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An Exploration into the Experiences of Student-Athletes

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Abstract

This paper investigated the experiences of student-athletes in British Columbia and aimed to address the limitations highlighted by the developers of the College Student-Athlete Life Stress Scale (CSALSS). By using the College Student-Athletes Life Stress Scale, factors which were the leading contributors of stress among student-athletes in British Columbia (BC) were identified. Furthermore, researchers discovered coaching relationships and injuries are significantly associated with the largest fluctuation in overall stress levels experienced at the population level.

Keywords: student-athletes, stress, university, College Student-Athletes Life Stress Scale

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An Exploration into the Experiences of Student-Athletes

Student athletes may face more stressors than other students throughout their time in university (Pritchard & Wilson, 2005). This population faces similar psychological stressors and difficulties compared to regular students when attempting to adjust to both social and academic aspects of campus life, however, student athletes have additional demands placed on them because of their participation in athletics. Taking part in sports requires a significant time commitment for practices, rigorous travelling schedules, team meetings, and games. For some athletes, this intense sports regime may result in mental and physical exhaustion; and the physical load may also lead to injuries, which could be a further source of mental stress (Vetter & Symonds, 2010). Participating in sports serves as a boost to self-esteem, source of enjoyment, and contributes to one's self-identity (Wankel & Berger, 1990). Therefore, being injured and away from the activities that form self-identity can take a toll on the psychological well-being of student athletes. Student athletes also have less time for their educational responsibilities, which could result in anxiety as they struggle to allocate the appropriate amount of time and mental resources to complete their academic requirements. In addition, how well one can perform determines a player's worth on a team; as a result, the demand to perform well becomes even more important to players if they want to contribute to team goals. The College Student Athletes' Life Stress Scale (CSALSS; Lu et al., 2012) is a measure that can determine which factor(s) are responsible for the highest levels of stress among certain student athletes. The present research examined which factor(s) contributed the most stress among B.C. student athletes.

Performance Demand

Coaches expect their players to perform well to attain collective group goals. Most athletes want to be seen positively by coaches and teammates; however, on a sports team the primary way to be seen in a positive light individually is through productive performance (Brown & Rogers, 1991; Greenberg et al., 1982; Naylor, 2007). The common practice of keeping track of individual player statistics and team standings further emphasizes the importance of performance at both an individual (micro) and team (macro) level. Consistent high-performance demands that focus on winning negatively affect the ability of student athletes to improve and perform because they begin to conceptualize that the success and failures are outside their control (Mallett, 2005; Naylor, 2007). Within student athletes, there is a possibility of deterioration in effort, confidence, motivation, and the overall enjoyment in the sports they play (Pelletier et al.,

1995; Salguero et al., 2004). The risk for such instances increases when mental health is not addressed, and inadequate mental health resources are provided to student athletes. A metanalysis of 20 studies, that was conducted about the pre-existing availability of mental health resources for collegiate student athletes, indicated that further resources are required for student athletes. Investing in resources that gear towards the awareness of mental health and services, such as an increased number of mental health professionals with sport backgrounds, could be beneficial for student athletes (Moreland et al., 2018). Participating in high-level sports requires athletes to develop cognitive coping mechanisms to manage the demands of playing sports. However, not all cognitive coping mechanisms have a positive outcome. Research conducted by Crocker and Graham (1995) has shown high usage of self-blaming when experiencing performance pressure. Self-blame occurs when individuals accept personal responsibility for their problems in performance. As Janoff-Bulman (1979) delineated, individuals engage in two forms of self-blame with one being "characteristic self-blame", where individuals blame one's character, and the other being, "behaviour self-blame" where individuals blame one's behaviour. Further research into both characteristic and behaviour self-blame reveals that characteristic blame is strongly associated with depression because individuals who take responsibility for negative events often experience guilt and shame (Lazarus, 1991; Peterson et al., 1981; Weiner, 1985).

Sports Injuries

Injuries sustained while playing sports can be devastating not only to one's physical health, but also to an individual's mental health. Emotional responses to sports injuries have been well researched. According to Suinn (1967), three factors determine the psychological response of an athlete to their injury: the psychological level of functioning prior to injury, the nature of injury (including location, severity, duration of rehabilitation and associated lifestyle changes), and the meaning and interpretation of injury to the athlete. Athletes who have excessive negative interpretations of an injury will most likely have negative thoughts such as fear of re-injury, loss of self-identity, anger, frustration, depression, disbelief, and irrational thinking (Beck, 1970; Thatcher et al., 2007). Other responses to sports injuries found in athletes include decreased motivation and altered sleeping patterns (Forsdyke et al., 2016; Putukian, 2016). For example, an athlete's fear of being re-injured can impede their subsequent rehabilitation process because they may be reluctant to fully engage in rehabilitation activities, and the lack of participation will reduce their progress in rehabilitation while lowering chances of a full recovery from the injury

(Forsdyke et al., 2016; Hsu et al., 2017). These negative interpretations of injuries or being injured usually occur because physical condition and athletic ability contribute to self-worth in athletes, and when they become injured, much of what athletes have worked hard for is taken away. This can have lasting impacts for athletes (Faris, 1985). Research has also emphasized that several emotions are simultaneously experienced during the rehabilitation process. Athletes encounter feelings of separation, loneliness, and a loss of independence because they are reliant on others when rehabilitating, and injured athletes are unable to contribute to their team in the same ways prior to being injured (Lewis-Griffith, 1982). Emotions such as anger, depression, and anxiety further worsen injuries because of the physiological reactions (e.g., muscle tension, reduced blood circulation to injured area) such emotions can illicit (Lynch, 1988).

