

**The Role of Psychological Distress and Sport
Participation on Help-Seeking Among University
Student Athletes**

**by
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Abstract

Student athletes are considered less likely to seek help than non-athlete students despite comparable rates of mental health difficulties. However, recent findings suggest certain variables may influence these differences. The present study used a secondary analysis of a national sample of university students to explore the role of psychological distress on help-seeking among student athletes and non-athlete students. Results indicate student athletes are less likely to consider help-seeking than non-athlete students. However, the association of psychological distress and help-seeking intention did not differ across level of sport participation. Unique predictors among student athletes indicate that athletes who are in fourth year and above, had previously sought help, or were experiencing greater psychological well-being demonstrated increased help-seeking intention. Psychological distress was associated with reduced intention. This study expands upon the growing body of student athlete help-seeking research and reinforces the importance of investigating strategies to better support this unique population.

Keywords: student athlete; help-seeking; psychological distress

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Chapter 1. Introduction

It is widely accepted that post-secondary students experience a significant amount of stress that can impact their mental health. However, researchers have indicated that mental health difficulties have recently been increasing in frequency and severity among university students (Hunt & Eisenberg, 2010). Help-seeking is an important coping strategy that can be used to reduce mental distress and receive much needed assistance. Unfortunately, researchers found that only 36% of students who experienced a mental health problem in university actually sought treatment from a formal source (Eisenberg et al., 2011). These high rates of mental distress combined with low help-seeking behaviours have resulted in academic institutions focusing significant resources on properly supporting student's mental health. Moreover, special emphasis has been placed on supporting at-risk populations within the university. One often overlooked and understudied sub-population of university students that experiences unique additional stressors is student athletes.

Student athletes experience unique stressors such as athletic performance pressure, high rates of injury, academic eligibility demands, and frequent time spent traveling for sport, all of which are in addition to the stressors experienced by a typical university student (Neal et al., 2015). Student athletes have been found to experience similar (Rice et al., 2016) to slightly higher (Watson & Kissinger, 2007) rates of mental health difficulties compared to their non-athlete peers. However, researchers have suggested that only 10% of student athletes as compared to 30% of non-athlete students, who experience anxiety or depression go on to seek support (Eisenberg, 2014). Furthermore, student athletes have been found to hold more negative attitudes towards help-seeking behaviours as compared to non-athlete students (Watson, 2005). Despite some researchers indicating that student athletes experience additional stressors and lower help-seeking, there have been recent equivocal findings across multiple studies (Barnard, 2016; Hillard et al., 2018). Salient underlying factors such as the impact of the level of psychological distress or well-being on future help-seeking intention have not been explored in student athlete help-seeking research. Therefore, the present study aims to explore how salient demographic variables, previous help-

seeking, and levels of psychological distress and well-being predict the intention to seek help among student athletes and non-athlete students.

Help-Seeking

There is an increasing focus on help-seeking as an important factor in mental and physical health research. Despite this rise in help-seeking research, there is no agreed upon definition of the term. Previously, help-seeking has been identified as a part of the illness behaviour process (e.g., Mechanic, 1962 as cited in Rickwood et al., 2012). Recently, the definition of help-seeking has shifted to suggest that it is a form of active and problem-focused coping that relies on external assistance (Rickwood et al., 2012). There still remains a difficulty in assessing actual help-seeking behaviour given the longitudinal methodology that is often required to assess the occurrence of behaviour. However, Fishbein and Ajzen's (2010) Reasoned Action Approach suggests that help-seeking behaviour can be predicted from an individual's intention to seek help. There are two types of external assistance; informal (e.g., parents, friends) and formal (e.g., psychologist, physician). Informal sources are typically adequate at lower levels of psychological distress. However, as distress increases the importance of seeking formal sources to receive proper treatment and care becomes increasingly instrumental.

Research on help-seeking behaviours among university students has focused on specific factors such as demographic variables (Moreland et al., 2018; Oswalt et al., 2018), past help-seeking (Biddle et al., 2004), stigma (Eisenberg et al., 2009), masculine norms (Raemaker, 2016), and psychological distress (Leahy et al., 2010; Mitchell, 2018). As noted above, researchers typically describe a significant difference in attitudes toward help-seeking for student athletes compared to non-athlete students (e.g., Watson, 2005). However, the differences can be mitigated when other factors like past help-seeking and gender are controlled for (e.g., Hillard et al., 2018). This finding may suggest that understanding the differential impact of variables such as demographic characteristics, stigma, previous help-seeking, and psychological distress/well-being, is important for assessing potential differences in help-seeking among student athletes and non-athlete students.

Demographic Variables

Personal characteristics such as gender, ethnicity, year of study, sexual orientation, and time commitments are commonly explored in relation to help-seeking intention in university students. Exploration of gender differences consistently finds that females are more likely to report an intention to seek help compared to males (Biddle et al., 2004; Eisenberg et al., 2007; Morgan et al., 2003; Oswald et al., 2018). This finding has also been noted in student athlete research as well (Barnard, 2016; Moreland et al., 2018). There is a paucity of research that has explored non-binary genders (e.g., transgendered) compared to cisgendered individuals. However, there is evidence to suggest that individuals who identify as non-binary are more likely to access professional sources of support than friends and family for mental health difficulties (e.g., McNair & Bush, 2016).

There appears to be notable differences among people who identify with various ethnic groups in terms of help-seeking intention in the general population (e.g., Gonzalez et al., 2011). Students who identify as Asian, Black, Hispanic, and bi/multi-racial to be significantly less likely to seek help compared to White students (Morgan et al., 2003; Oswald et al., 2018). It has been suggested that these differences may reflect student's concern over perceived cultural competence of mental health services (Eisenberg et al., 2012). No identified studies have explored these differences with athletes.

Although academic year is not often explicitly explored in relation to help-seeking, recent research suggests that first year university students are less likely to seek help compared to any other year (Oswald et al., 2018). There have been mixed results when exploring the association of sexual orientation with help-seeking. Oswald et al., (2018) found that university students who identified as gay or lesbian were more likely to seek help compared to students who identified as heterosexual. In contrast Gorchynski et al., (2017) suggests that students who identify as bisexual are less likely to intend to seek help compared to heterosexual students, with no other noted differences among sexual orientation.

Level of time commitments is one variable that is often explored in athlete help-seeking research. Several researchers have identified that athlete's time constraints impact their willingness to seek help from a mental health professional (Lopez & Levy,

2013; Moreland et al., 2018; Steinfeldt & Steinfeld, 2010; Watson, 2006). However, this barrier to help-seeking may not be unique to student athletes as research with university students has produced similar findings with regard to time spent working or volunteering (Linden & Jurdi-Hage, 2017; Oswald et al., 2018). Overall, this brief review of demographic variables demonstrates that there are several variables that exhibit associations with help-seeking intention. Still, most of these variables do not appear to differ across student athlete and non-athlete peers, which suggests they may not be a potential factor that differs between the two groups. However, one factor that has been suggested as a potential differentiator for student athletes and non-athlete students in terms of help-seeking intention is stigma.

Stigma

Stigma can be experienced through the negative perception and stereotypes that people hold towards individuals that experience and seek treatment for a mental health difficulty. It has been reported that the perception of mental illness stigma is higher for student athletes compared to non-athlete students (e.g., Kaier et al., 2015). Conversely, recent research has found that there is no difference in the perception of stigma (Hillard et al., 2018), or that student athletes hold more positive views toward mental illness than their non-athlete peers (Barnard, 2016). These findings suggest that stigma is potentially a less salient factor influencing differences in help-seeking between these two groups. Although stigma may not be a great differentiator for help-seeking between student athletes and non-athlete students, there is still ample amount of evidence for stigma's effect on help-seeking.

Stigma has been considered a significant barrier to the perception of need and use of therapy (Hillard et al., 2019; Rickwood et al., 2005), psychotropic medication, and informal sources of support for mental health difficulties (Eisenberg et al., 2009). Mental health literacy has been associated with reduced stigma experience as well as increased help-seeking, which has led to a rise in interventions targeting this factor among college athletes (e.g., Chow et al., 2020). Beyond interventions focused on mental health literacy, previous experience seeking help from a mental health professional has also been suggested to reduce stigma and increase intention to seek help in the future (Rickwood et al., 2005; Schomerus & Matchsinger, 2009).

Previous Help-Seeking

Previous help-seeking experience, especially positive previous experiences, has been suggested to be a consistent facilitator for intention to seek help in the future (Biddle et al., 2004; Demyan & Anderson, 2012; Rickwood et al., 2005). Further, researchers have suggested that the recency of seeing a mental health professional can also reduce belief-based barriers (e.g., stigma, fear) related to help-seeking (Demyan & Anderson, 2012; Rickwood et al., 2005). This again speaks to the potential that previous help-seeking experiences may have in reducing fears or stigma related to accessing a mental health professional. Research with athlete samples has exhibited similar findings. Gulliver et al., (2012b) suggest that a previous relationship with a mental health service provider is considered a facilitator for help-seeking in young elite athletes. Given the evidence of a predominantly positive association of previous help-seeking with seeking help in the future that occurs for both athletes and non-athletes, other factors may better explain the potential difference in help-seeking between the two groups.

