

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Female Students Participation in Intramurals

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Final Report

KIN 464 001 Health Promotion and Physical Exercise

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Executive Summary

The identification and understanding of upper-year female student's barriers and social outcomes of the participation of intramurals was done by upper-year Kinesiology students in the University of British Columbia (UBC) for a class project. Although 56% of the undergraduate population at UBC are females, there has been a decline of female participation from intramural participation (Fact Sheet Winter 2019, 2019).

The assumption that upper-year students should be more aware of UBC Athletics and Recreation events and past research indicating that female participation in intramurals are stagnant throughout year levels, attributed to the scope of research narrowing to focus on upper year female students (Elkins, Forrester & Noël-Elkins, 2011). Furthermore, Student Involvement Theory, the Theoretical Model of Dropout Behaviour, and past research has identified that recreational sports, like intramurals, provide better sense of community involvement and increases in social, psychological, and physical well being, which guided the survey to focus on community outcomes and the possible barriers to participation (Astin, 1999; Tinto, 1975; Elkins et al., 2011; Sturts & Ross, 2013; Artinger et al. 2006).

The survey itself was guided by Artinger et al. (2006) and Elkins et al. (2011) which had a heavy focus on community involvement, but additional demographic and possible barriers were created by our group. Surveys were created on Qualtrics with 9 demographic questions and 12 Likert type questions. Throughout March 2020, the distribution of surveys was advertised to upper-year lectures at UBC, to clubs, to individuals, on flyers, and online. Incentives were also

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used to help with recruitment, which was an entry to win two \$25 gift cards or two yoga mats. Possible challenge and limitation identified in our study was sample sizes, sampling balance, desirability bias, lack of baseline and small sample sizes of comparison groups.

Results showed beneficial social outcomes with an individual's participation in intramurals, and that co-ed teams were more popular for females rather than all female teams. Additionally, top identified barriers to participation was "I am too tired after my day is finished," "I don't have someone to participate with," and "I don't consider myself good at the sports offered".

Recommendations to improve participation for females at UBC were to:

- 1) Provide more co-ed opportunities;
- 2) Offer incentives;
- 3) Continually collect data to have better understanding of trends throughout the years;
- 4) Provide more or different varieties for sports and
- 5) Allow free agents, which would match individuals or pairs with other individuals to create teams.

Introduction

UBC Intramurals, a division of UBC Athletics and Recreation, offers 13 intramural events and 11 leagues (UBC Recreation, n.d. a). All events coincide with UBC Intramurals *Inclusive Recreation* statement that “An individual’s physical or mental ability, level of health or wellbeing, physical size or fitness level; sexual orientation, gender identity or expression; racial, ethnic, or cultural identity should not be a barrier to anyone visiting our facilities or participating in our programs.” (UBC Recreation, n.d. a). Despite UBC Recreation’s *Inclusive Recreation* efforts, female participation in intramurals are declining, which creates the need to help UBC Athletics and Recreation understand the situation by identifying barriers to female participation in intramurals, and to create recommendations to decrease barriers and promote participation.

Through the assumption 56% of the undergraduate population at UBC are females, and that upper-year students should be established within the school and should be more aware of UBC Athletics and Recreation events, this study aims to identify barriers to participation in intramurals, and possible benefits of participating in intramurals (Fact Sheet Winter 2019, 2019). By collecting results through a Qualtrics survey, this study hopes to make effective recommendations to improve female upper year students’ participation in intramurals.

This research was conducted in association and with the support of our project partner UBC SEEDS Sustainability program. With guidance from our teaching assistant, our primary client, and Professor Bundon, we were able to make the most of our study efforts and maximize its ability to make the best recommendations.

Literature Review

Student Involvement Theory

Astin's Student Involvement Theory is the hypothesis that the amount an individual invests in their post-secondary experience provides that individual with opportunities and better social lives (Astin, 1999; Elkin et al., 2011). Whereas student involvement is the quantity and quality of physical and psychological energy put towards an individual academic experience (Astin, 1999). Involvement can include academic work, interactions with fellow students or faculty, or participation in extracurricular activities, such as intramural sports programs (Astin, 1999). According to Astin's (1999) theory, the greater the individual is involved in their post-secondary institution, the greater the amount of the individual's personal development and learning.

Theoretical Model of Dropout Behaviour

Tinto's Theoretical Model of Dropout Behaviour, also known as the Student Integration Model, suggests that an individual's interactions and experiences with the academic and social systems in the institution directly relates to their continuance at the school (Tinto, 1975). A large facet of the theoretical model is an individual's interaction within the institution, specifically the peer-group interactions, which tend to be most related to one's social integration within the post-secondary institution (Tinto, 1975). Extracurricular activities and faculty interactions, especially, have equal importance in an individual's commitment to the post-secondary

institution (Tinto, 1975). Furthermore, outcomes of these interactions occur tend to change with sex, whereas these interactions may be more important for females (Spady, 1971).

The use of Astin's (1999) Student Involvement Theory and Tinto's (1975) Theoretical Model of Drop Out Behavior, incorporated with the evidence of social outcomes and retention in intramural sports programs emphasizes the need to identify the reasons why female participation is lacking. This paper will further discuss other research on the participation of students in intramural sports programs and the social, psychological and physical effects of being a participant. Additionally, the methodology and results of each paper will be discussed.

Sense of Campus Community

In the study by Elkins et al. (2011), the perceived sense of campus community and involvement of the recreational sports program was examined. Participants were invited by using a random sampling system used at the post-secondary institution with an incentive to win a \$20 gift card to Best Buy (Elkins et al., 2011). An online questionnaire which used a 4-point Likert scale that ranged from "Strongly Agree" to "Strongly Disagree" on topics that touched on demographics, involvement in recreational sports, and class involvement was sent to selected individuals (Elkins et al. 2011). Of the emails sent out, 337 responded, of which 232 were females and 98 were males (Elkins et al., 2011). 47 of which, were first-year students (14.2%), 68 were second-year students (20.6%), 73 were third-year students (22.1%), 89 seniors (27.0%) and the other 53 students (16%) were made of graduate and part-time students (Elkins et al., 2011). A multiple regression analysis was used to analyze an individual's sense of belonging on campus, which was then compared to respondents' answers of how often they participated in the

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school's recreational sports using the scale of "Never," "Occasionally," or "Often" or "Very Often." (Elkins et al., 2011).