Academic Demands

While the emphasis is on athletic commitment and achievements, student athletes also need to be mindful of their academic requirements. A study conducted by Paule and Gibson (2011) found that student athletes generally are able to only dedicate 10-15 hours per week to their studies because the intense sports participation impedes their ability to study. Given that academic semesters are only four months, if students do not keep up with course material, catching up can be a challenge. With a busy schedule participating in training, games, and travelling, student athletes may face fatigue. Given this rigorous schedule, student athletes might value recovery over schoolwork, which results in falling behind in academic work (Paule & Gibson, 2011). For most student athletes, the time for studying is late at night because of the rigorous athletic schedule athletes have during the day. However, night is not the ideal time of day to devote to studying, as there is a relationship between sleeping habits and academic performance. Students that have a later bedtime during the weekdays and weekends have lower academic performances (BaHammam et al., 2012; Trockel et al., 2000). Research has found that having an inadequate night's sleep can impact schoolwork the next day (Paule & Gibson, 2011). Students who delay their bedtimes diminish their ability to recall school material learned in class because sleep deprivation affects memory by reducing the brain's ability to encode and consolidate information gained through learning (Dotto, 1996; Killgore & Weber, 2014). Student athletes who are unable to attain enough sleep increase their likelihood of experiencing anxiety and irritability (Babson et al., 2010; Oginska & Pokorski, 2006). Furthermore, symptoms of depression, such as depressive thinking, and loss of interest in pleasurable activities, are also

likely to emerge when one is sleep deprived (Kahn-Greene et al., 2007). More specific to athletes, sleep deprivation is also related to slower reaction times, slower processing speed, and difficulties with attention and visual perception skills (Brauer et al., 2019).

Mental Health of Student Athletes

Considering these factors, student athletes can find themselves under an increasing amount of stress and anxiety, causing significant psychological distress (Hwang & Choi, 2016). As a result, along with severe impacts in both academic and athletic performance, clinically diagnosed problems may arise including heightened depression, suicide, anxiety, and an increase in substance abuse (Hwang & Choi, 2016). In some cases, individuals are unaware of the effects of certain stressors, and will begin to display behaviours which suggest psychological distress (Neal et al., 2013). As highlighted further by Neal et al. (2013), behaviours such as drug or alcohol abuse, social contract withdrawal, increased irritability, and frequent complaints about physical injuries, illnesses, and fatigue, along with a decreased interest in previously enjoyable activities, all are indications that one might require psychological assistance.

Counselling services of academic institutions should be cognizant about the series of factors that are related to stress and anxiety in student athletes; and therefore, try to establish a strong relationship with their athletic departments. However, many student athletes, express concerns about disclosing their mental health problems, and specifically, are worried that their relationships, status, and playing time within the team could be altered if the coaching staff becomes aware of their struggles with mental health (Kissinger et al., 2011). Maniar and colleagues (2001) point out that therapists who are compassionate and understanding of the entire student-athlete experience are seen as supportive by student athletes.

Theoretical Models

To further investigate the psychological stress resulting from academic obstacles and to improve support services given to student athletes, a Conceptual Model of Academic Success for Student-Athletes was created by Comeaux and Harrison (2011). This model aims to help the development of academic and personal skills of student athletes by providing supportive school environments for student athletes and identifying factors that impede learning and personal development. The model emphasizes that success in academics for student athletes is dependent on the educational systems and social settings they belong to within their respective institutions (Comeaux & Harrison, 2011). Within this model, multiple variables are explored to develop a

greater insight into student athlete academic success. Variables include essential pre-college characteristics of student athletes (e.g., family background, past high school experiences, race, and gender), and commitments (e.g., sports, and academic) that individuals place to either sports or school during the time at their post-secondary institutions. For example, individuals who are committed to academics are more likely to achieve higher educational success in comparison to their counterparts that place more commitment to sports.

Furthermore, Comeaux and Harrison (2011) also acknowledge that how student athletes integrate the values and norms of their schools is another vital component that shapes the experiences of student athletes and determines academic success. Previous research done by Comeaux and Harrison (2007) investigating individual differences in the environmental predictors of academic achievements in student athletes was essential to the creation of the Conceptual Model of Academic Success for Student Athletes. While there has been no further refinement or any real-world application, the model does serve as a framework for guiding additional research on collegiate student athletes. In particular, the Student Athletes Climate Study (SACS; Rankin et al., 2016) uses Comeaux and Harrison's conceptual model as a foundational perspective to examine how climate (attitudes, behaviours, and perceptions of faculty and students towards needs, abilities, and potential of students) can affect student athletes' academic and athletic success, and athletic identity. The conceptual model helps explain the number of variables that exist in university education, and their impact on academic success for student athletes.

Measuring Stress Among Student Athletes

Reliable instruments have been used by researchers to assess levels of stress and anxiety in student athletes during their time in university. One scale is the Athlete Burnout Questionnaire (ABQ). Created by Raedeke and Smith (2001), the ABQ has three subscales: reduced sense of athletic accomplishment, perceived mental and physical exhaustion, and devaluation of sports participation. This questionnaire is self-reported, where subjects indicate their own burnout experiences through a Likert scale between 1, *never*, and 6, *always*. After further investigating the psychometrics of the questionnaire, Raedeke and Smith concluded that the questionnaire in its entirety meets the standards of being a reliable mode of identifying burnout among student athletes.

Like the ABQ, the College Student Athletes' Life Stress Scale (CSALSS) which was developed and validated by Lu et al. in 2012, is another scale that has been used to research the experiences of student athletes (see Appendix A). Using the Delphi method, the researchers made sure that the items on the scale were not redundant. The Delphi method uses a process in which a definitive decision is made by surveying a series of experts within the appropriate field. During the creation of the CSALSS, opinions of multiple sports psychologists, coaches, educational administrators, and psychological consultants were considered. After such consideration, the once 40-item CSALSS during the early stages of scale creation, is now a 24-item scale which includes an investigation of eight factors specifically identifying sources of stress. These eight factors are: (a) sports injuries, (b) performance demand, (c) coaching relationships, (d) training adaptation, (e) interpersonal relationships, (f) romantic relationships (g) family relationships, and (h) academic requirements (Lu et al., 2012). After thorough examinations, results indicated that not only is the CSALSS a reliable instrument, but it also displays sufficient levels of concurrent and discriminant validity (Lu et al., 2012).