Psychological Distress/Well-Being

Psychological distress has also been indicated to be important in help-seeking intention (e.g., Leahy et al., 2010). Researchers have indicated that a positive association exists between psychological distress and help-seeking intention (Biddle et al., 2004; Leahy et al., 2010; Vogel & Wei, 2005). However, Biddle and colleagues (2004) indicate that low levels of psychological distress are associated with decreased help-seeking as the desire to access services may be perceived as unnecessary. In one of the few studies examining psychological well-being, Richardson (2017) indicates that greater well-being was associated with a reduced likelihood of seeking help in the past year for individuals who met criteria for a mental disorder. These findings suggest that a single continuum from psychological distress to well-being could be used to describe the relationship of these constructs with help-seeking, however there are variable opinions on this notion.

There are multiple ways to define the relationship between psychological distress and psychological well-being. Researchers (e.g., Mirowsky & Ross, 2002) have suggested a single continuum exists from significant psychological distress to psychological well-being or “mental health”. Alternatively, other researchers (e.g., Keyes,

2002) suggest these two concepts are related but distinct concepts on a dual continuum of mental illness and mental health. Payton (2009) examined this disagreement in dimensionality and concluded that neither dimension is supported over the other and that researchers should avoid lumping these factors together because the two concepts are influenced by and predict different outcomes. Therefore, examining psychological well-being and distress as separate constructs may be the best approach when examining help-seeking intention of student-athletes and non-athlete students. Given the advised separation of the variables, psychological distress and well-being may demonstrate differing associations with help-seeking.

The relationship between psychological well-being and help-seeking is hard to determine as researchers predominantly include psychological distress as a predictor. One of the few studies focusing on psychological well-being suggests that well-being is associated with a decrease in help-seeking intention (Richardson, 2017). On the other hand, previous research suggests that psychological distress could be an important factor influencing differences in help-seeking (Leahy et al., 2010). However, this association has not been explored in research between these student athletes and non-athlete students. At face value, the disparity in help-seeking intention between student athletes and non-athlete peers is probably not caused by the level of psychological distress experienced because researchers have found similar (Rice et al., 2016) to slightly higher rates (Watson & Kissinger, 2007) of distress for athletes. Alternatively, disparities in perception of distress due to factors such as athlete culture could be the facilitator of underlying differences found in help-seeking between student athletes and non-athlete students.

Previous research suggests that 47 to 62 percent of student athletes who acknowledged a need for professional help did not receive any (Drew & Matthews, 2019; Giovannetti et al., 2019). Emotional denial and a reliance on team systems has been suggested as one reason that student athletes resist seeking help (Pinkerton et al., 1989). This notion may provide a partial explanation of how student athletes and non-athletes differ in terms of perception of psychological distress. The following hypothetical model may offer another explanation for how these two groups differ. Foremost, athlete identity reflects the extent to which an individual identifies with the athlete group and has been associated with decreased attitudes toward help-seeking behaviours (Steinfeldt & Steinfeldt, 2012; Weatherhead, 2016). Consequently, athlete identity can be thought of

as an adherence to, and acceptance of, athlete culture. Research has suggested that athlete culture is underpinned by traditional masculine norms (Messener, 1992). Traditional masculine norms value behaviours such as restricted emotionality, increased aggression, and competitiveness (Weatherhead, 2016). These valued behaviours may then lead to the perceived importance of toughness in athletes. Evidently, toughness in sport is continually accepted and rewarded by the valuing of behaviours such as playing through pain despite significant injury and dominating opponents physically. Furthermore, these norms and the accompanying behaviours cut across both male and female sport, which is not to say that female athletes are “masculinized” by sport but rather that these norms apply to all athletes (Knoppers & McDonald, 2010; Weatherhead, 2016). Thus, the importance and admiration of “toughness” in sport may lead athletes to believe that certain levels of psychological distress do not merit seeking help from a mental health professional. Alternatively, student athletes have a limited window of eligibility or scholarship funding, hence athletes may be less likely to seek help to reduce the risk of having to stop playing their sport and losing the accompanying support (e.g., scholarships, eligibility) due to a mental health difficulty.

Factors such as gender, ethnicity, time commitments, psychological distress, and psychological well-being within the student athlete group may also influence an athlete’s consideration to seek help. These personal characteristics may contribute to variability in help-seeking intention among student athletes as well and could provide identification of particularly at-risk student athletes who are less likely to seek help. Ultimately, these factors could be possible reasons why there may be differences between student athletes and non-athlete students or why student athletes may differ from each other in their intention to seek help for psychological distress. Therefore, the primary aim of the present study was to examine how the association of psychological distress with help-seeking intention varies across student athletes and non-athlete students. A secondary aim was to explore differences in how personal characteristics and intrapersonal variables predict help-seeking intention among student athletes. These aims were guided by four research questions.

Current Study

First, does sport participation significantly increase model prediction of intention to seek help, above and beyond demographic variables and previous help-seeking?

Second, do psychological distress and well-being significantly increase model prediction of the intention to seek help, above and beyond demographic variables, previous help-seeking, and sport participation? It was hypothesized that for research questions one and two the addition of sport participation and psychological distress/well-being, respectively, would significantly increase model prediction above and beyond the other variables in the model. For this second research question, it was hypothesized that psychological distress would provide a unique contribution to model prediction above and beyond the other variables.

Third, does the association of psychological distress with help-seeking intention differ across varsity athletes, club athletes, intramural athletes, and non-athlete students? It was hypothesized that there would be minimal differences at none-low and high psychological distress levels between the four groups. However, at moderate levels of psychological distress, it was hypothesized that varsity athletes would be significantly lower in help-seeking intention compared to students that engage in club sport, intramural sport, and non-athlete students. Club athletes would be considered a similar group to varsity athletes (referred to as student athletes for rest of manuscript) because they participate in competitive intercollegiate leagues. Nonetheless, club sport athletes typically receive no scholarship funding and may have lower levels of time spent competing in sport or post-graduation goals for their sport. Intramural athletes are considered to be a group that has some similar characteristics to varsity athletes due to previous exposure to sport culture (e.g., former high school athletes) and the social aspects of being part of a team. However, they most likely do not have the same level of exposure or commitment to the athlete culture at the time that student athletes were surveyed. Thus, club and intramural athletes may be a group that falls somewhere between varsity athletes and non-athlete students in terms of the influence of psychological distress on help-seeking intention.

Fourth, how do demographic characteristics, previous help-seeking, and psychological distress/well-being differ in terms of prediction of help-seeking intention among student athletes? This research question is exploratory but there are several potential variables that may be better at predicting the likelihood that an athlete would consider seeking help in the future. Based upon previous research with the general student population and athlete samples, gender, year of study, sexual orientation, ethnicity, previous help-seeking, and increased levels of psychological distress may

have a significant impact on consideration to seek help. A secondary data analysis of the American College Health Association-National College Health Assessment (ACHA-NCHA) II Spring 2016 Canadian dataset was conducted to examine these research questions.

Chapter 2. Methods

Participants

Universities administer the ACHA-NCHA II on their individual campuses through randomly sampling classrooms or sending the survey in emails to randomly selected students. Forty-one universities in Canada participated in the ACHA-NCHA II Spring 2016 Canadian survey. The overall response rate to this survey by students was 18%.

The total sample for the ACHA-NCHA II Spring 2016 Canadian data set is 43,780 students. The data set is comprised predominantly of females ($n = 29,966$; 69%), with a smaller sample of males ($n = 12,822$; 29.5%). Most participants identified as White ($n = 33,149$; 75.7%), followed by Asian ($n = 6,289$; 14.4%), and Indigenous ($n = 1,908$; 4.4%). Other ethnicities, representing under 4% of sample were, Black, Latin American, biracial or multiracial, and “other”. Student athletes (i.e., varsity athletes; $n = 1,638$, 3.8%) and club athletes ($n = 3,393$; 7.8%), represented a smaller portion of the sample than intramural athletes ($n = 4,821$; 11.1%). Power analysis was conducted via G*Power at the highest level of analysis. With a predicted effect size (i.e., square root of standardized chi-square statistic) of .05, alpha level of .01, sample size of 43,780, and 40 degrees of freedom, power was predicted to be $>.999$. Therefore, power is assumed to be adequate for the present study.

Measures

The ACHA-NCHA II consists of 66 items related to health behaviors and outcomes. Additionally, the ACHA-NCHA II Canadian distributed survey has three additional measures for specific Canadian racial/ethnic categories, university community factors, and a mental health continuum measure. As this survey covers a broad spectrum of health behaviours, only certain items were selected for analysis. Items used in the present study are help-seeking intention, demographic variables, previous help-seeking, sport participation status, psychological distress, and Mental Health Continuum-Short Form (MHC-SF).

Help-Seeking Intention. The primary dependent variable, help-seeking intention, was measured by a dichotomous yes/no item. The item asks, “If in the future

you were having a personal problem that was really bothering you, would you consider seeking help from a mental health professional?" This item was endorsed by 77.4% of participants in the overall sample.