Results from Elkins et al., (2011) reveals that intramural sport programs are a great platform for student's social interactions and are a medium to create a better sense of community and acceptance within the post secondary institution. Additionally, participation in campus recreational sports predicted a significant perceived sense of campus community when compared to individuals who did not participate (Elkins et al., 2011). Furthermore, individuals who did participate in recreational sports felt less lonely and stressed (Elkins et al., 2011).

Participation in Intramurals

Sturts and Ross (2013) investigated differences of possible social outcomes of intramural sports programs between groups based on gender, age, status and ethnicity. Sturts and Ross (2013) surveyed students at a large research university who were participating in a basketball intramural. Surveys had 23 Likert type questions ranging from (1) "Strongly Disagree" to (5) "Agree" and 7 demographic questions (Sturts & Ross, 2013). Pen and paper questionnaires were filled, on-site, through the week as the basketball intramurals proceeded, however duplication was not a variable due to the intramural having different teams each day (Sturts & Ross, 2013). 301 of the 386 responses were used for data analysis and of the 301 responses, 75% were from men (Sturts & Ross, 2013). Participation was fairly equal for lower year students to upper-year students but of the teams, 68.8% were all-male teams, 28.4% were co-ed teams, and 2.7% were all-female teams (Sturts & Ross, 2013). Due to the small percentage of all-female teams, social outcomes could not be measured specifically within groups; however, overall female participants

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experienced higher levels of satisfaction, development and improved social outcomes (Sturts & Ross, 2013).

Sturts & Ross (2013) reveals that although intramural sports programs have benefits on female student's social, physical and psychological well-being, there is a pattern of a lack of female participation in intramural sports programs and similar patterns of participation in each academic year level. Which raises concerns, as Spady (1971) found that intramural sports programs, or involvement within the campus community are important for females' commitment to their post-secondary institution.

Retention in Intramurals

Artinger et Al's (2006) research examined the social impacts of recreational sport participation in collegiate students. A questionnaire was developed and distributed randomly to students immediately before or after participating in an intramural sport at a medium-sized university. The survey took approximately 15 minutes to complete and consists of two sections: demographics and the social benefits of participating in intramural sports. The latter of which was measured on a Likert scale that ranged from (1) "Strongly Disagree" to (5) "Agree" and was further divided into five categories: "University Integration," "Personal Social Benefits," "Cultural Social Benefits," "Social Group Bonding," and "Reliable Alliance" (Artinger et al., 2006). The results of Artinger et al's (2006) study were based on 349 completed surveys, with 177 (50.7%) surveys completed by males and 172 (49.3%) completed by females. 118 (33.8%) respondents were in their first year of university, 69 (19.8%) were in their second, 56 (16%) were in their third-year and 106 (30.4%) were in their fourth-year or more (Artinger et al., 2006).

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Using the independent samples t-test, it was found that there were significant differences between male and female respondents wherein female students reported significantly higher increases in commitment to peers, willingness to learn about different cultures, community involvement, ability to work within a team, social bonding and support, ability to interact socially and bonding with teammates (Artinger et al., 2006). In addition, one-way analysis of variance was used to determine that there are significant social benefits to first-year students—when compared to fourth-year or more students—in their sense of belonging, sense of responsibility to the university, and tolerance of different cultures (Artinger et al., 2006).

Artinger et al's (2006) found that social benefits for intramurals were dependent on year and gender and that the retention of intramural participation in post-secondary institutions is highly dependent on how socially integrated students are. Therefore, the improvement of social integration on female post-secondary students in different year levels can be beneficial in increasing participation in intramural sports programs.

The Theory of Student Involvement and the Theoretical Model of Dropout Behaviour combined with empirical evidence of intramural participation, emphasizes the need to provide an explanation for lack of participation in female students, especially in the stagnant levels of participation across academic year levels (Astin, 1999; Tinto, 1975; Elkins et al., 2011; Sturts & Ross, 2013; Artinger et al. 2006). Therefore, the purpose of this study is to understand why female upper-year students have decreasing or stagnant participation rates, if differences in community involvement change between gender or year of study, and if those rates of participation are due to having a lowered sense of campus belonging.

Methodology

The main steps conducted during this study to collect data in chronological order were the following: designment of our online survey, participant recruitment, analyzation of data, and presentation of findings.

Design of Online Survey

Data collection was done through a quantitative and qualitative online study using a system known as “Qualtrics”. The online survey is based on the questionnaire used in Artinger et al. (2006) and Elkins et al.’s (2011) study but has been modified to specify our study’s goals and demographic. The online survey included 9 demographic identifying questions, 12 Likert type questions, and word entry boxes for participants to give a more detailed description of their experiences with UBC intramurals. Further details of the Qualtrics survey can be seen in Questionnaire 1A.

Participant Recruitment

Participant recruitment was advertised throughout March 2020 by placing physical flyers at high student traffic UBC buildings, like Woodward library or Irving K. Barber learning centre, announcements at upper level UBC courses with permission from the professors, and to individuals through word of mouth. During recruitment, the study accepted all years and genders to take the survey concerning their participation (or lack of) in UBC intramurals. All years and genders were accepted to compare participation factors between different groups of UBC students, as we did not have UBC Intramural’s participation data from previous years. An incentive was also used in participant recruitment which was the entry to a win draw prize being two \$25 gift cards and two yoga mats.

Data Analysis

Using the data collected, tables and graphs were created to compare the results between year, gender, barriers to participation, and social outcomes, which can be further seen in Appendix B and Appendix C. The questions chosen were created to identify underlying reasons for the lack of participation in intramural sports programs or perceived sense of social belonging. The results of the first portion of the questionnaire facilitated a better understanding of which specific populations experienced the greatest barrier to participation in intramurals. The received answers for barriers in non-participation for females are displayed as bar graphs (Graph B4). Additionally, the information this study received was sorted into tables to have a concise breakdown of all number of participants and rates of which options were chosen (Table A1 & Table B2). Significant Likert scale results for social benefits was also created as a graph (Graph B1).