Current Study

The purpose of the current study was to: (a) use the scale to assess which factor(s) are most responsible for stress among student athletes in a different sample (b) determine which changes in stress levels from specific factors are significantly associated with the largest fluctuation in overall stress levels experienced at the population level. Lu et al. (2012) have acknowledged the lack of diversity in research samples such as differences in age, sports, and gender; however, the current study addressed this limitation by including subjects who participate in a variety of different sports (basketball, soccer, football, track and field, swimming, etc.), are different in ages, are of different genders, and are in different years of studies. Furthermore, given that the CSALSS was first established and examined in Taiwan, this was identified by the researchers as another limitation. There are differences between Asian and Western cultures that might influence the stress that is experienced by student athletes and may also influence the way student athletes respond to the scale as well. Therefore, the current study examined the scale in a completely different culture than the one in which it was developed. We hypothesized that for the current sample, both performance demands, and academic requirements will be the biggest sources of stress that student athletes encounter in university. Given that Lu et al. (2012) had just developed the CSALSS, the researchers had not yet been able to specifically investigate the

stressors that cause stress among student athletes; however, like the hypothesis of this study, Chabrecek and DeBeliso (2021) found in their research that sports injuries and academic requirements are most stressful for student athletes.

Methods

Participants

The inclusion criteria for this study were that participants must be recognized as active student athletes within British Columbia universities including University of British Columbia (UBC), Simon Fraser University (SFU), University of Northern British Columbia (UNBC), Thompson Rivers University (TRU), University of Fraser Valley (UFV), Langara College, and Douglas College. Furthermore, subjects were also individuals who were active participants in community-organized sports while in post-secondary education. Those who did not fit the participant criteria were excluded from this study. The process of recruiting participants began after gaining ethics approval from the desired institutions through RISe, which is a harmonized system that allows researchers to obtain ethics approval from multiple universities in British Columbia using one application. Upon ethics approval, the coaching staff of each sport were personally contacted through the school's athletic website to gain access to participants. Coaches were not involved in any way during the study but were only asked to forward the information provided by researchers about the study along to student athletes via email. Attached in the email was an invitation letter specifically for student athletes. The invitation letter for student athletes was sent to them by their coaches providing them with more information on the survey, and the link to the survey, which assisted in their individual decision to participate. In the email that was sent out to coaches to forward survey information to student athletes, coaches were reminded that they are only relaying information from the researchers to the student athletes. Coaches were told not to pressure student athletes to participate in any way, as this decision should only be made autonomously by the student athletes. Participants were also reminded by their coaches that their decision whether to participate would have no effect on their position(s) within school sports teams, or academic standings. In addition to representing a university, potential participants could also have been individuals who were both involved in athletic teams within their communities and pursuing post-secondary education.

For the current study, 78 participants were recruited for our sample, the determination of the ideal number of participants was based on a number of factors: (a) significance test being

conducted at $\alpha = .05$; (b) *t* test for a multiple linear regression, (c) expectation by researchers of a medium effect size that is $f2 = .15$ based on significance testing at the .05 level, and (d) within the CSALSS, there are eight predictor (independent) variables being assessed which will help reveal which factor(s) are most responsible for the experience of stress among student athletes in post-secondary education. Of the 78 individuals who participated, the data of 23 individuals were removed due to insufficient data. From the remaining 55 participants, there were 34 female participants and 20 male participants, with one participant preferring not to specify their gender

Materials and Measures

Participants completed the CSALSS in which the effect of factors (sports injuries, performance demand, coaching relationships, training adaptation, interpersonal relationships, romantic relationships, family relationships, and academic requirements) on the dependent variable (stress) were investigated. The study used statements on a six-point Likert scale with 1 being *never*, and 6 being *always*. Statements from the original College Student Athletes' Life Student Stress Scale (Lu et al., 2012) such as "I am annoyed by my coach's preference for some teammates" were used in this study. Students' levels of stress was indicated by their responses given on the College Student Athletes Life Stress Scale, and further analyzed after data collection. Student athletes who scored higher on the scale, suggested that they were experiencing higher levels of stress.

Procedure

The study was conducted online through a program called Qualtrics. The participants in this study were recruited by contacting sports teams at different universities directly. Coaching personnel were personally contacted via email, obtained through the school's athletic website. Participants involved in community-organized sports were recruited by promoting the research study on social media (ex: Facebook, Instagram). In Qualtrics, the participants were required to provide consent to participate in the study (see Appendix B). If participants did not consent to participating, they were asked to close their browser, and could not complete the study. Those who did provide consent answered five demographic questions related to their gender, age, year of study, sport type, and years of athletic experience in their sport prior to beginning the study. Since this study did not comprise of an experimental design, participants were only provided with a survey that contained questions from the CSALSS to help get a clear understanding of the stress that is experienced among student athletes. The study addressed the shortcomings

highlighted by Lu et al. (2012), while examining the factors contributing to stress among student athletes. Once participants completed the survey, a short debriefing followed explaining their participation in the specific study, and how the results from the study would further scientific knowledge. The survey took participants between 15 to 20 minutes to complete.

Participants who wished to enter themselves into the prize draw followed a link provided at the end of the surveys. Only the email addresses of participants were required so the researchers could contact the potential winners. By giving a separate link, the data from the research was not attached to their email addresses, allowing to maintain the anonymity of data. Participants who won the prize draw were contacted through their email.

