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# Factors Associated with Psychosocial Development and Academic Success Among University Student-Athletes

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**Abstract**

There has been a growing focus on sport as a context to facilitate positive development among youth (Holt et al., 2017); however, little research has focused on emerging adults. The purpose of this study was to examine factors that may facilitate positive developmental outcomes and higher grade point averages (GPA) of student-athletes engaged in in inter-university sport. One hundred ninety-eight student-athletes from one of Canada's largest universities ($M_{age}$ = 20.5, 44.4% female, $M_{year\ of\ eligibility}$ = 2.2) completed one questionnaire gathering information pertaining to demographics, use of academic advising, tutoring, extracurricular involvement, sport-related experiences, coaching, and positive youth development (PYD) outcomes (i.e., 5 Cs of competence, confidence, connections, character, caring; Lerner et al., 2005). Student-athletes' GPA were obtained through the university's athletic department as a measure of academic achievement. Several factors within the sport context were associated with higher PYD and GPA scores including personal and social skills and year of eligibility.

Keywords*:* positive development; PYD; academic success; university athletes

**Résumé**

Le sport comme contexte favorisant le développement positif des jeunes a fait l'objet d'un intérêt croissant en recherche ( Holt et al., 2017); cependant peu de ces recherches ne se sont intéressées aux jeunes adultes. Le but de la présente étude était d'examiner les facteurs qui pourraient contribuer au développement positif et à des notes scolaires plus élevées chez des étudiants-athlètes engagés dans le sport interuniversitaire. Cent quatre vingt dix huit (198) étudiants-athlètes d'une des plus grandes universités au Canada ( Âge moyen= 20,5 ; 44,4% féminin; Années d'éligibilité moyenne = 2,2) ont complété un questionnaire sur les thèmes suivants: démographie; utilisation de support académique; mentorat; engagement extra curriculaire; expériences sportives; coaching; et les acquisitions découlant du développement positif des jeunes. Les notes scolaires ont été obtenues de la section du sport universitaire comme mesure de la réussite académique. Plusieurs facteurs du contexte sportif sont en relation avec le développement positif des jeunes et les notes scolaires, incluant des habiletés personnelles et sociales et l'année d'éligibilité.

Mots clés: développement positif; succès scolaire; athlètes universitaires

Positive development; PYD; academic success; university athletes.

## Introduction

Participation in athletics has been suggested to influence the overall development of young people, as there are several benefits that have been found to be associated with sport engagement including fostering teamwork and social skills (Holt, Kingsley, Tink, & Scherer, 2011), leadership skills (Wright & Côté, 2003), and improved health (Janssen & LeBlanc, 2010). However, many negative associations have also been made to youth sport participation including dropout, excessive alcohol use, aggression, and violence (Bean, Fortier, Post, & Chima, 2014; Sønderlund et al., 2014). Given growing interest regarding the healthy development of young people in an increasingly competitive society, paired with this interesting dichotomy of outcomes associated with sport participation (Fraser-Thomas, Côté, & Deakin, 2005; Lerner et al., 2005), it is important to better understand the factors within sport that may be facilitating optimal outcomes among young people.

### Positive Youth Development through Sport

Positive youth development (PYD) is a framework stemming from developmental psychology, which takes a strength-based approach to youth development, by focusing on the potential of all adolescents to develop optimally (Damon, 2004). The 5 Cs Model of PYD is commonly used as a framework of indicators of youth development (Côté, Turnnidge, & Evans, 2014; Holt & Neely, 2011), with each C representing a cluster of behaviours that are the desired goals and outcomes of community-based programs (Lerner et al., 2004). Lerner and colleagues (2005) define the 5 Cs as: (a) character (having a sense of morality and integrity, (b) competence (having a positive view of one's actions specific to different domains), (c) caring/compassion (a sense of sympathy and empathy for others), (d) connection (positive bidirectional exchanges with people and institutions), and (e) confidence (an internal sense of overall positive self-worth and self-efficacy). Additionally, it has been suggested that an individual who demonstrates the 5 Cs of PYD will, over time, engage in a sixth C – contribution to their communities and civil society (Lerner, Dowling, & Anderson, 2003). Some of the pioneering work done within this field focused on extracurricular programming as a context for the development of initiative and intrinsic motivation (Larson, 2000). Larson (2000) suggested that initiative is a core quality of PYD that "consists of the ability to be motivated from within to direct attention and effort toward a challenging goal" (p. 170). Further, Larson suggests that voluntary structured activities (e.g., extracurricular activities) offer an optimal context for the development of initiative, as they involve elements of intrinsic motivation and concerted engagement in the environment (e.g., concentration), which occur over time. Further, Larson (2000) suggested extracurricular activities are unlike other contexts where adolescents spend their time such as school or leisure, because they require high levels of intrinsic motivation and concentration, yet are voluntary, also making them favorable for developing many other positive qualities, from altruism to identity.

Given the early focus on extracurricular activities as a context for the development of initiative and other PYD outcomes, research has explored adolescents' experiences in a variety of organized activities including arts programs, academic and leadership activities, faith-based and service activities, student clubs, and sports (e.g., Forneris, Camiré, & Williamson, 2015; Hansen, Larson, & Dworkin, 2003; Zarrett et al., 2008). In a study that involved 450 high school students, Hansen and colleagues (2003) found that those who participated in sports reported higher rates of self-knowledge, emotional regulation, and physical skills. Interestingly, despite many youth reporting being on team sports, they did not indicate higher rates of learning experiences related

to teamwork or social skills. More recently, it was found that youth involved in sport and other types of extracurricular activities scored significantly higher on positive values, social competencies and positive identity than youth who were not involved in any extracurricular activities (Forneris et al., 2015). Collectively, these findings suggest that participation in extracurricular activities such as sports may facilitate some unique positive outcomes related to personal development.