Demographic variables. Eleven demographic items were selected for this study. The demographic variables controlled for were gender, ethnicity, year of study, sexual orientation, enrollment status, transfer student status, international student status, current residence, hours worked for pay per week, hours volunteered per week, and sport participation. Categories for certain variables (i.e., ethnicity, sexual orientation, current residence, year of study) were collapsed to reduce the number of variables in the analysis, maintain mutually exclusive categories, and/or due to low cell counts. Sport participation in the past 12 months is a specific variable of interest. This variable has item response options for varsity, club, and intramural. Participants were coded into their highest level of sport competition if they selected multiple levels of sport participation to create mutually exclusive groups.

Previous help-seeking. Previous help-seeking was determined by a yes or no question whether the participant had ever accessed particular formal sources of mental health support. These sources included counsellor/psychologist/therapist, psychiatrist, other medical professional (e.g., general practitioner physician, nurse-practitioner), and religious leader (e.g., rabbi, minister). These separate questions were combined into a single measure by compiling responses from these separate questions into categories of no previous help-seeking, counsellor/psychologist/therapist, psychiatrist, other medical professional, religious leader, and multiple sources if the participant endorsed accessing two or more of the sources. Moreover, a yes/no measure of whether the participant had accessed mental health services at their current university via counselling or health services was used as a separate measure of previous help-seeking.

Psychological distress. Psychological distress is measured by responses to 11 items. An example item is "Have you ever felt very sad." In the survey, the potential response options for each item are: no, never; no, not in the past 12 months; yes, in the past 12 months, yes in the past 30 days; yes, in the past 2 weeks. These item responses were dichotomized to no, not in the past 30 days and yes, in the past 30 days to reduce potential for memory errors by participants. This measure was then turned into a continuous variable based on the number of items the participant endorses. The

measure ranges from 0-11 with lower scores indicating lower levels of endorsement or experience of psychological distress. These scores were then converted to a categorical variable to examine research question three. Scores ranging from 0 to 2 were considered none to low (n = 14,774, 40.6%) while score ranging from 3 to 6 (n = 13,677, 37.6%) and 7 to 11 (n = 7,970, 21.9%) were considered moderate and high, respectively.

Mental Health Continuum-Short Form (MHC-SF). The MHC-SF is a previously validated measure included in the ACHA-NCHA II survey. This 14-item measure represents Corey Keyes' (2002) dual continuum model of mental health and is derived from the Mental Health Continuum-Long Form. The items for the MHC-SF are scored on a 6-point Likert scale (0 = *never* to 5 = *everyday*) and measure 3 separate areas of well-being; social, psychological, and emotional. An example item from this scale is "During the past month, how often do you feel that you had warm and trusting relationships with others." Scores range from 0-70 with higher scores indicating greater levels of mental health/well-being. These scores can be categorized as languishing (i.e., poor mental health), moderate, and flourishing (i.e., good mental health). Internal consistency ($\alpha = .89$), test-retest reliability up to 9 months (.65), and convergent validity from previous research is considered adequate (Lamers et al., 2011). Internal consistency ($\alpha = .94$) was considered adequate for the present study.

Analysis

Prior to the main analysis, discriminant validity was examined for psychological distress and MHC-SF through Pearson Product Moment correlation analysis. This analysis was used to check if the constructed psychological distress variable diverges sufficiently with psychological well-being on a previously validated measure (i.e., MHC-SF). Previous research suggests that brief symptom inventories (e.g., BSI, RCADS-25) similar to the psychological distress measure in the present study have demonstrated significant negative associations that range from -0.34 to -.51 (Lamers et al., 2011; Luitjen et al., 2019). The observed Pearson Product Moment Correlation fell within in this range, $r = -0.44$, $p = <.001$, 95% CI [-0.45, -0.43], suggesting the psychological distress measure is adequate for use in the study. Further, the MHC-SF was included in this

study because of Payton's (2009) suggestion that psychological distress and well-being should be used as separate variables in research.

Analysis for all four research questions was conducted through Statistical Package for Social Sciences (SPSS) Version 24 using two hierarchical logistic regressions. Help-seeking intention was the outcome variable for both logistic regressions. The first logistic regression examined research questions one through three. In the first model of this logistic regression, 10 demographic and two previous help-seeking variables were added as control variables. In the second model, sport participation was added to the previous model containing demographic and previous help-seeking variables. In the third model, psychological distress and MHC-SF were added to the previous model containing sport participation, demographic, and previous help-seeking variables. In the fourth model, a psychological distress by sport participation interaction term was added to the previous model containing psychological distress, MHC-SF, sport participation, demographic, and previous help-seeking variables. The second hierarchical logistic regression explored predictors of student athlete consideration of seeking help for mental health difficulties. In the first model of this logistic regression demographic variables, previous help-seeking, psychological distress, and MHC-SF were added. In the second model interaction terms were added for sexual orientation, gender, and ethnicity by psychological distress as well as by MHC-SF. Additionally, previous help-seeking and access to university mental health services interaction with psychological distress categories were explored.

Model statistical significance was determined by an omnibus likelihood ratio chi-square (χ^2) test. The Nagelkerke index was used as a pseudo R^2 measure of model fit. This pseudo R^2 index estimates the variability accounted between the worst and best possible models (i.e., null deviance) for a set of predictors (Cohen et al., 2002). The Nagelkerke index is adjusted so that the maximum value it can attain is 1.00, which is an appropriate adjustment relative to other pseudo R^2 indexes (e.g., Cox and Snell), which does not have an upper limit of 1.00 (Cohen et al., 2002). The Hosmer and Lemeshow goodness of fit test was not used for the hierarchical logistic regression analysis of research questions one, two, or three. This test was not used due to the present study's sample size resulting in high levels of power for the test. Increased power can result in the Hosmer and Lemeshow test indicating poor model fit even if the model fit is adequate (Paul et al., 2013). However, the Hosmer and Lemeshow test was used for

research question four because the smaller sample size is considered appropriate for use of this test (Paul et al., 2010). Wald (*W*) chi-square test reported in SPSS was used to test statistical significance and adjusted odds ratio was used as the effect size measure of each individual predictor. Alpha level was set at .01 for all analyses to reduce the possibility of type I error due to the high power as the result of the size of the sample.

Prior to analysis, logistic regression assumptions were checked. Dichotomous outcome variable and independence of observation were assumed given the binary help-seeking variable and random sampling by universities. Sufficient cases per variable were checked visually by examining frequency tables and ensuring at least 20 cases per cell for the overall sample.

Diagnostic procedures were also tested to identify extremity on predictor variables, extremity of the outcome variable, influence of regression equations, and multicollinearity. Due to the large sample size of the study a combination of cut-off scores and visual inspection of scatterplots was used to identify extreme or influential cases for both the whole sample and varsity athlete only sample analysis. Cut-offs were used initially to examine potentially influential cases but often identified over 10% of these cases. Further, these cut-offs have been considered overly conservative (Cohen et al., 2002). Therefore, visual inspection was used to confirm large separation between cases to determine whether the case differed significantly.

To examine extremity of predictor variables, centred leverage values were compared to a cut-off of .0025 that was calculated using the Belsley et al., (1980) large sample formula and examined visually. Externally studentized residuals were used to examine extremity of the outcome variable using visual inspection. The influence of regression equations was examined using Cook's *D* for global influence when cases were deleted and standardized *DFBETA* for specific influence when cases were deleted. Visual inspection was used for Cook's *D* while *DFBETA* used both visual inspection and a cut-off value of .011. Multicollinearity was considered adequate if the variance inflation factor (*VIF*) was equal to or less than 10. Extremity and influential case diagnostic procedures were calculated via the SPSS logistic regression statistical package, while linear regression statistical package was used to calculate *VIF*. Identical diagnostic procedures were conducted for the varsity athletes only sample used for research

question four except the adjusted centred leverage values and DFBETA cut-off values were .086 and .055, respectively.

Chapter 3. Results

Missing Data

In total 43,780 university students completed the ACHA-NCHA II Canadian Reference Group Survey. For research questions one to three examining the whole sample, 7,639 (17.6% of sample) cases were removed due to missing data. The majority of the missing data (5,469 participants) was the result of the MHC-SF not being completed, which likely occurred due to the inclusion of this scale at the end of the survey. Additionally, 273 cases were identified through diagnostic procedures as influential cases and were subsequently removed. The varsity athlete subpopulation of this sample was used to address research question four. A total of 312 cases were removed due to incomplete surveys as well as 72 cases were identified as influential cases through diagnostic procedures and subsequently removed for research question four analyses.

Demographic/Descriptive Analysis

The frequency and percentage of categorical variables (i.e., gender, ethnicity, year of study, sexual orientation, enrollment status, transfer student status, international student status, current residence, hours worked for pay per week, hours volunteered per week, previous help-seeking, university mental health services use, sport participation in the past 12 months, psychological distress) as well as the mean and standard deviation of continuous variables (i.e., psychological distress, MHC-SF) are found in Table 1.