Analysis

Since the study was a correlational design, the obtained data was analyzed by running Multiple Regression analysis to determine which factor(s) contribute to the most stress experienced among student athletes. Numerical values for each option were given to each survey question in the study. For instance, in Item 8: "I am annoyed by my coach's preference for some teammates", participants were asked to indicate overall stress and anxiety levels by clicking, never, very rarely, rarely, occasionally, very frequently, and always. In SPSS, these responses were coded as *never* = 1, *rarely* =2, *sometimes* = 3, *quite often* = 4, *very often* = 5, and *always* = 6. Thus, when conducting data analyses, numbers replaced and indicated the responses of participants to the survey items. A one-sample t-test was conducted to determine which variables are the leading factors in the experience of stress among this specific sample. Multiple independent t-tests were used to determine whether there are group differences in the data obtained between any given two groups. An independent sample one-way ANOVA compared the means between the different course loads taken by student athletes. Moreover, investigating the internal consistency of the items in the CSALSS ensured that the items in the scale are reliable. Given that the study followed a correlational design and was conducted online, the assumption of independent observations was met because there was only one group of participants in our data. Normality was assessed through the creation of histograms in the statistical software SPSS, and the data is normally distributed. Linearity and Homoscedasticity was assessed by analyzing scatter plots. This study used stress as one of the measured variables, which was also a continuous variable because stress cannot be characterized by gaps in values.

Results

In the study, 78 individuals participated; however, the data of 23 individuals were removed due to insufficient data. Therefore, of the remaining 55 participants, there were 20 male participants and 34 female participants, with one participant who preferred not to specify their gender (see Table 1). To ensure the consistent performance of the items in the CSALSS, a reliability analysis was conducted which showed that the scale was reliable to use in this specific context, $\alpha = .91$. Multiple independent t-tests were used to investigate differences among overall stress levels. There was no significant effect of stress for gender, $t(52) = .504$, $p = 0.21$, with no significant effect for age, $t(53) = -2.209$, $p = 0.31$ as well. An independent sample one-way ANOVA was performed to compare the effect of year of academic study on overall stress levels. Results revealed that there were no statistically significant differences in overall stress levels between the differing groups of academic study, $F(3,52) = 1.185$, $p = 0.33$. Further post hoc test using Tukey's HSD supported the finding of no statistically significant differences in stress levels among the years of study, $p = .044$. A one sample t-test examined the hypothesis of the study and found that participants indicated coaching relationships ($M = 12.80$, $SD = 4.13$) and interpersonal relationships ($M = 12.51$, $SD = 4.36$) as the leading factors in their experiences of stress (see Table 2). Furthermore, a hierarchical regression analysis was used to determine which changes in the factors are associated with the largest shifts in overall stress levels at the population level. Findings revealed that changes in stress resulting from coaching relationships, $t(54) = 14.28$, $p < .001$, and sports injuries, $t(54) = 13.27$, $p < .001$, resulted in the largest changes in overall stress levels experienced by student athletes. The positive standardized beta values of both coaching relationships (.290) and injuries (.244) indicated a positive relationship between each factor (coaching relationships and injuries) and overall experiences of stress (see Figure 1 and 2). As stress from coaching relationships and injuries increase, there is also an increase in overall stress among student athletes (see Table 3). More specifically, we can expect an increase of 1.41 points in overall stress levels for every one-point increase in stress resulting from coach-player relationships. In addition, we can observe an increase of 1.26 points in overall stress levels for every one-point increase in stress resulting from injuries, assuming all other factors are held constant. Considering the results, the initial hypotheses articulated by the researchers were not supported as both coaching relationships and interpersonal relationships emerged as the largest contributors of stress for student athletes in this specific sample, rather than academic

requirements and performance demands. Overall, the results of the data from one sample of student athletes suggested that when investigating all the factors highlighted in the CSALSS independently, both coaching relationships and interpersonal relationships are the leading contributors of stress among this specific sample of student athletes. However, when examining stress using the same factors as one integrative model, it is evident that as student athletes experience more stress from coaching relationships and injuries, there will be a heightened experience of overall stress levels among student athletes.

Discussion

Using the College Student Athletes' Life Stress Scale, the research study aimed to uncover the experiences of stress among student athletes by addressing limitations that were outlined by Lu et al. (2012). The scale also assessed which of the eight factors were most responsible for the stress among student-athletes. In contrast to previous research, the study included individuals who participate in a variety of sports (basketball, soccer, football, track and field, swimming, volleyball, etc.), are of different ages, and are in different years of studies with differing years of sport experiences. Additionally, the study examined the scale in a completely different culture than which it was originally developed in. Finally, the study used the factors from the CSALSS to also determine which specific factors are responsible for the largest changes in overall stress levels. Researchers hypothesized that for the current sample, both performance demands, and academic requirements would be the biggest sources of stress that student-athletes encounter in university.

The researchers inaccurately predicted the impact of academic requirements and performance demands on student athletes and their experiences of stress among student athletes. Contrary to the hypotheses, among the eight factors outlined in the CSALSS, data from this sample of student athletes suggest that coaching relationships and interpersonal relationships serve as the leading contributors to their experiences of stress over the remaining factors. Participants on average ranked these items as stressful throughout their experiences as student athletes: "annoyed by their disappointing relationship with their coach", their "coach's preference towards specific teammates", and "annoyance with the coach's bias against them". In addition, student athletes were also "bothered by having poor social skills when handling interpersonal relationships" and are "annoyed with being friendless". While both coaching relationships and interpersonal relationships are the leading contributors of stress, we can observe changes in

overall stress resulting from increases in stress due to coaching relationships and injuries because student athletes may feel the pressure to push themselves through their athletic participation to improve their relationship with their coaches. For example, student athletes might overtrain during practice in the pursuit of being seen favorably by their coaches. As a result, student athletes become more susceptible to injuries by overtraining. Keeping these findings in mind, those who provide professional support for student athletes, such as sports counselors, coaches, and faculty, can use the CSALSS to become aware of the unique life stress of student athletes, and use the scale to develop and improve existing programs offered for support.