Results

Demographics

Of the 105 survey responses, 6 were incomplete and removed from the dataset. From the resulting 99 responses, it was found that 80.8% (n=80) of participants were female and 19.2% (n=19) were male; the “Other” option was removed from analysis as no participant selected it. Of the female participants, 2.5% (n=2) were in their first-year, 20.0% (n=16) were in their second, 47.5% (n=38) were in their third, 21.3% (n=17) were in their fourth and 8.8% (n=7) were in their fifth-year or more. Of the male participants, 5.3% (n=1) were in their first-year, 15.8% (n=3) were in their second, 36.8% (n=7) were in their third, 26.3% (n=5) were in their

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fourth and 15.8% (n=3) were in their fifth-year or more. For both genders, 3.0% of participants were in first-year (n=3), 19.2% in second-year (n=19), 45.5% in third-year (n=45), 22.2% in fourth-year (n=22) and 10.1% (n=10) were fifth year and above. The mean year of study was 3.17 and the mode and median were both 3.00. Further demographic details can be found in Table A1 and Table A2.

Gender and Intramurals

Table B1 and Table B2 provides the survey results of male and female participation rates in intramurals. A Chi-squared test was used, with gender as the key variable, to find the differences between gender and participation rates in intramurals. There was no significant relationship between participation of intramurals and gender, with a small-medium Cramér's V size of 0.209 and a p-value of 0.116 (Table B1). Additionally, there was no significant relationship between gender and amount of intramurals participated in, with females' participation amount with a small-medium Cramér's V size of 0.254 and a p-value of 0.307 (Table B2). Furthermore females' participation amounts had a mean of 0.54, a median and mode of 0.00, with a skewness of 2.16, and a kurtosis of 4.78, and males' participation mean as 0.63, median and mode of 0.00, skewness of 2.14, and a kurtosis of 3.58 (Table B3).

There was a significant relationship between gender and type of intramural each group participated in. Using a Chi-Test, for gender and type of intramural team, a p-value of 0.0003 and a large Cramér's V size of 0.681 was found between the two variables. Of the 35 responses who participated in intramurals, 29 were female respondents. 82.8% (n=24) of females were in co-ed teams, and 17.2% (n=5) were in all female teams. Of the 6 male respondents, 50.0% (n=3)

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were in co-ed teams, and the other 50% (n=3) were in male teams. Table B4 provides more detail on female and male differences in intramural team types.

Social Outcomes.

Another Chi-squared test was used to look at the differences in social outcomes and gender, gender being the key variable in the analysis. One of the eleven Likert-type questions, pertaining to social outcome, had a statistical significant relationship. Gender and the feeling of community involvement responses were assigned numbers based off of the responses, 1 being ‘Strongly Disagree’, 2 being ‘Somewhat Disagree’, 3 as ‘Neither Agree nor Disagree’, 4 as ‘Somewhat Agree’, and 5 being ‘Strongly Agree. Female responses had a mean of 4.3, a median and mode of 4.0, a kurtosis of -0.580, and a skewness of 0.119, while males responses had a mean of 4.2, a median and mode of 5.0, a kurtosis of 2.664, and a skewness of -1.714 (Table B5). Responses between gender and community involvement had a statistically significant relationship with a p-value of 0.0450, and a medium-large Cramér’s V size of 0.487. Of the results, 34.5% (n=10) females and 60% (n=3) males chose ‘Strongly Agree’, 62.1% (n=18) of females and 20% (n=1) of males chose ‘Somewhat Agree’, 3.4% (n=1) of females and 0.0% (n=0) of males chose ‘Neither Agree Nor Disagree’, 0.0% (n=0) of females and 20.0% (n=1) of males chose ‘Somewhat Disagree’, and 0.0% (n=0) and 0.0% (n=0) of males and ‘Strongly Disagree.’. Further response data can be found in Table B5 and in Graph B1.

Responses to Non-Participation.

Graph B2 displays the frequency of responses to the survey prompt, “If no, please select reasons why.” Of the sample of 99, 60.0% (n=66) of participants responded to the prompt, 22.7% (n=15) of those that responded were male and 77.3% (n=51) were female. Graphs B3 and B4

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show the relationships between identifying as male and survey responses as well as identifying as female and survey responses, respectively.

Chi-squared tests were used to determine statistical significance and effect size between gender and each survey response. In all but one of the 13 survey prompts, there was found to be no statistical significance. There is a small (effect size = 0.241) statistically significant (p-value = 0.020) relationship between the response, “I don’t consider myself good at the sports offered” and gender.

Year of Study and Intramurals

Chi-squared tests were used, with year of study as the key variable, to find significant differences between year of study and participation rates and types of intramural team, which rates of each can be observed in Table 1C, Table 2C, and Table 3C. There were no statistically significant relationships between year of study and participation rates, participation amounts, or type of team in intramurals. Year of study and participation rates had a p-value of 0.920 and a small Cramér’s V size of 0.127. Additionally, year of study and amount of participation had a p-value of 0.590 and a small-medium Cramér’s V of 0.220. Furthermore, the year of study and type of intramural team had a p-value of 0.198 and a medium effect size of 0.350.

Social Outcomes.

Using a Chi-squared test, the relationship between year of study and eleven social outcomes were examined, year of study being the key variable. No statistical significance was found in any of the Likert-type questions.

Responses to Non-Participation.

Graphs 1C, 2C, 3C, 4C, and 5C display the relationship between year of study and responses to the survey prompt, “If no, please select reasons why,” for participants in their first, second, third, fourth and fifth year and beyond, respectively. Of the study’s sample of 99, 60% (n=66) of participants responded. Of those that responded, 4.5% (n=3) of those were first year, 18.2% (n= 12) were in their second, 42.4% (n=28) were in their third, 21.2% (n= 14) were in their fourth, and 13.6% (n=9) were in their fifth year or beyond.

Chi-squared tests were used between year of study and each survey response to determine statistical significance. In all 13 survey prompts, there was found to be no statistical significance between the prompt and barriers to participation.

Discussion

Participation and Social Outcomes

The results of the study indicate that there are some beneficial social outcomes with a student’s participation within intramurals. Consistent with Elkins’ et al. (2011) research, student’s who were involved with recreation sports, such as intramurals, felt a better sense of community. Although Spady (1971) and Sturts & Ross (2013) found that females felt more social benefits from participating in intramurals, the results in this study found that females did not report higher feelings of involvement compared to their male counterparts. Additionally, similar to Sturts & Ross (2013), all female teams were much smaller in size compared to co-ed teams for female respondents.

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Interestingly, like Sturts & Ross (2013), this study found no significant differences between year levels, which conflicts with Artinger et al's (2006) study that suggests first years experience better social outcomes compared to upper-year students.