Table 1. Frequency, Relative Percent, Mean, and Standard Deviation of Primary Variables. (N = 35,868)

Variable	Frequency	Percent	Mean	SD
Help-Seeking Intention				
Yes	28,086	78.3		
No	7,728	21.7		
Gender				
Female	24,373	68.0		
Male	10,493	29.2		
Non-binary	1,002	2.8		
Ethnicity				
White	22,026	61.4		
Asian	7,762	21.6		

Black	1,028	2.9
Indigenous	599	1.7
Latin American	571	1.6
Bi/Multiracial	3,333	9.3
Other	549	1.5
Year of Study		
1 st year	7,974	22.2
2 nd year	7,286	20.3
3 rd year	6,798	19.0
4 th + year	12,972	36.2
Other	838	2.3
Sexual Orientation		
Heterosexual	28,695	80.0
Asexual	2,366	6.6
Queer	3,807	10.6
Another Identity	1,000	2.8
Enrollment Status		
Full-time	33,520	93.5
Part-time	1,950	5.4
Other	398	1.1
Transfer Status		
Non-transfer student	30,991	86.4
Transfer student	4,877	13.6
International Status		
Domestic student	32,902	91.7
International student	2,966	8.3
Current Residence		
On-campus	5,080	14.2
Off-campus	16,237	45.2
Parent/Guardian's home	11,624	32.4
Other	2,927	8.2
Hours worked for pay per week		
0 hours	16,858	46.9
1-9 hours	6,302	17.6
10-19 hours	6,515	18.2
20-29 hours	2,973	8.3
30-39 hours	1,319	3.7
40 hours	1,155	3.2
>40 hours	746	2.1
Hours volunteered per week		
0 hours	22,813	63.6
1-9 hours	11,492	32.0
10-19 hours	1,247	3.5
20+ hours	316	0.9
Previous Help-Seeking		
None	20,412	56.9
Psychologist/Counsellor	5,872	16.4
Psychiatrist	256	0.7
Other Medical Professional	1,234	3.4
Religious Leader	420	1.2
Multiple Sources	7,674	21.4

MH Support at University				
Not received	28,963	80.7		
Received	6,905	19.3		
Sport participation				
Non-athlete	27,488	76.6		
Intramural	4,199	11.7		
Club	2,869	8.0		
Varsity	1,312	3.7		
Psychological Distress			3.76	2.83
None-low	14,543	40.5		
Moderate	13,482	37.6		
High	7,843	21.9		
MHC-SF			46.55	16.06

Note. SD = Standard Deviation. MH = Mental Health. MHC-SF = Mental Health Continuum-Short Form. Other Medical Professional source examples provided were general practitioner, nurse practitioner.

Primary Analysis

The results of the four-model hierarchical logistic regression that was used to examine research questions one, two, and three can be found in Table 2. Demographic and previous help-seeking variables were controlled for in Model 1 of the logistic regression.

Table 2. Hierarchical Logistic Regression with Demographic Variables, Previous Help Seeking, Sport Participation, and Psychological Distress and Well-being Predicting Help-Seeking Intention.

Model/Variable	Nagelkerke R ²	Omnibus χ^2	aOR	aOR 99% CI	
Model 1**	0.118	2845.16			
Gender					
Female			Reference		
Male**			0.70	0.65	0.75
Non-binary*			0.77	0.62	0.96
Ethnicity					
White			Reference		
Asian**			0.71	0.65	0.78
Black**			0.49	0.41	0.59
Indigenous**			0.69	0.53	0.91
Latin American			0.92	0.69	1.22
Bi/Multiracial**			0.76	0.67	0.86
Other**			0.62	0.47	0.80
Year of Study					
1 st year			Reference		
2 nd year			1.01	0.91	1.12
3 rd year			1.01	0.91	1.13
4 th + year**			1.32	1.19	1.46
Other			1.25	0.97	1.61
Sexual Orientation					

Heterosexual			Reference		
Asexual**			0.79	0.70	0.90
Queer			1.10	0.97	1.25
Another Identity			0.83	0.67	1.02
Enrollment Status					
Full-time			Reference		
Part-time*			1.24	1.04	1.42
Other			1.33	0.92	1.93
Transfer Status					
Non-transfer student			Reference		
Transfer student			0.94	0.85	1.04
International Status					
Domestic student			Reference		
International student			0.98	0.86	1.11
Current Residence					
On-campus			Reference		
Off-campus			1.10	0.99	1.24
Parent/Guardian's home			0.92	0.82	1.03
Other			1.11	0.94	1.31
Hours worked for pay per week					
0 hours			Reference		
1-9 hours			1.06	0.96	1.17
10-19 hours			1.03	0.94	1.14
20-29 hours			0.93	0.81	1.06
30-39 hours			1.12	0.92	1.37
40 hours			1.08	0.87	1.33
>40 hours			1.10	0.84	1.43
Hours volunteered per week					
0 hours			Reference		
1-9 hours**			1.23	1.14	1.33
10-19 hours			1.05	0.82	1.27
20+ hours			1.40	0.93	2.11
Previous Help-Seeking					
None			Reference		
Psychologist/Counsellor**			2.20	1.96	2.48
Psychiatrist			1.42	0.95	2.13
Other Medical Professional**			1.74	1.42	2.12
Religious Leader			1.04	0.78	1.39
Multiple Sources**			3.40	2.99	3.87
MH Support at University					
Not received			Reference		
Received**			1.57	1.37	1.79
Model 2**	0.118	21.81			
Sport participation					
Varsity			Reference		
Non-athlete			1.08	0.91	1.29
Intramural*			1.30	1.07	1.59
Club			1.19	0.96	1.47
Model 3**	0.147	725.64			

Sport participation			
Varsity	Reference		
Non-athlete*	1.24	1.04	1.48
Intramural**	1.36	1.11	1.66
Club*	1.24	1.00	1.53
Psychological Distress			
None-low	Reference		
Moderate	1.02	0.94	1.10
High	0.96	0.86	1.07
MHC-SF**	1.02	1.02	1.03
Model 4	0.147	11.48	

Note. * $p < .01$; ** $p < .001$. aOR = adjusted odds ratio. MH = Mental Health.

Research Question 1

Sport participation was added in Model 2 of the hierarchical logistic regression. According to the omnibus likelihood ratio chi-square test, sport participation provided a statistically significant contribution, $\chi^2(3) = 21.81$, $p < .001$, to the fit of the model. The overall model fit remained statistically significant, $\chi^2(40) = 2866.97$, $p < .001$, as well. This model accounted for 11.8% (Nagelkerke R^2) of the null deviance of help-seeking intention. In terms of the unique contribution of the variables of interest, intramural athletes had a statistically significant contribution to model prediction according to the Wald chi-square test, $W(1) = 11.50$, $p = .001$, while controlling for the effect of demographic variables. Further, intramural athletes were 1.30 times more likely to consider seeking help than varsity athletes. Contrarily, according to the Wald test non-athletes, $W(1) = 1.38$, $p = .240$, and club athletes, $W(1) = 4.47$, $p = .034$, did not provide a statistically significant contribution to model fit while controlling for other variables in the model. Unique statistically significant contributions for gender, ethnicity, year of study, sexual orientation, enrollment status, hours volunteered per week, previous help-seeking, and accessing university mental health services variables remained consistent with Model 1.

Research Question 2

Psychological distress and MHC-SF were added in Model 3 of the hierarchical logistic regression. According to the omnibus likelihood ratio chi-square test, the addition of psychological distress and MHC-SF demonstrated a statistically significant, $\chi^2(3) = 725.56$, $p < .001$, contribution to the fit of the model. The overall model fit was

statistically significant, $\chi^2(43) = 3592.54$, $p = <.001$, as well. This model accounted for 14.7% (Nagelkerke R^2) of the null deviance in help-seeking intention. In terms of the unique contribution for variables of interest, all sport participation categories had a statistically significant contribution to model prediction while controlling for the effect of demographic, psychological distress, and psychological well-being (i.e., MHC-SF) variables. Specifically based on the Wald chi-square test, non-athletes, $W(1) = 9.47$, $p = .002$, exhibited a statistically significant contribution to the model while controlling for other variables and were more likely to consider seeking help than varsity athletes by a factor of 1.24. Similarly, intramural, $W(1) = 15.34$, $p = <.001$, and club athletes, $W(1) = 6.82$, $p = .009$, provided a unique contribution to the model and were more likely to consider seeking help than varsity athletes by a factor of 1.36 and 1.24, respectively.

According to the Wald statistic, inclusion of indicators for students experiencing moderate, $W(1) = 0.32$, $p = .630$, and high psychological distress, $W(1) = 1.06$, $p = .304$, did not demonstrate a statistically significant contribution to model prediction while controlling for the effect of demographic variables, sport participation, and psychological well-being (i.e., MHC-SF). Psychological well-being (i.e., MHC-SF) demonstrated a statistically significant contribution to model prediction, $W(1) = 584.56$, $p = <.001$, while controlling for the other variables in the model. Further, for every unit increase on the MHC-SF, odds of help-seeking intention increased by a factor of 1.02.