While these results suggest significant findings, they should be taken with caution. The study failed to reach to the required number of participants as determined in the G Power analysis; hence the study lacked power which influenced the results. Low-powered studies reduce the researcher's ability to draw accurate conclusions. In addition, the low power in this study reduced the likelihood of a statistically significant result reflecting a true effect. Consequently, when conducting future studies, researchers should allot more time for data collection when investigating specific populations such as student athletes. More specifically, researchers should dedicate most of their time and efforts towards recruiting such participants because the process is much more difficult in comparison to other common populations. This ensures that an adequate number of participants are obtained, and enough statistical power is achieved for when conducting data analysis. Having sufficient power then assists in the ability of researchers to draw accurate conclusions and be confident in their results. Moreover, future research should examine subtle differences among student athletes such as socioeconomic status, sexual orientation, or ethnicity which all can affect the experiences of student athletes.

Tables

Table 1

Participant Description

			Gender			
Age			Male	Female	Prefer not to say	Total
24 and below	Sport Type	Soccer	4	5	0	9
		Basketball	5	5	1	11
		Baseball/Softball	1	2	0	3
		Volleyball	5	2	0	7
		Track and Field	2	1	0	3
		Swimming and Diving	0	2	0	2
		Golf	0	1	0	1
		Other	2	11	0	13
	Total		19	29	1	49
25 and above	Sport Type	Soccer	0	1	0	1
		Basketball	1	0	0	1
		Baseball/Softball	0	1	0	1
		Volleyball	0	1	0	1
		Track and Field	0	1	0	1
	Total		1	4	0	5
Total	Sport Type	Soccer	4	6	0	10
		Basketball	6	5	1	12
		Baseball/Softball	1	3	0	4
		Volleyball	5	3	0	8
		Track and Field	2	2	0	4
		Swimming and Diving	0	2	0	2
		Golf	0	1	0	1
		Other	2	11	0	13
	Total		20	33	1	54

Note. Table 1 provide further information on the participants including their age, gender, and type of sport played.

Table 2

One-Sample Statistics

	N	*M*	*SD*	*SEM*
Overall Stress	55	90.55	20.068	2.706
Academic Stress	55	9.22**	2.955	.398
Injury Stress	55	10.35**	3.874	.522
Coaching Relationship Stress	55	12.80**	4.125	.556
Family Relationship Stress	55	10.67**	4.212	.568
Romantic Relationship Stress	55	11.36**	3.535	.477
Interpersonal Relationship Stress	55	12.51**	4.358	.588
Performance Stress	55	11.25**	3.632	.490
Training Stress	55	12.38**	3.418	.461

Note. Table 2 describes the results obtained from the one-sample t-test, analyzing which predictor variables are leading contributors to stress in this sample of student-athletes. M, SD, and SEM representation mean, standard deviation, and standard error of the mean, respectively.
* $p < .05$ ** $p < .001$

Table 3

Coefficients on the Dependent Variable of Overall Stress

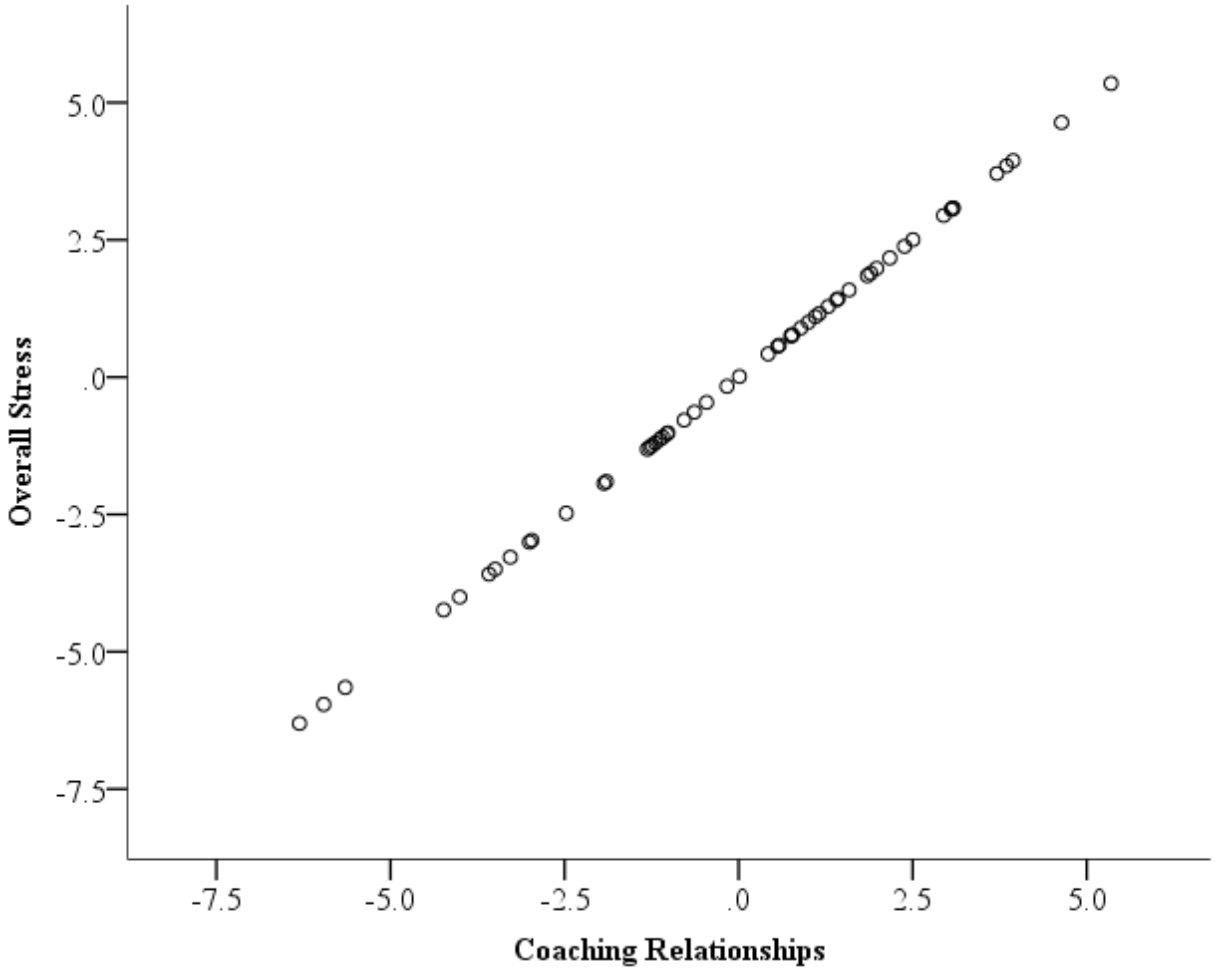
Model		B	SE	Beta	t	Sig.
1	(Constant)	35.731	7.053		5.066	.000
	Academic Stress	2.087	.680	.307	3.068	.003**
	Performance Stress	3.161	.553	.572	5.713	.000
2	(Constant)	4.279	1.421		3.011	.004
	Academic Stress	.789	.151	.116	5.229	.000*
	Performance Stress	1.148	.106	.208	10.844	.000*
	Injury Stress	1.263	.095	.244	13.266	.000*
	Coaching Relationship Stress	1.411	.099	.290	14.283	.000*
	Family Relationship Stress	1.038	.095	.218	10.964	.000*
	Romantic Relationship Stress	.801	.138	.141	5.793	.000*
	Interpersonal Relationship Stress	1.181	.094	.256	12.531	.000*