Barriers to Participation

From our findings we have determined that a subject's motivation for participation in UBC's intramurals are hindered by a diverse set of reasons. From analyzing the data, it seems to have been determined that the largest barriers facing UBC students as a whole are encompassed by the three themes: time, social barriers and competency. The top three options that were chosen were found to be: "I am too tired after my day is finished," "I don't have someone to participate with," and "I don't consider myself good at the sports offered" (See Graph B2). Of the 66 individuals who responded to Question 20, 43.9% (n=29) of them chose, "I don't have someone to participate with." The same number of participants, 43.9% (n=29), chose, "I am too tired after my day is finished" (See Graph B2). Following this, the next most popular reason was "I don't consider myself good at the sports offered" at 40.9% (n=27). However, as the data collected mostly consisted of female respondents, the data is skewed to more-so represent the opinions of female students.

When the results are filtered to completely exclude male participants, the data does change slightly. In female-only responses, the top three reasons chosen for non-participation in intramural sports then become: "I don't consider myself good at the sports offered" (n=26), "I am too tired after my day is finished" (n=23), and "I don't have someone to participate with" (n=23) (See Graph B4). This study reveals the concerning perception of inability or lack of competency that seems to be prevalent in female participants and less common in male

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participants. This is further reflected when analyzing the option: “I don’t consider myself good at the sports offered” through statistical analysis determining there is a small, but statistically significant relationship between the response and gender. This statistical significance reinforces the idea that gender has an impact on perceived competency. This is not a novel theme within athletics and has been a common issue in the past. In the past, men were typically involved in more team sports and informal recreation based around competition whereas women seem to participate in more leisure-based fitness classes (Bourgeois et al., 1995). The study by Wood & Garn (2016) determined that sport administrators and participants alike perceived the athletic ability of males outweigh the athletic ability of females. Unfortunately, this seems to not have changed much over time; women are still typically behind men in sport and physical activity rates, with one suggested reason being the competitive tones and emphasis of winning in sport (Warner & Dixon, 2015). The idea that sport is inherently competitive is true, however, the belief that women do not find enjoyment from competition is misguided (Warner & Dixon, 2015). In the study by Warner & Dixon (2015), they determined external competition between teams had little involvement in female participation—it was expected. Internal competition, on the other hand—within one’s team—was generally disliked. We can infer similarly with the data from our study. Most participants chose “I don’t consider myself good at the sports offered,” rather than “I don’t know how to play any other sports offered” or filling out their own response relating to not enjoying competition. Thus, it is clear the issue is with their presumption of their capabilities rather than their knowledge or the competitiveness of sport.

The issue presented by UBC Recreation was the declining rate of female participation in intramural activities. The partner desired to understand decreasing involvement within intramural

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sports for women and to determine barriers that these non-participants face. In addition, UBC Recreation wanted to create recommendations to improve intramurals in terms of inclusivity. The relevancy to this study lies in Question 20's direct examination of barriers aiding non-participation in said intramural sports. With the majority of responders to this prompt identifying as female (77.3%, n=51), we are able to apply our findings to help understand this demographic better and make improvements to decrease barriers to recreational sport. As stated earlier, having women participate more will likely lead to greater satisfaction and retention rates, according to Astin's (1999) Student Involvement Theory and Tinto's (1975) Theoretical Model of Drop Out Behavior. This study also provides us the opportunity to see the relevancy of current issues at hand due to the scarce amount of current research on female intramural participation barriers. With proper knowledge regarding this subject, changes are able to be made to implement better processes that would encourage female participation, specifically for UBC Recreation.

Furthermore, our findings indicate that there is very little difference in the reported reasons for non-participation according to "Year of Study." In both groups, "first-year" and "fifth-year and above," participants seem to have found difficulty finding or creating a team. In each case, the barriers "I don't have someone to participate with," as well as, "I don't have a team set up" are the top reasons for non-participation (See Graph 1C & 5C). Similarly, as seen in Graphs 2C, 3C and 4C, the response "I don't have someone to participate with" is common amongst respondents in second and third year, though quite low in fourth students compared to other barriers. From this we can infer that the barrier of finding others to participate with is likely similar throughout the years of study. As a result, the beneficial social outcomes received

through participating in intramurals are equally lacking throughout the groups of “Year of Study.”

Challenges and Limitations

Sample Size.

A challenge that was experienced during data collection was the lack of participants willing to take the online survey in the initial release of it. The study would have been negatively impacted by the smaller sample size making the findings less significant. We alleviated this issue by increasing awareness of the study by contacting UBC professors asking them for permission to advertise the study prior to lectures. The increase of awareness to larger masses of undergraduate students through lectures helped increase participation rates, compared to reaching out to students individually. Additionally, survey participation increased when incentives were mentioned via random draw of provided emails of participants for draw prizes. With the addition of these countermeasures, the study collected a larger amount of responses than expected from individuals, and with plenty of the targeted demographic of upper-year female students included.

Sampling Bias.

Another challenge identified for the research study was the appearance of sampling bias within the data. Although random sampling, a method of sampling in which the participants are drawn randomly from the population, is ideal, we did not have the resources to do so. Therefore, the method used for this study would be convenience sampling, a method in which participants will be drawn from the desired population due to ease and availability (Etikan, Musa, & Alkassim, 2016). As a result of using this type of sampling, there may be differences in

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representation between demographics, potentially leading to the overrepresentation of some groups and the underrepresentation of others. The inaccurate representation of certain demographics may be problematic as it may not provide an accurate measure of participation for underrepresented groups. For example, if there is a disproportionately large number of individuals that have had a great experience with intramurals, then the data may be skewed with positive overrepresentation. As the method of sampling used in the study was convenient sampling, the survey would be distributed to as much of the population as possible, targeting large and diverse groups, and hopefully encouraging more participants and to mitigate this bias.

Desirability Bias.

An additional challenge was desirability bias, or the potential for a participant to respond in a way that they deem to be socially preferable (Fisher, 1993). This may have skewed our data, potentially increasing overly positive responses. A method used to reduce the occurrence of desirability bias was using a limited number of choices within the survey, which would restrict the extremity of the options. Another method was by using a self-administered questionnaire, whereby the respondent took the survey without the involvement of the researchers, such as Qualtrics. In addition, to a self-administered questionnaire, the survey questions themselves were designed to be as neutral as possible, preventing any indication of what was desirable to the researcher.