Statistically significant contributions within gender, ethnicity, year of study, sexual orientation, enrollment status, hours volunteered per week, previous help-seeking, and accessing university mental health services variables remained consistent with Model 1. Additionally, results from the Wald statistic indicated that students' residing off-campus, $W(1) = 6.94$, $p = .008$, and students who have sought help from a psychiatrist, $W(1) = 8.64$, $p = .003$, demonstrated statistically significant contributions to the model while controlling for all other variables. Student's residing off-campus odds of considering seeking help was 1.12 times more likely than students that reside on-campus. Students who have sought mental health services from a psychiatrist were 1.59 times more likely than students who had not sought help to consider help for a mental health difficulty in the future. Students who identified as non-binary did not contribute demonstrate a statistically significant contribution in this model, (W) = 4.14, $p = .038$, while controlling for the effect of other variables in the model according to the Wald chi-square test.

Research Question 3

In Model 4 of the hierarchical logistic regression, a psychological distress by sport participation interaction term was added. According to the omnibus likelihood ratio chi-square test, the addition of these six interaction terms did not make a statistically significant contribution, $\chi^2(6) = 11.48, p = .075$, to the fit of the model. The overall model fit remained statistically significant, $\chi^2(49) = 3604.02, p = <.001$. This model explained 14.7% (Nagelkerke R^2) of the null deviance in help-seeking intention. No individual interaction terms provided a unique statistically significant contribution to the model according to the Wald test. In relation to the research question, varsity athletes did not demonstrate a statistically significant difference in odds of considering help-seeking from non-athletes, $W(1) = 6.06, p = .014$, aOR, 1.46, 99% aOR CI [0.98, 2.15], intramural athletes, $W(1) = 1.10, p = .295$, aOR, 1.20, 99% aOR CI [0.77, 1.90], and club athletes, $W(1) = 3.57, p = .059$, aOR, 1.41, 99% aOR CI [0.88, 2.25], between none to low and moderate categories of psychological distress. Additionally, varsity athletes did not differ in odds of considering help-seeking from non-athletes, $W(1) = 4.49, p = .034$, aOR, 1.51, 99% aOR CI [0.92, 2.49], intramural athletes, $W(1) = 2.87, p = .090$, aOR, 1.46, 99% aOR CI [0.82, 2.58], and club athletes, $W(1) = 2.62, p = .105$, aOR, 1.45, 99% aOR CI [0.80, 2.64], between none to low and high categories of psychological distress. A graphical representation examining the mean predicted probabilities for help-seeking intention based on category of psychological distress across athlete status can be found in Figure 1.

Figure 1. Hierarchical Logistic Regression Predicted Probabilities for Help-Seeking by Level of Psychological Distress and Sport Participation.

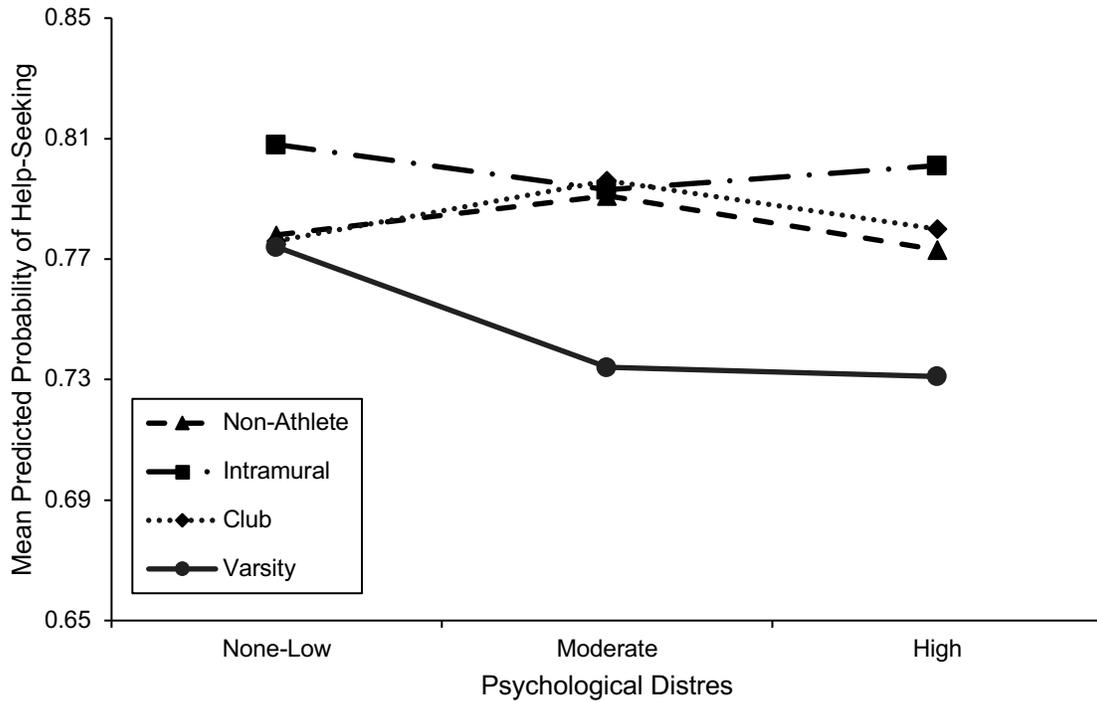


Figure 1. Mean predicted probability of help-seeking intention by none-low, moderate, and high psychological distress among non-, intramural, club, and varsity athletes. Predicted probability is the probability of considering seeking help in the future based on demographic variables, previous help-seeking, sport participation, psychological distress, and psychological well-being.

Research Question 4

Research question four explored demographic characteristics, previous help-seeking, psychological distress, and psychological well-being variables influence on odds of help-seeking intention. In Model 1 of this hierarchical logistic regression gender, ethnicity, year of study, sexual orientation, enrollment status, transfer student status, international student status, current residence, hours worked for pay per week, hours volunteered per week, previous help-seeking, access to university mental health support, psychological distress, and MHC-SF were added. Results for this analysis can be found in Table 3.

Table 3 Logistic Regression for Demographic Variables, Previous Help-Seeking, and Psychological Distress and Well-being Predicting Help-Seeking Intention Among Varsity Athletes. (N = 1,254)

Variable	Frequency	Percent	<i>W</i>	<i>p</i>	aOR [CI 99%]
Help-Seeking Intention					

Yes	977	77.9			
No	277	22.1			
Gender					
Female	782	62.4	Reference		
Male	450	35.8	4.08	.043	0.72 [0.48, 1.09]
Non-binary	22	1.8	0.20	.659	1.42 [0.18, 11.17]
Ethnicity					
White	907	72.3	Reference		
Asian	174	13.9	0.20	.652	0.90 [0.50, 1.62]
Black	41	3.3	1.33	.249	0.64 [0.23, 1.75]
Indigenous	14	1.1	1.37	.241	3.54 [0.22, 56.93]
Latin American	8	0.6	<.01	.999	>100 [0.00, >100]
Bi/Multiracial	98	7.8	1.52	.218	0.72 [0.37, 1.43]
Other	12	1.0	0.56	.456	1.98 [0.19, 20.76]
Year of Study					
1 st year	302	24.1	Reference		
2 nd year	338	27.0	4.16	.041	1.59 [0.89, 2.87]
3 rd year	229	18.3	0.13	.721	1.09 [0.58, 2.06]
4 th + year*	375	29.9	7.16	.007	1.93 [1.03, 3.62]
Other	10	0.8	0.65	.442	2.59 [0.12, 54.59]
Sexual Orientation					
Heterosexual	1,015	80.9	Reference		
Asexual	119	9.5	0.04	.843	1.05 [0.55, 2.03]
Queer	98	7.8	2.51	.113	1.73 [0.71, 4.21]
Another Identity	22	1.8	3.36	.067	4.21 [0.56, 31.69]
Enrollment Status					
Full-time	1,195	97.6	Reference		
Part-time	29	2.3	3.06	.080	6.23 [0.42, 92.09]
Other	1	0.1	<.01	>.999	>100 [0.00, >100]
Transfer Status					
Not transfer student	1,075	85.7	Reference		
Transfer student	179	14.3	0.64	.425	1.18 [0.69, 2.02]
International Status					
Domestic student	1,157	92.3	Reference		
International student	97	7.7	6.56	.010	2.06 [1.00, 4.26]
Current Residence					
On-campus	261	20.8	Reference		
Off-campus	618	49.3	0.12	.725	0.92 [0.51, 1.67]
Parent/Guardian's home	331	26.4	0.15	.696	0.91 [0.49, 1.68]
Other	44	3.5	0.91	.340	0.67 [0.22, 2.00]
Hours worked for pay per week					
0 hours	656	52.3	Reference		
1-9 hours	277	22.1	1.42	.234	1.27 [0.78, 2.12]
10-19 hours	194	15.5	1.05	.306	1.26 [0.71, 2.24]
20-29 hours	66	5.2	0.13	.720	0.88 [0.36, 2.16]
30-39 hours	21	1.7	<.01	.998	>100 [0.00, >100]
40 hours	22	1.8	0.09	.761	0.84 [0.19, 3.75]
>40 hours	18	1.4	4.14	.042	8.84 [0.56, 139.5]
Hours volunteered per week					
0 hours	683	54.5	Reference		
1-9 hours	508	40.5	0.19	.665	0.93 [0.62, 1.41]

10-19 hours	47	3.7	2.51	.113	0.56 [0.21, 1.44]
20+ hours	16	1.3	<.01	.998	>100 [0.00, >100]
Previous Help-Seeking					
None	802	64.0	Reference		
Psychologist/Counsellor*	202	16.1	6.73	.002	1.96 [1.01, 3.80]
Psychiatrist	7	0.6	<.01	.981	0.98 [0.09, 10.73]
Other Medical Professional	33	2.6	1.96	.162	2.12 [0.53, 8.49]
Religious Leader	10	0.8	0.32	.574	1.61 [0.18, 14.37]
Multiple Sources**	200	15.9	14.12	<.001	2.95 [1.41, 6.21]
MH Support at University					
Not received	1,034	82.5	Reference		
Received**	220	17.5	14.88	<.001	3.49 [1.52, 8.04]
Psychological Distress					
None-low	555	44.3	Reference		
Moderate*	480	38.2	8.40	.004	0.61 [0.39, 0.95]
High	219	17.5	4.32	.038	0.60 [0.32, 1.13]
MHC-SF**	M = 52.04	SD =14.42	24.47	<.001	1.03 [1.01, 1.04]

Note. * $p < .01$; ** $p < .001$. W = Wald chi-square test. aOR = adjusted odds ratio. MH = Mental health.