Note. Table 3 describes which changes in the factors *are* associated with the largest changes in the outcome variable (experienced stress).
* $p < .05$ ** $p < .001$

Figures

Figure 1

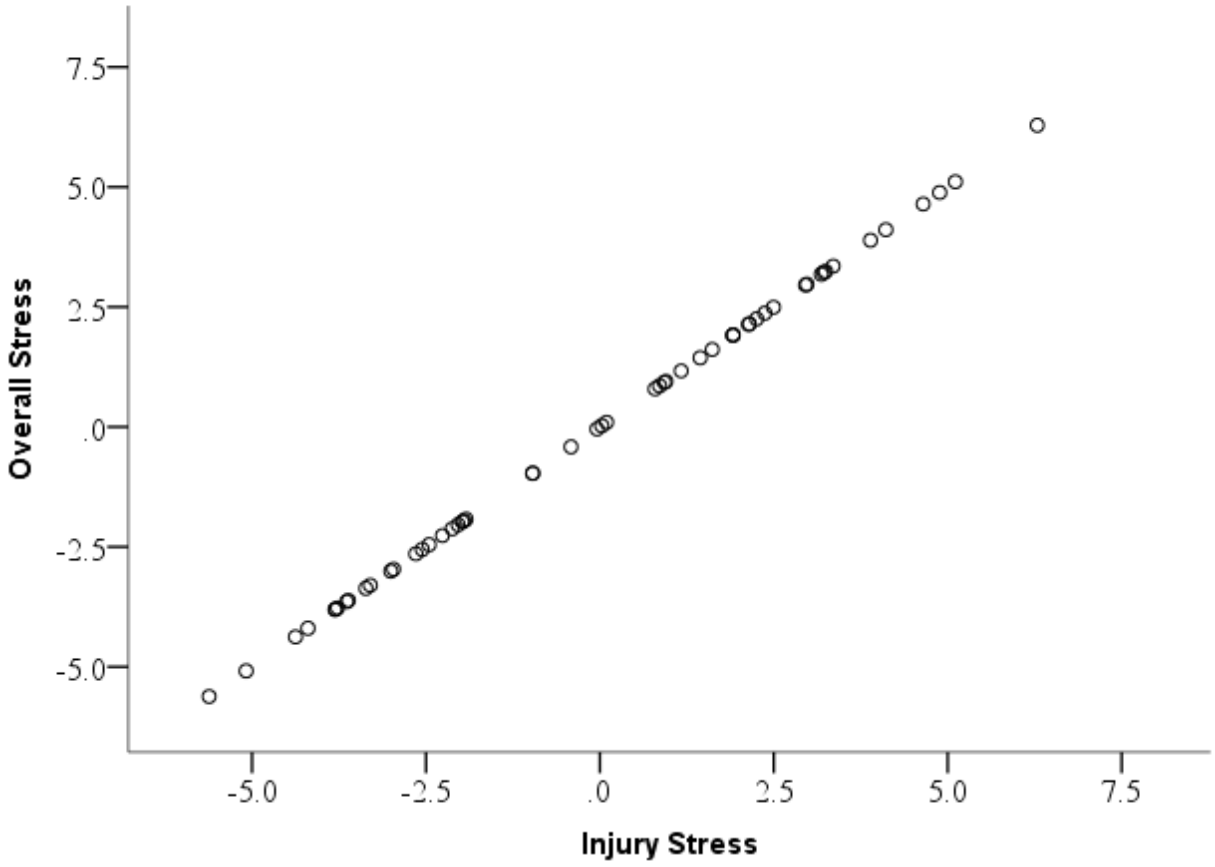
Scatterplot Describing Relationship Between Coaching Relationships and Experienced Stress



Note. The scatterplot diagram shows associations between coaching relationships and overall experienced stress among student-athletes. As individuals experience further strains in the relationship with their coaches, there will be an increase in their overall stress levels as well.

Figure 2

Scatterplot Describing Relationship Between Sport Injuries and Experienced Stress



Note. The scatterplot diagram shows associations between sports injuries and overall experienced stress among student-athletes. As individuals encounter stress resulting from sports injuries an, increase in overall stress levels will follow.