Lack of Baseline.

A limitation of this study was the lack of a baseline of first year UBC female students to compare to the target demographic of upper year UBC female students. Despite having a large number of the target demographic, by not having a baseline it is not possible to know if

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intramural participation rates increase or decreased from when they first entered university. Furthermore, a baseline dataset would be helpful to know if intramural participation barriers change from first year university to the upper years. Future studies can resolve this limitation by including a modified version of this study's survey directed towards first year students, or if intramural data was collected every year.

Small Sample Size of Comparison Group.

Another challenge during data analysis was the relatively small sample size of male upper year UBC students. This demographic served as the comparison group for the target demographic of upper year UBC female students which had 80 participants versus the male comparison group of 19 participants. As a result of this large imbalance of sample size between the two demographics, it was difficult to properly compare them because of the underrepresentation of the male group. Furthermore, this potentially could have affected the different identified intramural participation barriers from the male and female groups, as the female group had over 4 times the sample size thus more likely to have more varied responses. Further studies can overcome this challenge by encouraging more male participation for the online survey to offset the sample size imbalance.

Recommendations

Providing more Co-ed Opportunities

UBC Recreation currently offers 10 intramural sports all of which offer Co-Ed team options (UBC Recreation, n.d. b) . As presented in Table B4, females are more likely to participate in Co-ed intramurals so it would be beneficial to provide more Co-ed sport options. We believe Co-ed leagues are more appealing to university females for a few reasons and

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enhance participation. Firstly, Co-ed teams allow females to make teams with male and/or female friends. Secondly, by offering a greater number of Co-ed sport competitions, greater involvement and engagement opportunities will be available by being able to interact with more than your exclusive gender. Lastly, due to the low numbers in female only leagues, Co-ed allows for more competitions and a larger competing bracket therefore increasing the number of interaction opportunities. Some possible sports that would be beneficial to add as Co-ed options are flag rugby or floor hockey.

Offer Incentives

The best method to attract participants or increase participation rates is often through offering incentives. With incentivization tactics students could see a greater time and social value in their participation in intramurals. Incentives could be applied in the form of discounts on UBC athletic apparel merchandise or gym memberships to on campus facilities. These discount incentives would essentially make the participant feel they are receiving greater physical activity opportunities on campus making involvement in intramurals more worthwhile to them. This recommendation would directly target barriers from our findings including, “I commute to campus and would take too long” (11.26%) as well as, “It does not benefit me” (4.05%) (Graph B2). Commuters may feel more value in their time travelling to campus if they receive a discount on a flexible membership to the UBC workout facilities through participation in intramurals. Participants who selected not finding a benefit in intramurals will see a greater benefit in signing up because of the extra incentives offered by UBC Recreation.

Provide More Variety

The highest barrier as presented in Graph B4 for female's is "I don't consider myself good at the sports offered". When trying to attract a greater amount of female participants, it is important to consider not all young female adults have former experience in sports that require high amounts of skill. The current 10 sports available may not be sufficient for all females. By adding sports such as Table tennis, a Quidditch league, doubles tennis or even indoor croquet. These sports are easy to learn and may be more appealing to beginners.

Data Collection

UBC recreation was not able to provide us with any data based on the people who participate in intramurals. Some data is recorded through registration but it is very minimal. Having more information about the age, gender, and faculty of who is participating in intramurals will allow the UBC recreation to look at who are their most active cohorts in intramurals. This would give them a better idea of who is benefiting from their programs and who they should be targeting in terms of recruitment. This recommendation is based on the fact that they were unable to offer us any data on the participants and we cannot compare our sample from the survey to the greater population. We do not know if our sample was representative of the UBC population or the UBC Rec participant population. Many surveys are sent out through mass emails so it would be very possible to have another from UBC Athletics and Recreation for data collection. Adding a form with age, year of study, sex, with the type of intramural they are playing would also give more insight for further research and increase data collection of students already participating in intramurals. The best way we can improve these programs to have the greatest benefit is to understand the demographic and what it needs.

Free Agents

Promoting the option of being assigned to a team with a partner or friend would be beneficial to increasing participation. It is very difficult to find an entire team because you may not know enough, time conflicts with all friends, or they could have different interests in sports. Currently there is a free agents page on Facebook as well as one meeting per term. This is to connect the people who are looking for a team and they are matched based on skill level, desired gender participation and commitment. This is matching people with no teams at all, not teams with rapport that have been established. Adding more times for people to come and sign up for free agents and promoting it more internally from UBC recreation would give students who don't feel like they can't find a team an opportunity to participate. Changing the team placement option to put new participants on an already established team with a positive dynamic would give unsure players a great opportunity to be successful off the bat.

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Appendix A

Survey and Demographics

Questionnaire A1:

Start of Block: Intramurals on UBC Campus

Please answer the following questions that apply to YOU and YOUR experience with intramurals. Leave any questions that do not apply to you blank

Q2 Gender

Female (1)

Male (2)

Other (3) _____

Q3 Year of Study

1 (1)

2 (2)

3 (3)

4 (4)

5+ (5)

UPPER YEAR FEMALES AND INTRAMURALS

Q4 Ethnicity

- African (1)
- Asian (2)
- Hispanic (3)
- Aboriginal (4)
- Caucasian (5)
- Other (6) _____

Q5 Are you a Canadian citizen?

- Yes (1)
- No (2)

Q6 Residence

- Greek Housing (1)
- On Campus (2)
- Off Campus (3)
- UBC Residence/ Housing (4)
- Other (5) _____

UPPER YEAR FEMALES AND INTRAMURALS

Q7 Have you ever played intramurals?

Yes (1)

No (2)

Maybe (3)

Q8 How many intramurals have you played?

0 (1)

1 (2)

2 (3)

3 (5)

4+ (6)

Q9 If yes, which kind?