The Hosmer and Lemeshow test for Model 1 was not statistically significant, $\chi^2(8) = 9.51$ $p = .301$, indicating adequate model fit. The addition of the demographic characteristics, previous help-seeking, psychological distress, and psychological well-being demonstrated a statistically significant contribution to model fit, $\chi^2(40) = 193.69$, $p < .001$, according to the omnibus likelihood chi-square statistic. Further, this model accounted for 21.9% (Nagelkerke R^2) of the null deviance in help-seeking intention.

Student athletes in fourth year or above demonstrated a statistically significant contribution to model prediction, $W(1) = 7.16$, $p = .007$, while controlling for the influence of other variables in the model. Further, the odds of considering help-seeking increased by a factor of 1.93 compared to student athletes in their first year. Student athletes who had previously sought help from a counsellor/psychologist, $W(1) = 6.73$, $p = .002$, and those who sought help from two or more sources of professional support, $W(1) = 14.12$, $p < .001$, also demonstrated a statistically significant contribution to model prediction of help-seeking intention while controlling for other variables in the model. Odds of considering help-seeking in the future for mental health difficulties for student athletes who had sought help from a counsellor/psychologist or multiple sources increased by a factor of 1.96 and 2.12 compared to student athletes who had not sought help previously, respectively. Student athletes who had received mental health support at their current university exhibited a statistically significant contribution to model prediction, $W(1) = 14.88$, $p < .001$, while controlling for other variables in the model. Further, the

odds of those who had received previous mental health support at their university increased by a factor of 3.49 compared to those who had not.

According to the Wald test, inclusion of the indicator for student athletes experiencing moderate psychological distress demonstrated a statistically significant contribution to model prediction, $W(1) = 8.40$, $p = .004$, while controlling for the effect of other variables in the model. Student athletes experiencing a moderate level of distress were 40% less likely to consider seeking help in the future compared to student athletes with none to low levels of psychological distress. Scores on MHC-SF (i.e., psychological well-being) also exhibited a statistically significant contribution to model prediction, $W(1) = 24.47$, $p = <.001$, while controlling for other variables in the model. Further, odds of considering help-seeking increased by a factor of 1.03 for every unit increase in MHC-SF.

In Model 2 of the hierarchical logistical regression interaction terms of sexual orientation, gender, ethnicity, by psychological distress and MHC-SF, respectively, were added. Additionally, previous help-seeking and access to university mental health services interaction with psychological distress categories was explored. The Hosmer and Lemeshow test was not statistically significant for this model, $\chi^2(8) = 0.80$ $p = .999$, indicating adequate model fit. The addition of the interaction terms did not exhibit a statistically significant contribution, $\chi^2(42) = 64.25$, $p = .015$, to model fit. The overall model fit remained statistically significant, $\chi^2(82) = 257.94$, $p = <.001$. This model accounted for 28.5% (Nagelkerke R^2) of the null deviance in help-seeking intention.

No interaction term demonstrated a statistically significant contribution to model fit while controlling for other variables in the model according to the Wald chi-square test. Specifically, the interaction terms of gender by mental well-being, $W(2) = 7.20$, $p = .027$, and gender by psychological distress, $W(4) = 1.27$, $p = .866$, did not demonstrate a statistically significant difference in model prediction. Similarly, ethnicity by mental well-being, $W(6) = 6.54$, $p = .366$, and psychological distress, $W(11) = 3.76$, $p = .976$, as well as sexual orientation by mental well-being, $W(3) = 4.48$, $p = .214$, and psychological distress, $W(6) = 2.53$, $p = .865$, did not exhibit a statistically significant contribution to model prediction. Psychological distress by previous help-seeking, $W(8) = 1.17$, $p = .997$, and receiving mental health support at the current university, $W(2) = 1.46$, $p = .483$, did not demonstrate a statistical difference in model prediction.

Overall, student athletes who were in their fourth year or above, had previously sought help from a counsellor/psychologist or multiple sources, had received mental health support from their current university, or had experienced greater psychological well-being demonstrated a statistically significant increase in odds of intending to seek help for a mental health difficulty compared to their respective reference groups. Contrarily, moderate psychological distress was associated with reduced odds of help-seeking intention when compared to student athletes experiencing none to low levels of psychological distress.

Chapter 4. Discussion

The primary aim of the present study was to examine how the association of psychological distress with help-seeking intention varies between student athletes and non-athlete students. A secondary aim was to explore differences in personal characteristics and intrapersonal variables prediction of help-seeking intention among student athletes. The hypothesis for research question one that sport participation added to the prediction of help-seeking intention was supported. The hypothesis for research question two was partially supported, as psychological distress and well-being added to the model predicting help-seeking intention. However, psychological well-being provided unique contributions to the model whereas psychological distress did not. The hypothesis for research question three, which is most aligned with the overall aim of the present study, was not supported because there was not a statistically significant difference in the prediction of help-seeking intention in relation to psychological distress among student athletes and non-athlete students. Research question four was exploratory, thus no specific hypotheses were made. The analysis for this research question suggests student athletes who are in fourth year or above, who had previously sought help from a counsellor/psychologist or multiple sources, who had received mental health support from their current university, or who had experienced greater mental well-being demonstrated a greater likelihood of intending to seek help. Whereas, student athletes who perceived greater psychological distress demonstrated reduced odds to seek help in the future.

Research Question 1

It was hypothesized for research question one that sport participation would significantly increase model prediction of intention to seek help, above and beyond demographic variables and previous help-seeking. This hypothesis was supported, which suggests that despite the salience of demographic variables and previous help-seeking, sport participation adds to the prediction of help-seeking intention. The present study's finding partially aligns with previous research (e.g., Watson, 2005) that suggests there is differing levels of help-seeking intention across levels of university sport participation. However, the only observed difference was that intramural athletes provided a unique contribution to help-seeking intention prediction while controlling for

other variables and were at significantly increased odds to intend to seek help compared to varsity athletes. Examining help-seeking across level of sport participation in university has not been examined previously, thus the noted differences between intramural and varsity athletes is a novel finding. One possibility for the difference is that involvement in intramural sports could provide a source of social support that increases the comfortability in seeking help for a mental health difficulty. This notion is consistent with previous research that indicates that perceived social support is positively associated with informal and formal help-seeking intention (Kenny et al., 2016). Intramural athletes' potential increase in perceived social support due to being part of a team may be similar to that of varsity athletes. However, varsity athlete's perceived social support may be overshadowed by their fear of losing eligibility or playing time due to mental health difficulties.

Despite sport participation adding a statistically significant contribution to the prediction of help-seeking intention, the absence of a statistically significant difference between student athletes and non-athlete students was surprising. However, once psychological distress was added to the model, there was a statistically significant difference between varsity athletes and non-, intramural, and club athletes. This is salient because the lower odds of student athletes intending to seek help compared to non-athlete students aligns with previous research findings (Eisenberg, 2014; Watson, 2005). Further, the observed difference between these two groups while controlling for demographic variables and previous help-seeking contradicts the evidence presented by Barnard (2016) and Hillard et al., (2018) who suggested demographic variables or previous help-seeking may account for the previously observed differences.

Given the hypothesis research question three was not supported, it is hard to firmly suggest that psychological distress may be the sole reason for the notable difference in findings in this study compared to Barnard (2016) and Hillard et al., (2018). One alternative is that these different findings from recent research may reflect the differing emphasis on athlete mental health by Canadian (i.e., U Sport) and American (i.e., NCAA) intercollegiate athletic governing bodies. Student athletes that were examined in the Barnard (2016) and Hillard et al., (2018) likely had received significant support and targeted mental health promotion by the National Collegiate Athletic Association (NCAA). Mental health promotion has been a prominent NCAA initiative since their creation of a mental health task force in 2013. On the other hand, U Sport

student athletes, who make up most of the varsity athletes in the present study, likely have not received the same level of mental health programming. The difference between these two populations of student athletes is emphasized by U Sport's development of a mental health subcommittee and mental health best practices occurring several years after the NCAA. Thus, Canadian student athletes' perception of availability and normalization of seeking mental health support appears to be lagging behind that provided to their American counterparts. Nevertheless, this finding is important for this area of research because it reaffirms that student athletes are a unique population that national and regional athletic bodies in Canada as well as individual post-secondary institutions should consider for targeted interventions to increase help-seeking for mental health difficulties.