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Appendix A

	Never	Rarely	Sometimes	Quite Often	Very Often	Always
I am bothered by a lack of motivation for academic learning.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed when preparing for exams.	**1**	**2**	**3**	**4**	**5**	**6**
I worry about my academic skills because I do not know how to learn efficiently.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my injury because it has still not yet fully recovered.	**1**	**2**	**3**	**4**	**5**	**6**
I worry about being frequently injured.	**1**	**2**	**3**	**4**	**5**	**6**
I am bothered by the slow recovery of my injury.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my disappointing relationship with my coach.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my coach's preference for some teammates.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my coach's bias against me.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my parents' high expectations.	**1**	**2**	**3**	**4**	**5**	**6**
I am bothered by difficult situations in my family.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with communicating with my family.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with not finding time to encounter romantic partners.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with being too shy to express myself when I encounter someone I love.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with not getting along with my romantic partner.	**1**	**2**	**3**	**4**	**5**	**6**

I am bothered by poor social skills in handling interpersonal relationships.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with being friendless.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my social skills because it seems like nobody likes me	**1**	**2**	**3**	**4**	**5**	**6**
I worry about my unstable competitive performance.	**1**	**2**	**3**	**4**	**5**	**6**
I worry about dragging my team down.	**1**	**2**	**3**	**4**	**5**	**6**
I am afraid of being eliminated from competition because of poor performance.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed with the training program now.	**1**	**2**	**3**	**4**	**5**	**6**
I worry that my training is not beneficial to my performance.	**1**	**2**	**3**	**4**	**5**	**6**
I am annoyed by my training load because it is too much for me.	**1**	**2**	**3**	**4**	**5**	**6**

Note. The original 24-item College Student-Athlete Stress Life Scale (CSALSS).

Appendix B

STUDY TEAM

Principal Investigator: Dr. Susan Thompson, KPU Faculty, Psychology Department, susan.thompson@kpu.ca
Co-Investigator: Ekjot Bhullar, KPU student, Psychology Department, ekjot.bhullar@email.kpu.ca

CONFLICTS OF INTEREST

There are no real, potential, or perceived conflicts of interests on the part of the researchers, their institutions, or the research sponsors.

INVITATION & PURPOSE OF THE STUDY

Participants are being invited to participate in the study because this study looks to examine and highlight the unique experiences of student-athletes that are in university. The purpose and objectives of the study is to investigate sources of stress among student-athletes. The present research is a part of the student researchers' (Ekjot Bhullar) Honours degree in Psychology at Kwantlen Polytechnic University.

VOLUNTARY PARTICIPATION

Participation in this research project is completely voluntary. The decision to participate in the study or not will have no effect to your position(s) within school sports teams, or academic standings. Participants will be given any information that is relevant to their decision to continue participating in the study.

PROCEDURES

Participants will be asked to state whether they agree or disagree with statements based on their experiences of being student-athletes. A website link specific to this study will be provided to participants in order complete the study. Data from participants in the study will be collected online and stored through an online software called Qualtrics. The time requirement for this study is between 15-20 minutes, and the study will be conducted online.

WITHDRAWING FROM THE STUDY

Participants may withdraw at any time during the study without explanation or consequence to your position(s) within school sports teams, or academic standings. During the study, if participants wish to withdraw their data, they can do so by simply closing their web browser which will end participation in the study. Data of participants who choose to withdraw will be deleted, not used, nor analyzed in the results of the study. However, once the survey is completed, participants are no longer able to withdraw from the study because the data is anonymous. Therefore, if the questionnaire is fully completed and submitted, it will be assumed that participants of the study have no concerns with withdrawing their data from the study.

ANONYMITY & CONFIDENTIALITY

Throughout this study, anonymity will be protected by ensuring that participants will not be asked information that would allow researchers, publishers, or readers to identify specific participants based on their data. In the study, participants will only be required to indicate their age, gender, year of study, the sport they play, and the years of experience in their sports. Data will be collected through an Qualtrics which is an online software that can collect data from online studies that has servers to store data in Canada. Data will be analyzed through Statistical Package for the Social Sciences (SPSS), which is a statistical software that is used to run data analyses. Only the researchers in the study team will have access to the data and personal information that is obtained from this study. In the study, participants will only be required to indicate their age, gender, year of study, the sport they play, and the years of experience in their sports. However, participants will not be asked information such as name, or date of birth, that would allow researchers, publishers, or readers to identify specific participants based on their data. All data collected through Qualtrics will be stored on a Canadian server. All data will be stored in Qualtrics for a minimum of one year and then it may be deleted. The data will be analyzed using SPSS, which is a statistical software that is used to run data analyses.

Because the Qualtrics account is a shared account between the current research team, we cannot guarantee confidentiality. However, all researchers with access to the account are aware of the importance of confidentiality and have been instructed to only access their own research data. If researchers decide to publish the results of this study, the data will be in a numerical format only and no individual data will be presented.

OPEN ACCESS & FUTURE USE OF DATA

There is a potential for this research and its data to be included in future research done with student-athletes that would include participant information about age, gender, year of study, the sport they play, and the years of experience in their sports. Data made publicly available will be deidentified, in numerical format so that no data is specifically connected to participants. After data have been submitted to be made public, participants cannot have their data withdrawn as the data is anonymous. Participants must acknowledge that making data public has the potential for increasing risks to participants of the study.

BENEFITS

The primary benefits associated with this study are for participants and society as individuals associated with running university sports become aware of the experiences of student-athletes. Another benefit of this research is towards the advancement of knowledge, as researchers in the field of Psychology will gain the understanding of what factor(s) are responsible for the experience of stress among student-athletes in post-secondary schools.

RISKS

This study is minimal risk; however, there are no anticipated risks to you both at the individual-level and community-level resulting from your participation in this study. You can withdraw from the survey at any point by closing your browser. Keep in mind, after results have been submitted, they cannot be withdrawn as the data is anonymous.