Co-ed (1)

Women's (2)

Men's (3)

UPPER YEAR FEMALES AND INTRAMURALS

Q20 If no, please check the reasons why

- It conflicts with my schedule (1)
- I commute to campus and would take too long (2)
- I am too tired after my day is finish (3)
- It is not offered at a time I am available (4)
- I don't have someone to participate with (5)
- I don't have a team set up (6)
- I don't want to organize a team myself (7)
- I don't know how to organize the team or join (8)
- I don't know how to play any of the sports offered (9)
- I don't consider myself good at the sports offered (10)
- I cannot afford it (11)
- It does not benefit me (12)
- They don't offer physically inclusive opportunities for me so I am unable to (13)

Other (14) _____

Q21 Answer the following questions based on your experience in intramurals

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Increases my satisfaction with my university experience (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improves my overall happiness (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improves my ability to work within a team (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increases my community involvement (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps to manage my time better (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

UPPER YEAR FEMALES AND INTRAMURALS

Improves my ability to socially interact (6)

Allows me to bond with my teammates and others (7)

Adds social bonding and support to my life (8)

Makes me feel included on the UBC campus (9)

Increases my community (UBC) involvement (10)

Increases my willingness to perform at my best potential (11)

Q24

Thank you for filling out our survey. Use the link below to be entered in a draw for four different prizes worth up to \$78 each! Use Project 7 and Group 4 to enter.

https://ubc.ca1.qualtrics.com/jfe/form/SV_6PTtoAHxBCyf4rkh

By submitting this survey you are consenting to the information filled in above to be used in the KIN 464 class study by Dr. Andrea Bundon and Group 4. A written report will be shared with our campus partner UBC recreation. At the end of the course all data will be locked in Dr. Bundon's lab. Your participation in the study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

End of Block: Intramurals on UBC Campus

UPPER YEAR FEMALES AND INTRAMURALS

Table A1: Descriptive Statistics (Demographics)

Variable	Frequency	Percent
Gender		
Male	19	19.2
Female	80	80.8
Other	0	0.0
Year of Study		
1	3	3.03
2	19	19.2
3	45	45.5
4	22	22.2
5+	10	10.1
Ethnicity		
Asian	58	58.6
Caucasian	33	33.3
Hispanic	2	2.0
Other		
Asian-Caucasian	2	2.0
South Asian	2	2.0
Bahamian	1	1.0
Canadian Citizenship		
Yes	80	80.8
No	19	19.2
Residence		
Greek Housing	1	1.0
Off Campus	74	74.8
On Campus	13	13.1
UBC Residence	10	10.1
Other		
With Parents	1	1.0

UPPER YEAR FEMALES AND INTRAMURALS

Table A2: Gender and Year of Study

		Gender		
		Total	Female	Male
Year of Study (Frequency)	1	3	2	1
	2	19	16	3
	3	45	38	7
	4	22	17	5
	5+	10	7	3
Year of Study (Percent)	1	3.0%	2.5%	5.3%
	2	19.2%	20.0%	15.8%
	3	45.5%	47.5%	36.8%
	4	22.2%	21.3%	26.3%
	5+	10.1%	8.8%	15.8%

Appendix B

Gender and Intramurals Data

Table B1: Gender and Participation (Have you ever played intramurals?)

		Gender		
		Total	Female	Male
Answer (Frequency)	Maybe	1	0	1
	No	63	51	12
	Yes	35	29	6
Answer (Percent)	Maybe	0.010101	0	0.052632
	No	63.6%	63.7%	63.2%
	Yes	35.4%	36.3%	31.6%

UPPER YEAR FEMALES AND INTRAMURALS

Table B2: Gender and Amount Participated in Intramurals

		Gender		
		Total	Female	Male
Amount Participated in (Frequency)	0	63	49	14
	1	19	17	2
	2	5	4	1
	3	2	2	0
	4+	3	1	2
Amount Participated in (Percent)	0	67.7%	66.2%	73.7%
	1	20.4%	23.0%	10.5%
	2	5.4%	5.4%	5.3%
	3	2.2%	2.7%	0.0%
	4+	3.2%	1.4%	10.5%

Table B3: Descriptive Statistics of Gender, Year of Study and Intramural Rates

	Number of Intramurals Played			Year of Study		
	Female	Male	Both	Female	Male	Both
Valid	74	19	93	80	19	99
Missing	6	0	6	0	0	0
Mean	0.53	0.63	0.548	3.138	3.316	3.172
Median	0.000	0.00	0.000	3.000	3.000	3.000
Mode	0.000	0.00	0.000	3.000	3.000	3.000
Std. Deviation	0.93	1.30	1.006	0.924	1.108	0.959
Skewness	2.161	2.14	2.191	0.213	-0.162	0.143
Std. Error of Skewness	0.28	0.52	0.250	0.269	0.524	0.243
Kurtosis	4.78	3.58	4.487	-0.082	-0.328	-0.209
Std. Error of Kurtosis	0.55	1.01	0.495	0.532	1.014	0.481
Minimum	0.00	0.00	0.000	1.000	1.000	1.000
Maximum	4.00	4.00	4.000	5.000	5.000	5.000

UPPER YEAR FEMALES AND INTRAMURALS

Table B4: Gender and Type of Intramural Team

		Gender		
		Total	Female	Male
Team Type (Frequency)	Co-ed	27	24	3
	Male's	3	0	3
	Female's	5	5	0
Team Type (Percent)	Co-ed	77.1%	82.8%	50.0%
	Male's	8.6%	0.0%	50.0%
	Female's	14.3%	17.2%	0.0%