Research Question 2

It was hypothesized for research question two that psychological distress and psychological well-being would significantly increase model prediction of the intention to seek help, above and beyond demographic variables, previous help-seeking, and sport participation. The hypothesis was partially supported, which suggests psychological distress and well-being are important for predicting help-seeking intention among university students. However, psychological distress did not provide a unique contribution to the prediction of help-seeking intention, whereas psychological well-being did. The positive association of psychological well-being with increased help-seeking intention appears to be novel given the limited previous research. One potential reason for this finding is that psychological well-being is likely linked to other factors such as increased perception of social support and positive expectations for seeking help from a mental health professional. This may be reflected in some of the MHC-SF items that assess perception of belonging to a community and experiencing trusting relationships. Still, the underlying reason that psychological well-being is positively associated with increased help-seeking intention may be difficult to determine given the potential bidirectional associations between psychological variables (e.g., social support) and psychological well-being.

The unsupported hypothesis about psychological distress was unexpected because it is not consistent with previous findings that suggest that greater psychological distress is associated with increased help-seeking intention (Biddle et al., 2004; Leahy et

al., 2010; Vogel & Wei, 2005). One explanation may be that psychological distress varies across demographic variables (e.g., gender) in the overall student sample which has been observed in other studies (Biddle et al., 2004). Therefore, the potential influence of demographic characteristics or previous help-seeking may have accounted for this unsupported hypothesis.

Research Question 3

The hypothesis for research question three was not supported. The hypothesis was that there would be significant differences in association of psychological distress with intention to seek help across non-, intramural, club, and varsity athletes. Specifically, the hypothesized difference at the moderate level was not statistically significant between student athlete and non-athlete students. Visually, however, it is evident that the predicted probability of help-seeking intention in the model differs between varsity athletes and the other levels of sport participation at the moderate level based on Figure 1. Further, the change for non-, intramural, and club athletes across levels of psychological distress differs significantly from varsity athletes. Particularly, varsity athletes' predicted probability decreases at the moderate level compared to the none to low category of psychological distress, whereas club and non-athletes increases slightly.

Given the visual differences, the hypothesis not being supported may be the result of using a more conservative alpha value. Alternatively, the standard error among the four sport participation groups was around 10% of predicted probability per level of psychological distress, which suggests there is likely some overlap of predicted probability among the four groups. This variability in prediction across groups would lead to a greater likelihood of not meeting statistical significance. Therefore, despite the interaction not meeting statistical significance, further exploration of the perception of psychological distress as a potential differentiator between student athletes and non-athlete students may be warranted based on a visual inspection of the data.

Research Question 4

Research question four was exploratory, therefore no specific hypotheses were made. The results of statistical analysis suggest that student athletes who are in fourth

year or above had previously sought help from a counsellor/psychologist or multiple sources, had received mental health support from their current university, or had experienced greater mental well-being demonstrated a greater likelihood to intend to seek help compared to their respective reference groups. Whereas, student athletes who perceived moderate psychological distress demonstrated reduced odds with regard to seeking help in the future compared to athletes who experienced none to low levels.

The finding that student athletes in fourth year and above were more likely to endorse intention to seek help in the future compared to first year student athletes aligned with the overall student sample results. Generally, first year student athletes may be less likely to seek help for a multitude of reasons such as being less aware of campus resources, having less self-awareness when experiencing difficulties compared to older student athletes, and potentially having less experience actually seeking help. These explanations may not be unique for student athletes as there were similar findings with the overall sample of university in the present study. However, the observed differences with regard to the year of study could be attributed to student athlete specific factors as well.

One potential reason is that being a new member of a team may lead first year student athletes to feel less secure in their role on the team because the transition to university for first year athletes is associated with loneliness, isolation, reduced playing time, and reduced social integration (McFarlane, 2014; Tracey & Corlett, 1995). This experience would usually be in contrast to that of student athletes in their fourth year or above. Therefore, a first-year student athlete may be less likely to seek help for a mental health issue because they do not want to risk losing potential playing time or being seen as an outcast on the team. Concern over teammates' perception of those seeking counselling has been suggested as a significant barrier to help-seeking for student athletes in previous research (Lopez & Levy, 2012). In comparison, a fourth or fifth-year student athlete would be expected to be more secure in their role on the team and less concerned about how teammates perceive them because of their seniority and pre-existing relationship within the team. Thus, they may be more willing to seek help because they do not face the same potential repercussions as a first-year student athlete.

The finding of previous help-seeking is also aligned with the overall sample results for university students. The positive association of previous help-seeking from a mental health professional (i.e., counsellor, psychologist) with help-seeking intention is supported by previous research with the general population (e.g., Vogel et al., 2005) and athletes (e.g., Gulliver et al., 2012b). Similarly, the association of previous help-seeking at a student athletes' current academic institution and increased help-seeking intention is similar to the present study's overall university student sample and previous research (Oswalt et al., 2018). These findings may be explained by Demyan and Anderson's (2012) suggestion that previous help-seeking is associated with reduced fear of the intervention which can lead to greater willingness to seek help. Evidently, this finding may suggest that previous help-seeking reduces some of the stigma for help-seeking because it increases the awareness of the risk and utility of this behavioural process.

Although this previous help-seeking from a mental health professional or from current university resources is consistent with previous research, the significantly increased likelihood that a student athlete would seek help for a mental health difficulty if they have previously seen multiple sources is a unique finding. This finding is unique because often only a single or specific source is taken into account in help-seeking research. All three previous help-seeking findings may also be logically explained by previous support given that multiple mental health and/or medical professionals could put individuals at a greater likelihood of having had a positive experience with a provider. A positive experience with previous help-seeking is an important factor for future help-seeking intention because it can result in individuals experiencing a greater expectation of treatment outcome and reduced fears or stigma around help-seeking (Rickwood et al., 2005; Vogel et al., 2005). Likewise, a positive previous experience with help-seeking has been acknowledged as a facilitator of future help-seeking by elite young athletes (Gulliver et al., 2012b).

The increased likelihood of help-seeking for student-athletes experiencing greater psychological well-being is similar to that found with the general student population in this study as well. This finding is contrary to the limited research examining this association (Richardson, 2017). Similar to discussion points made regarding university students in general, this finding suggests that student athletes who experience greater psychological well-being see the benefit of seeking help in the future. On the other hand, this finding also suggests that student athletes who experience mental

health issues are less likely to seek help. This result is of concern given that individuals with greater psychological well-being likely need less support from a mental health professional compared to those who are experiencing difficulties. However, lower levels of psychological well-being may be indicative of lower life satisfaction rather than post-secondary student's inability to cope. An inability to cope with current levels of stress may be associated more with psychological distress. Hence, another novel finding that is important to consider is the reduced likelihood of seeking help for student athletes with moderate psychological distress because it has not been explored explicitly in previous research.

This finding is important because it suggests that student athletes may perceive psychological distress as a potential threat, resulting in a reluctance to consider seeking help. Pinkerton et al., (1989) have suggested that student athletes may be in denial of their emotional problems and rather rely on the team system for support when experiencing psychological distress. Consequently, this denial may result in a resistance to seeking professional help when experiencing psychological distress. Alternatively, this finding could provide some support for the hypothetical model suggested in the introduction that the role of masculine norms and perception of toughness may potentially result in student athletes' perception of moderate psychological distress not warranting professional help. This finding may be the result of a combination of emotional denial and reliance on team systems by student athletes as well as the perception that certain levels of distress do not warrant seeking help from a mental health professional. Additionally, fear of losing playing time or eligibility may account for the particular decrease in help-seeking intention from none to minimal compared to moderate levels of psychological distress. These fears may be particularly relevant for this finding because student athletes may perceive that this level of distress is a difficulty they can just push through compared to high levels of distress. Anecdotal evidence suggests student athletes are likely to attempt to push through this level of distress until there is an additional stressor (e.g., injury, relationship break up) that makes them feel an urgency to seek help. Unfortunately, waiting until there are multiple issues or increased psychological distress can be problematic because treatment may of necessity be more intensive and more disruptive to playing time or involvement with the team because of the severity of distress.

The implication of this finding is that student athletes who experience moderate psychological distress may be at a crucial point with regard to being encouraged to seek help. When taken into consideration with previous help-seeking experiences, this would suggest that having a trusted mental health referral source for student athletes is an important consideration for athletic departments. At a bare minimum the introduction of these mental health and medical professionals to varsity athletes could help facilitate future help-seeking intention. This is supported by research that has demonstrated that student athletes acknowledge the benefit of having a trusting relationship with a specific mental health provider (Giovannetti et al., 2019). Moving beyond an introduction, mandatory check-ins may also increase familiarity with sources. One potential solution is brief mandatory check-ins for incoming student athletes or annual check-ins prior to the school year with a designated mental health professional. This check-in would be similar to, and could be a part of, the requirement for a physical pre-participation exam that all university athletes engage in. The intention here is that these check-ins could substantially improve student athletes' help-seeking intention if a mental health difficulty does arise because they are familiar with the provider. However, these check-ins would be resource intensive, particularly with universities that have several hundred student athletes. In reflecting on the results of the current study, addressing the role of psychological distress in help-seeking intention among student athletes should likely be undertaken structurally among teams or athletic departments and individually by shaping student athlete perceptions and knowledge.

