it reduces the generalizability of the findings. Future research could further explore other aspects of the PCM by investigating factors that explain students' progression from attraction to loyalty to campus recreation programming. This could also be explored using qualitative methods in an attempt to enhance our understandings of students' personal experiences in campus recreation. Additionally, other constructs could be used to explain the variance in campus recreation participation. For example, past PA participation, geographic proximity, socioeconomic status, academic year are constructs that may develop deeper insight as to why some individuals participate in campus recreation compared to others.

6.0 Conclusion

In conclusion, this study set out to explore the associations among awareness, constraints motivations and three forms of campus recreation participation. One major contribution of the study is greater awareness of opportunities was most predictive of participation in the campus fitness centre compared to other campus recreation opportunities, including intramurals and drop in sports. This study also illustrates that constraints and motivations experienced by university students differ based on gender and the type of student (domestic and international) and by type of campus recreation.

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8.0 Appendix A – In Class Verbal Recruitment Script

My name is _____, I am a research assistant working with Dr. Luke Potwarka for the Campus Athletic Research Network (CARN). CARN is currently working to better understand students' attitudes and perceptions of physical activity and the Department of Athletics & Recreation. This research will be used to make recommendations to improve programming, communication, and delivery across campus

If you volunteer as a participant in this study, you will be asked to complete a questionnaire that will take roughly 10-15 minutes. If you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to ask me, the primary investigator.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee.

Thank you in advance for your interest in this project.

_____ (Name)

9.0 Appendix B – Questionnaire

WARRIOR ATHLETICS AND RECREATION

ACTIVE LIVING SURVEY

PREPARED BY:

CAMPUS ATHLETICS RESEARCH NETWORK

CAMPUS ACTIVE LIVING SURVEY

SURVEY PURPOSE

The purpose of this study is to explore physical activity behaviours of students at the University of Waterloo. Specifically, we hope to gain insights into students' attitudes and perceptions of physical activity and the Department of Athletics & Recreation, as well as what motivates and constraints participation. This information will be used to make recommendations to improve programming, communication and delivery across campus.

INSTUCTIONS

- Please read each question carefully and follow the directions as stated in each section.
- Mark only one option per question unless stated otherwise.
- For each question please choose the option that is the closest to what you think/feel is true for you.

EXAMPLE QUESTION

The following questions ask you about your recreation experience. Please rate how much you agree or disagree with these statements by coloring in the option that is the closest to what you think/feel is true for you.					
When participating in organized recreation…	Disagree				Agree
I keep to myself	○	○	○	●	○

Section 1: Tell Us About You

Q1.1. **What is your age?**
_____ years

Q1.2. **What gender do you identify with?**
_____

Q1.3. **Are you an undergraduate or graduate student? (e.g., undergraduate, graduate)**
_____

Q1.4. **If undergraduate student, what academic term are you in? (e.g., 2B, 3A, etc.)**
_____

Q1.5. **What faculty are you in?**	
☐	Engineering
☐	Math
☐	Arts
☐	Science
☐	Environment
☐	Applied Health Sciences

Q1.6. **Are you an international student?**			
○	Yes	○	No

Q1.7. **Do you identify with any of the following?**	
☐	Physical Impairment
☐	Intellectual Impairment
☐	Mental Health Condition
☐	None of the Above
☐	Prefer Not to Say

Q1.7. **Where do you currently live?**	
☐	Waterloo On-Campus Residence
☐	Waterloo Off-Campus Residence (e.g. CLV, UW Place)
☐	Off-Campus (less than 10-minute commute)
☐	Off-Campus (10 to 30-minute commute)
☐	Off-Campus (greater than 30-minute commute)

Q1.8. **Please rate your knowledge of opportunities provided by Warrior Athletics & Recreation.**				
I Know Nothing	Little	Some	I Know a Lot	
○	○	○	○	

Q1.9. **What comes to mind when you think of Warrior Athletics & Recreation?**

Q1.10. **Have you ever participated in any of the following opportunities at the University of Waterloo (Check all that apply)**	
☐	Warrior Athletics (Varsity Athlete)

☐	Warrior Athletics (Fan)
☐	Warrior Athletics & Recreation (Paid Staff/Volunteer)
☐	Warrior Recreation (e.g. clubs, instructional, drop-in, intramurals)
☐	Faculty or Department Clubs
☐	FED's Clubs/Associations (e.g. Breakers, chess, coffee lovers club)
☐	None of the Above

Q1.11. **Select from the list below how many times per week** you have participated in each of the following within the last semester. **(check all that apply).**	0	1	2	3	4	5	6	7
Warrior Recreation Drop in/Open rec sports (e.g. Basketball, squash, swimming)	O	O	O	O	O	O	O	O
Warrior Recreation Intramurals	O	O	O	O	O	O	O	O
Warrior Recreation Lessons and Workshops (e.g. Dance, skating, squash, martial arts, swimming, first aid, strength & conditioning)	O	O	O	O	O	O	O	O
Warrior Recreation Clubs (e.g. Archery, Badminton, Muay Thai, Quidditch, etc.)	O	O	O	O	O	O	O	O