Table B5: Gender and Community Involvement

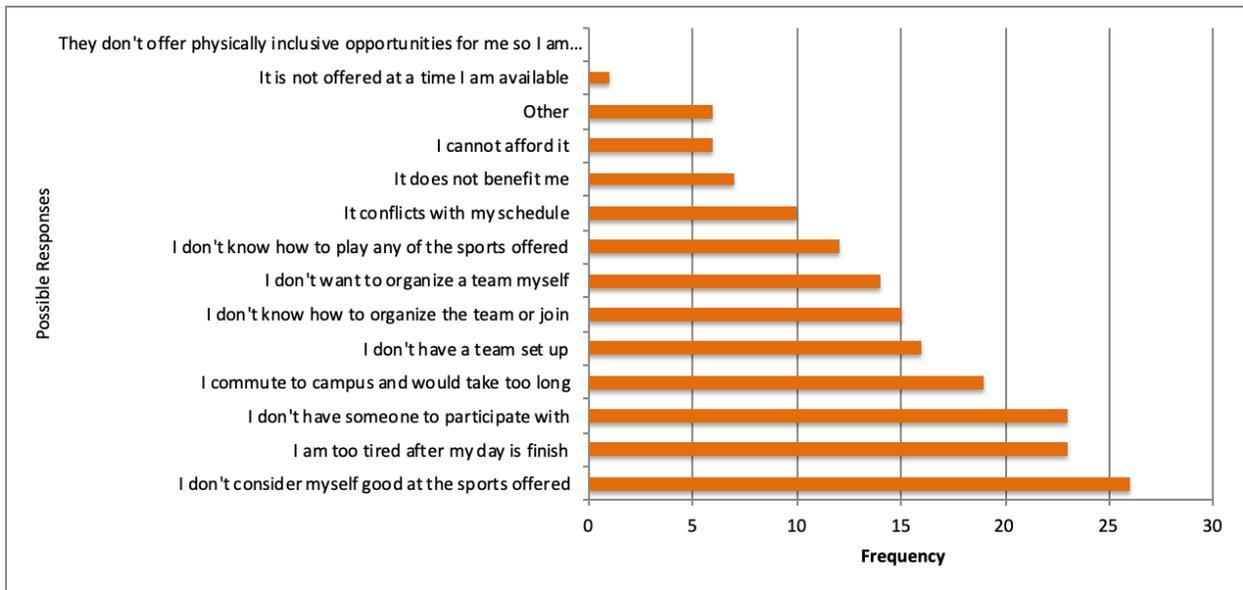
	Gender	
	Female	Male
Mean	4.3	4.2
Median	4.0	5
Mode	4.0	5
Std. Deviation	0.541	1.304
Skewness	0.119	-1.714
Std. Error of Skewness	0.434	0.913
Kurtosis	-0.580	2.664
Std. Error of Kurtosis	0.845	2.00
Minimum	3.00	2.00
Maximum	5.00	5.00

Graph B1: Gender and Sense of Community Responses

Graph B2: Possible responses to “If no, please reasons why” vs. Frequency

Graph B3: Possible responses to “If no, please reasons why” vs. Frequency (Male)

Graph B4: Possible responses to “If no, please reasons why” vs. Frequency (Female)



Appendix C
Year of Study and Intramurals

Table 1C: Year of Study and Participation (Have you ever played intramurals?)

		Year of Study					
		Total	1	2	3	4	5+
Answer (Frequency)	Maybe	1	0	0	1	0	0
	No	63	3	12	27	14	7
	Yes	35	0	7	17	8	3
Answer (Percent)	Maybe	1.0%	0.0%	0.0%	2.2%	0.0%	0.0%
	No	63.6%	100.0%	63.2%	60.0%	63.6%	70.0%
	Yes	35.4%	0.0%	36.8%	37.8%	36.4%	30.0%

UPPER YEAR FEMALES AND INTRAMURALS

Table 2C: Year of Study and Amount Participated in Intramurals

		Year of Study					
		Total	1	2	3	4	5+
Amount Participated in (Frequency)	0	63	3	13	28	11	8
	1	19	0	5	10	3	1
	2	5	0	1	3	1	0
	3	2	0	0	0	2	0
	4+	3	0	0	1	1	1
Amount Participated in (Percent)	0	67.7%	100.0%	68.4%	66.7%	57.9%	80.0%
	1	20.4%	0.0%	26.3%	23.8%	15.8%	10.0%
	2	5.4%	0.0%	5.3%	7.1%	5.3%	0.0%
	3	2.2%	0.0%	0.0%	0.0%	10.5%	0.0%
	4+	3.2%	0.0%	0.0%	2.4%	5.3%	10.0%