In terms of structural changes to increase help-seeking behaviour, using support staff to help identify and refer athletes that are struggling to a mental health professional could be beneficial. This route could help reduce the reliance on student athletes' ability to identify when they should seek help and provide a bridge to proper mental health supports. For example, athletic therapists are a support staff that is uniquely placed to provide a bridge to resources. The close contact athletic therapists have with athletes on a daily basis as well as interacting with injured athletes that may be at a greater risk of experiencing psychological distress could allow for easier identification of struggling athletes. However, athletic therapists often lack training in identification of mental health difficulties or comfortability with addressing these concerns with student athletes. Another well positioned support staff would be a mental performance consultant (MPC). MPCs are sport psychology practitioners that focus on performance related difficulties;

thus, they are likely to have a better working knowledge identification of psychological difficulties. As MPCs can be embedded with specific teams, pre-existing relationships with athletes may make them a trusted individual to refer athletes to a mental health professional. The use of MPCs at the university level is rare due to financial constraints, thus it may not only be available to specific institutions. Another emerging area is the use of peer support programs to provide familiarity with support as well as normalize mental health experiences among student athletes (Bachelor & DiCenzo, 2017, September 17).

Logically, student athletes' providing informal peer support to other student athletes should increase the likelihood of seeking help because of the mutual providing understanding of the difficulties this population would experience. Moreover, research suggests that student athletes prefer mental health professionals who have knowledge of or have played intercollegiate sports (Lopez & Levy, 2013). Therefore, knowledge and experience of intercollegiate sports could be considered an essential factor for peer support programs as well. However, there are few of these programs in existence and a paucity of research on their effectiveness. Although there appears a logical benefit of peer support programs, they are not without their limitations of ensuring proper training and crisis protocols in addition to potential confidentiality concerns among the tight knit student athlete community.

Mental health screening for athletes may provide another avenue that is less resource intensive and could target athletes in the moderate range where help-seeking intention decreases. Similar to using support staff or peer support, this proactive method could allow for identification and intervention prior to student athletes' experiencing more severe psychological distress or mental health difficulties. Universal mental health screening has been suggested before (e.g., Neal et al., 2015), but has not been explored in research until recently (e.g., Donohue et al., 2019). Mental health screening by university athletic departments has shown encouraging results for the increased identification of struggling student athletes and may allow for greater access to and the encouragement of student athletes experiencing mental health difficulties to seek help (Donohue et al., 2019; Tomalski et al., 2019). This approach may provide a strategy for universities to identify student athletes at the moderate range of psychological distress where intention to seek help is reduced and provide them with supports. Consequently, this lessens the need for student athletes to perceive their distress level and identify that

seeking help is warranted. In sum, the use of dedicated mental health professionals, psychological check-ins, use of support staff, peer support, or mental health screening may be best delivered in combination to provide structural changes that could positively impact help-seeking intention among student athletes.

In terms of individual factors that could be modified, mental health literacy interventions for student athletes have shown promise for increasing help-seeking intention (Chow et al., 2020; Gulliver et al., 2012a), but still do not show consistent results (Liddle et al., 2019). These types of intervention focus on increasing individuals' awareness of potential problems, decreasing mental health stigma, and increasing the awareness of resources (Gulliver et al., 2012a). The present study's finding that psychological distress predicts lower help-seeking intention suggests that increased mental health literacy of student athletes could be valuable in recognizing the importance of seeking help when experiencing even moderate psychological distress. Overall, the results of this study indicate that student athletes' help-seeking intention for mental health difficulties diverge from non-athlete students and that psychological distress may be an important differentiator between the two groups. Further, these differences may be important for informing university athletic department's support of student athlete mental health.

Limitations

There are three main limitations to the current research. First, the outcome variable was dichotomous with yes or no response options. This is a limitation because having a narrow sampling of help-seeking intention reduces variability which may have reduced the likelihood of detecting small differences or variation based on individual or interaction terms. This limitation is particularly salient for the analysis involving the exploration of differences between student athletes and non-athlete students help-seeking intention by level of psychological distress. A continuous scale that can capture larger variability in scores such as the General Help-Seeking Questionnaire (GHSQ; Wilson et al., 2005) may be a more appropriate measure of help-seeking intention in future studies. There were potential ways to construct an overall help-seeking variable by combining several variables to increase variance in outcome measure but due to temporality issues (e.g., inconsistent time periods referenced in items) this would create more problems than it would solve. Sample size and a reduction of critical values are

both ways that this limitation was addressed. The balancing of power and alpha level allows for detection of very small effects and ensuring that a higher critical value has to be met for statistical significance. Nonetheless some potential differences in predicting help-seeking intention may not have met statistical significance due to this balance.

A second concern is the representativeness of student athletes and students in the sample. Although the sample size is large, students self-selected into the survey at their respective universities. Further, the balance of gender in the study differs from the gender breakdown enrolled at Canadian post-secondary institutions (Statistics Canada, 2020). Similarly, student athletes at university usually have a comparable number of male and female athletes due to increased focus on equality in athletic opportunities. This issue with representativeness may have impacted the lack of gender differences in help-seeking intention among student athletes. However, the higher proportion of female research participants is likely not uncommon for research at universities.

Third, potentially important underlying variables (e.g., stigma, athlete identity, masculine norms) for help-seeking are not measured in the study. External validity may be slightly reduced because of this limitation which arises out of conducting a secondary analysis rather than a prospective study. External validity is impacted because some of these underlying variables may mitigate the unique role that psychological distress could play in help-seeking. Further, sport participation is being considered as a proxy for athlete identity and masculine norms. Similarly, previous help-seeking may be associated with the reduced experience of mental health stigma. Generalizability would be increased and greater clarity of the role of these factors would be achieved if these potentially underlying variables were actually measured. Ultimately, this limitation may be best addressed in future research that uses a prospective design to factor in these potentially important variables.

Future Directions

Future research should aim to address the present study's limitations in the following ways. Use of a continuous outcome variable in future studies could better capture the nuances and variability in the student and student athlete population. The GHSQ (Wilson et al., 2005) and Attitudes Towards Seeking Professional Psychological Help (ATSPPH; Fischer & Turner, 1970) have been utilized in previous research. This

may be an essential next step for assessing the role of psychological distress and how it may influence student athlete and non-athlete student differences in help-seeking intention. A similar argument can be made for using a previously validated scale like the Kessler-10 (Kessler et al., 2002) for psychological distress, rather than the one from the present study.

Research with a more balanced gender distribution with regard to student athletes would be helpful for capturing gender differences in help-seeking intention. An equal proportion of binary gender (i.e., male and female) categories may be important for future studies to determine how gender influences perception of psychological distress and how it is associated with help-seeking intention. Lastly, including underlying variables such as stigma, athletic identity, or mental health literacy might also allow for a better understanding of the role of psychological distress predicting help-seeking. These variables would be helpful to determine if psychological distress demonstrates a unique prediction of help-seeking intention above and beyond other well-researched factors influencing help-seeking. Ideally, future research would address all three limitations with a comparable sample size to the present study, but that may require more resources to be successfully undertaken.

In addition to addressing study limitations, building on the present study findings is also important for future research. The exploration of perception of psychological distress and the association with help-seeking could be illuminating if conducted with qualitative methods. Qualitative methods could provide increased insight into the help-seeking process of student athletes who experience different levels of psychological distress and provide better guidance on how best to support this unique population. Further, this in-depth knowledge could allow for more targeted interventions or screenings that are driven by student athlete experiences of these processes. These additional supports, screenings, and interventions are essential for better supporting student athletes on university campuses.

Conclusion

Student athletes are a subpopulation of university students who experience unique stressors (e.g., athletic performance pressure, time constraints, travel requirements, academic pressure) in addition to the stressors experienced by a typical

university student (Neal et al., 2015). Despite comparable rates of mental health difficulties (Rice et al., 2016), student athletes have been found to be less likely to seek help than non-athlete students (Eisenberg, 2014). However, recent findings examining help-seeking differences between these two groups suggest that variables such as demographic characteristics may be influencing these differences (e.g., Hillard et al., 2019). Thus, understanding if there is a difference in help-seeking between the groups and what influences these differences is important to better support the unique population of student athletes.

The aim of the present study was to examine how the association of psychological distress with help-seeking intention varies across student athlete and non-athlete students as well as among student athletes. The results of the study indicate that student athletes differ in intention to seek help from their non-athlete peers and suggest that perception of psychological distress may be a potential reason for this difference that requires further investigation. Additionally, the results indicate that student athletes may need targeted interventions to increase help-seeking and/or identify student athletes who may be experiencing mental health difficulties. This research expands upon the growing body of student athlete help-seeking research and further reinforces the importance of investigating interventions or screening strategies to better support this unique group.

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Appendix.

Data Use Disclaimer

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