Warrior Recreation Shoe Tag/Group Fitness	○	○	○	○	○	○	○	○
Warrior Recreation Fitness Centres (PAC Weight Room, CIF Fitness Centre)	○	○	○	○	○	○	○	○
Organized or non-organized physical activity *on* campus unrelated to Warrior Recreation (running, walking)	○	○	○	○	○	○	○	○
Organized or non-organized physical activity off campus (running, community leagues/tournaments, fitness class, going to the gym)	○	○	○	○	○	○	○	○
Other (Specify)_____	○	○	○	○	○	○	○	○

Q1.12. **Do you participate in any non-physical recreational activities either on or off campus? (e.g. e-sports, video games, board games, theatre, reading)**			
○	Yes. Please indicate the activity(ies)	○	No

Q1.13**. If these non-physical recreational activities were offered by the Department of Athletics & Recreation, would you participate?**			
○	Yes	○	No

***Q1.14*. Are you as physically active as you want to be?**			
○	Yes	○	No

***Q1.15.* In the last 7 days, estimate how many hours you spent:**	
Watching TV, DVDs, movies or Internet videos?	_____hour(s)
Playing video or computer games? Include games played on a game console, computer or hand-held electronic device such as a tablet or smart phone.	_____hour(s)
On a computer, tablet or smart phone, doing activities such as surfing the Internet, using Facebook, Instagram, Snapchat, and/or Twitter?	_____hour(s)

Section 2: Attitude towards activity and participating in Warrior Recreation

Q2.1. **I value being active to…**	**Disagree**				**Agree**
Fill my time	O	O	O	O	O
Control my body weight	O	O	O	O	O
Be healthy	O	O	O	O	O
Live longer	O	O	O	O	O
Relieve stress	O	O	O	O	O
Be more energetic	O	O	O	O	O
Improve my physical appearance	O	O	O	O	O
Feel good/personal enjoyment	O	O	O	O	O
Build relationships	O	O	O	O	O
Be physically fit	O	O	O	O	O
Improve my grades	O	O	O	O	O
Challenge myself	O	O	O	O	O
Please a health care professional	O	O	O	O	O
Improve my university experience	O	O	O	O	O

Other (Specify)_____	O	O	O	O	O

***Q2.2* What gets in the way of your being active?**	**Disagree**				**Agree**
Takes up too much of my time	O	O	O	O	O
Tires me	O	O	O	O	O
I'm not interested in the types of programs offered on campus	O	O	O	O	O
Warrior Recreation facilities do not have convenient schedules for me	O	O	O	O	O
My friends/family do not encourage me	O	O	O	O	O
Takes too much of my time from family relationships	O	O	O	O	O
I do not know enough people who participate	O	O	O	O	O
I do not feel the Warrior Recreation facilities/programs are accessible	O	O	O	O	O
I do not know how to get involved in Warrior Recreation	O	O	O	O	O
Warrior Recreation programs are too hard for me	O	O	O	O	O
I feel uncomfortable working out in public	O	O	O	O	O
I do not know how to properly use the equipment	O	O	O	O	O

Other (Specify) _____	○	○	○	○	○

Q2.3. **If choosing to participate in a Warrior Recreation activity/program I consider the following…**	**Disagree**				**Agree**
Time of the program	○	○	○	○	○
If it is a drop-in program or weekly commitment	○	○	○	○	○
Size of the group participating	○	○	○	○	○
Required fitness level	○	○	○	○	○
If I need to pay	○	○	○	○	○
The competitive level	○	○	○	○	○
My free time	○	○	○	○	○
Who else is participating	○	○	○	○	○
If there is an instructor	○	○	○	○	○
Other (Specify)_____	○	○	○	○	○

Q3.2. **Please rate your level of agreement with the following statement:** **_____will enhance my interest to participate in Warrior Recreation.**	**Disagree**				**Agree**
More information offered about programs	O	O	O	O	O
More programs during the day-time	O	O	O	O	O
More programs during night-time	O	O	O	O	O
More/Different programs offered	O	O	O	O	O
Incentives to join	O	O	O	O	O
Longer hours for facilities on weekdays	O	O	O	O	O
Longer hours for facilities on weekends	O	O	O	O	O
Extramurals (sport teams that compete below a varsity level against other schools)	O	O	O	O	O
More accessible programs for individuals with impairments	O	O	O	O	O
More assistance from recreation staff/athletic trainers	O	O	O	O	O
Other (Specify)_____	O	O	O	O	O

Section 3: Final thoughts on Warrior Athletics & Recreation

Q4.1. **What can Warrior Recreation do to help you be more active?**

Q4.2. **Are there any programs, clubs, opportunities etc. you would like to see offered on campus that might increase your activity-levels and improve your overall wellness?**

----- END OF SURVEY -----

On behalf of the University of Waterloo Athletics & Recreation, we thank you for completing our survey. Your feedback will help us to make recommendations to enhance the delivery and communication of Waterloo Athletics and Recreation programming. We hope to maximize recreation and athletic opportunities across campus for all those interested in participating.

----- THANK YOU -----