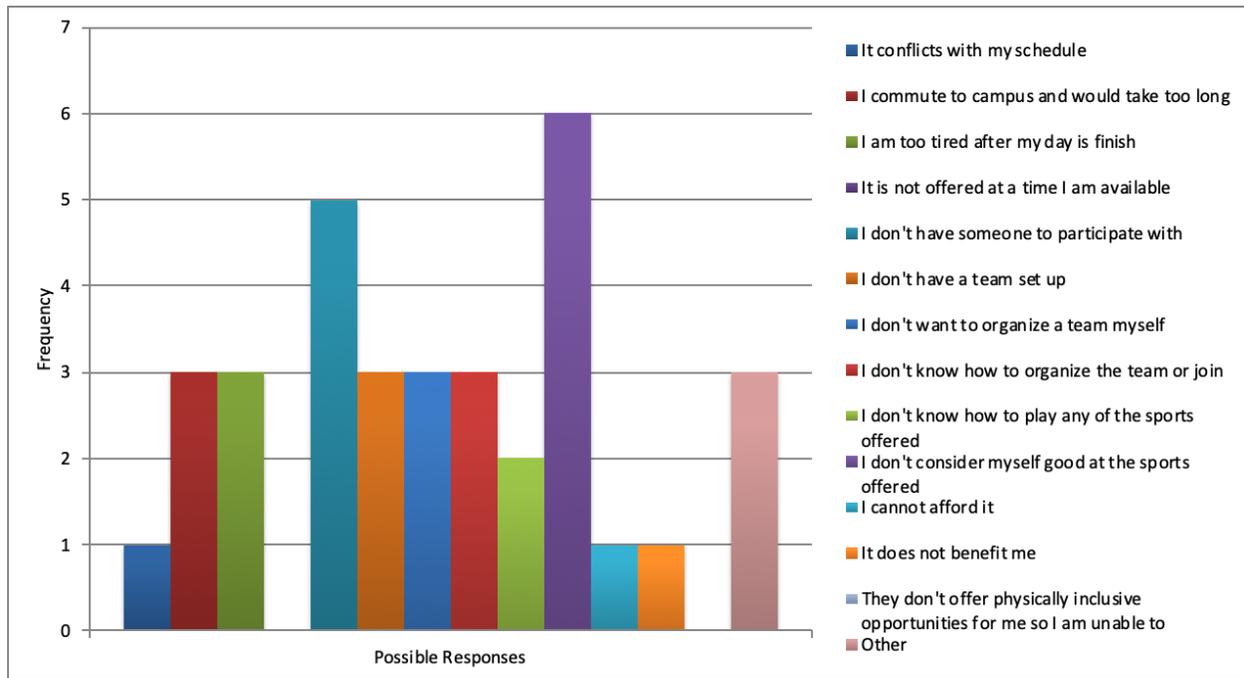
UPPER YEAR FEMALES AND INTRAMURALS

Table 3C: Year of Study and Type of Intramural Team

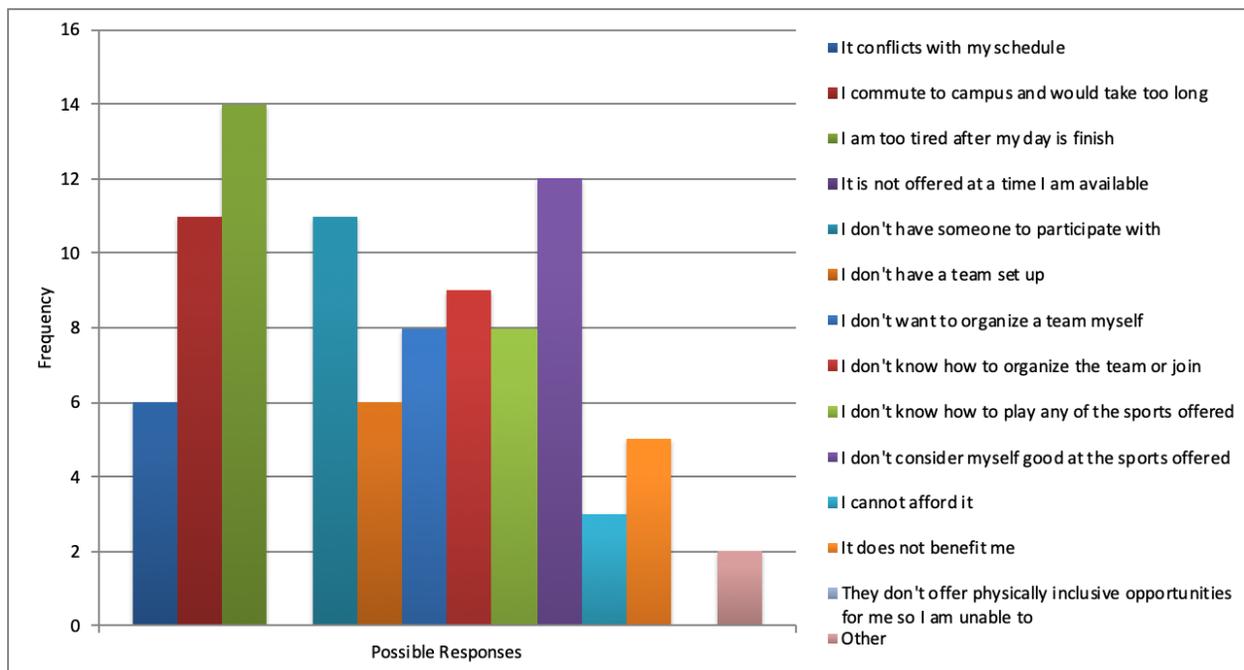
		Year of Study					
		Total	1	2	3	4	5+
Team Type (Frequency)	Co-ed	27	0	5	16	5	1
	Men's	3	0	0	1	1	1
	Women's	5	0	2	1	2	0
Team Type (Percent)	Co-ed	77.1%	0.0%	71.4%	88.9%	62.5%	50.0%
	Men's	8.6%	0.0%	0.0%	5.6%	12.5%	50.0%
	Women's	14.3%	0.0%	28.6%	5.6%	25.0%	0.0%

Graph 1C: Frequency vs. Possible responses to “If no, please reasons why” (first-year)

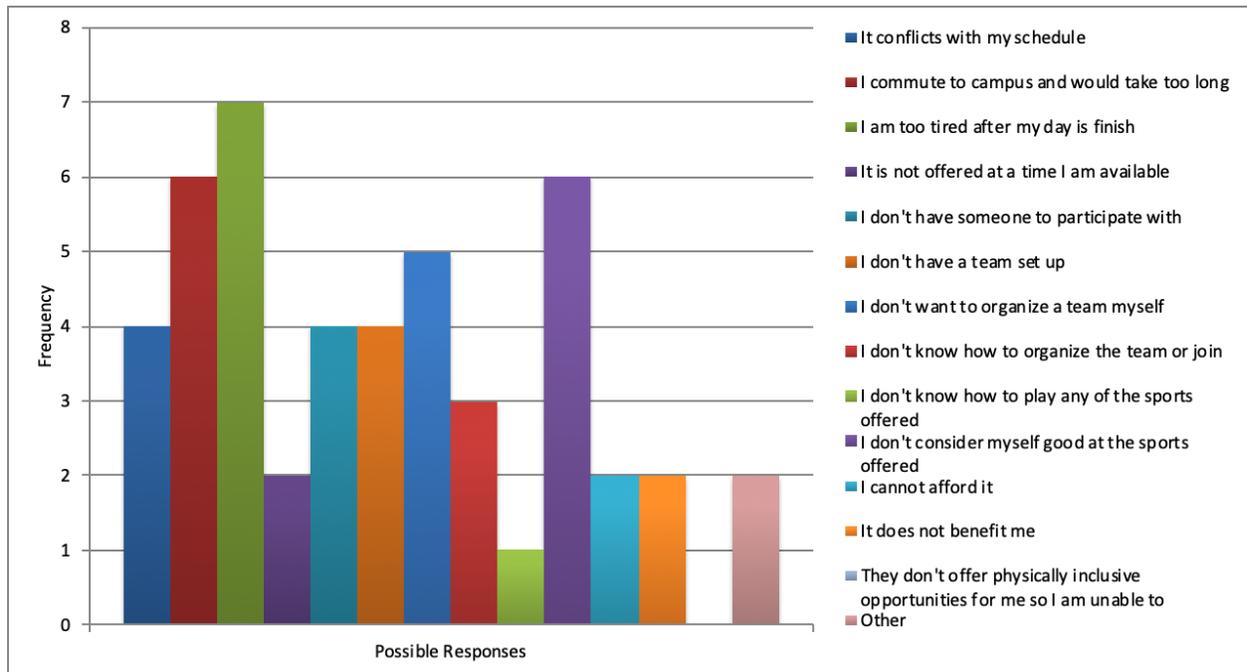
Graph 2C: Frequency vs. Possible responses to “If no, please reasons why” (second-year)



Graph 3C: Frequency vs. Possible responses to “If no, please reasons why” (third-year)



Graph 4C: Frequency vs. Possible responses to “If no, please reasons why” (fourth-year)



Graph 5C: Frequency vs. Possible responses to “If no, please reasons why” (fifth-year+)