COMPENSATION

All participants will be able to enter their names into a draw for a chance to win one of sixty $25 Sportchek, Footlocker, or Champs Sports gift cards. At the end of the study, a link to another Qualtrics page will be provided where participants who wish to join the draw will be asked to provide their email address in the other Qualtrics page. Individuals will not have their email addresses associated to their research data and is the reason for redirection to a separate page. Even if you decide to withdraw from this study at any point, you are still eligible to enter in the draw for a chance to win prizes.

STUDY RESULTS

The research results will be published in a journal upon the completion of the study, and the results from the study might be used to conduct further research with student-athletes to increase scientific knowledge. When publishing study results, participants will be identified indirectly through their sports, age, and year of study; but participants will not be individually identified in any manner through the process of sharing research results.

DISPOSAL OF DATA

The data from the study, along with the email addresses obtained for compensation will be destroyed after five years by deleting the study from Qualtrics which will also delete the associated data with the study.

CONTACT FOR INFORMATION ABOUT THE STUDY

If you want to talk to anyone about this research study because you think you have not been treated fairly or think you have been hurt by joining the study, or you have any other questions about the study, you should email either Susan Thompson at susan.thompson@kpu.ca, or Ekjot Bhullar at ekjot.bhullar@email.kpu.ca.

CONTACT FOR COMPLAINTS/ETHICS CONCERNS

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the KPU Research Ethics Board at reb@kpu.ca or 604-599-3163.

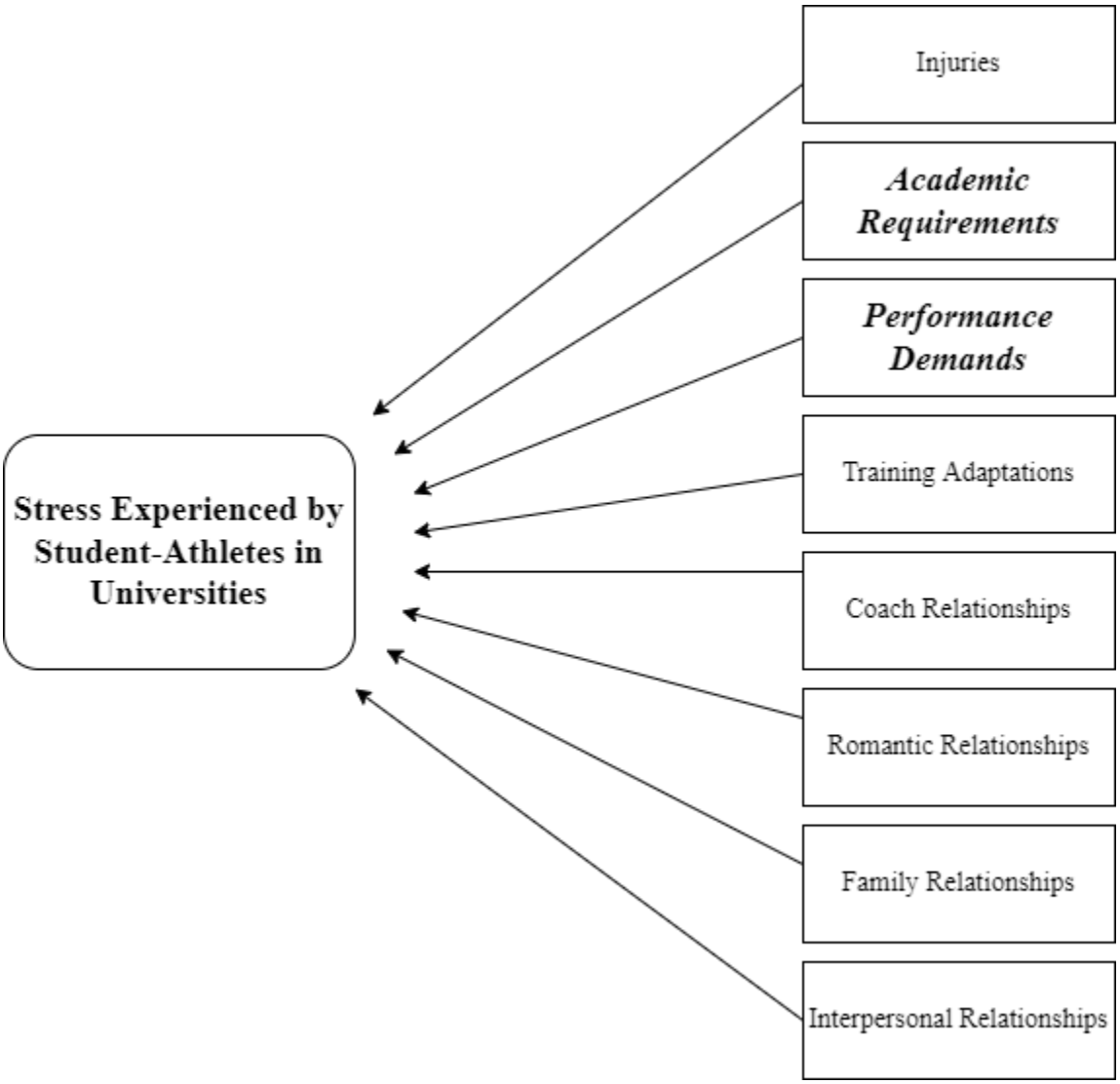
PARTICIPANT CONSENT

Remember, your participation is voluntary, and you can withdraw without any repercussions to your schooling, sports affiliations. As participants, you do not waive any legal rights by participating in the study.

Once you have read this document, indicate below if you give your consent to participate in the study.

- "I consent to participating in this study"
- "I **do not** consent to participating in this study

Appendix C



Note. Hypothetical data results based on researcher-created hypothesis. Bold and italicized factors in the diagram are hypothesized to be the leading sources of stress experienced by the sample of student-athletes.