A recent two-part study by Kniffin, Wansink, and Shimizu (2015) offered further perspective upon some of the outcomes associated with sport. In the first part of the study, 66 American adults ($M_{age}$=39 years; approximately one third of whom had played high school sports in their youth) were asked to indicate the degree to which they thought individuals participating in different extracurricular activities demonstrated certain characteristics. Participants' responses demonstrated the belief that people with sports experience would display significantly higher levels of leadership, self-confidence, and self-respect compared to those who engaged in non-sport extracurricular activities. In the second part of the study, Kniffin and colleagues surveyed World War II veterans ($N$=931) on their high school sport engagement approximately 60 years prior, as well as long-term correlates of participation in competitive sports. Results indicated that former high school athletes had higher-status careers, volunteered more time, and donated to charity more than those who did not participate in high school sports. These findings demonstrate the potential long-term developmental benefits of participation in athletics, and factors within sport contexts that allow for the positive development of its participants may persist over an athlete's lifetime.

**PYD in High Performance Sport and Emerging Adulthood**

Although there has been increased research in recent years that has focused on youth sport as a context for PYD, much of this research has examined sport through a singular lens, failing to recognize the diversity that exists across contexts (e.g., competitive versus recreational, children versus adolescent, across different sport types; Holt et al., 2017). It may be particularly important to look at high performance sport, given the unique characteristics of this context. Specifically, it has been proposed that high amounts of focused training and competition may be associated with various physical and psychosocial costs, such as social isolation, increased rates of injury, dropout, burnout, and decreased enjoyment (e.g., Bean et al., 2014; Côté & Fraser-Thomas, 2016; Fraser-Thomas, Côté, & Deakin, 2008). As such, it seems that for elite athletes, one must consider whether high performance sport contexts are still able to develop optimal physical, psychological, and social development or if these goals may sometimes conflict with a higher level of competition (Fraser-Thomas et al., 2017; Fraser-Thomas & Strachan, 2015).

Another lens of investigation that warrants further attention is the understanding of PYD in older age groups. *Emerging adulthood* describes the period between the late teens through the twenties, with evidence supporting that this period is theoretically and empirically different from both adolescence and young adulthood (Arnett, 2000). During this time, individuals are relatively independent from social roles and normative expectations but have yet to experience the enduring responsibilities that occur in adulthood. Additionally, emerging adults engage in extensive exploration in many life domains including love, work, and worldviews. Further, given the importance of success during this crucial time of transition, it appears particularly important to understand development during this period of time. It has been argued that more research is needed regarding the relationship between high performance athletes and PYD outcomes beyond childhood (Fraser-Thomas et al., 2017; Fraser-Thomas & Strachan, 2015). To date, limited research has been done regarding PYD outcomes in the university student-athlete population,

specifically within a Canadian context (Miller & Kerr, 2002). Because of this, there is benefit in investigating what aspects of the sport context may favourably contribute to the overall positive development of emerging adults within Canada. This study aims to address this gap.

**PYD Outcomes and Facilitators Among University Student-Athletes**

The post-secondary student-athlete population offers a unique group of individuals through which to better understand PYD and sport participation – in that they are high performing athletes engaged in sport throughout emerging adulthood. Although the 5 Cs (competence, confidence, connection, character, and caring; Lerner et al., 2005) have been proposed as key indicators of PYD, these outcomes have yet to be examined among university student-athletes; however, potential contributing facilitators of university student-athletes' PYD have recently begun to be explored. In Rathwell and Young's (2017) qualitative study, university athletes identified coaches, family members, and athletic peers as key influencers in their development of life skills, but suggested they themselves also played a key role. Côté, Bruner, Erickson, Strachan, and Fraser-Thomas (2010) suggested that coaches must aim to facilitate the 5 Cs of PYD within all coaching contexts, while also being mindful of athletes' ages and competition level. Academic success offers another outcome often used as a measure of PYD (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 1999; Eccles, Barber, Stone, & Hunt, 2003; Greenberg et al., 2003). Although there is some evidence to suggest that post-secondary sport participation is associated with higher grade point averages (GPA)s and higher rates of graduation (Miller & Kerr, 2002; Rishe, 2003), there has yet to be any research examining the specific factors within the university/college sport environment that may be contributing to the optimization of student athletes' academic performance.

**Rationale and Purpose**

Given growing concern regarding healthy development of young people in an increasingly complex and competitive society (Lerner et al., 2005), coupled with this interesting dichotomy of outcomes associated with sport participation (Fraser-Thomas et al., 2005), it is important to better understand the factors within sport that may be facilitating various psychosocial outcomes among young people. Limited research has focused on PYD in high performance sport settings, during the period of emerging adulthood. As such, university and college athletes offer a ripe population for enhancing understanding of PYD through sport. Academic achievement (i.e., GPA) is linked to many positive outcomes such as graduate school attendance (Mullen, Goyette & Soars, 2003; Ethington & Smart, 1986), occupational success (Barrett & Depinet, 1991), and subsequent salary (Roth & Clarke, 1998); however, "there remain analytical gaps constraining the ability of student affairs leaders (….) to explain (…) how certain factors influence student-athletes' academic success" (Comeaux & Harrison, 2011, p. 235). The purpose of this study was to examine factors within the inter-university sport environment that may be facilitating positive developmental outcomes (i.e., 5 Cs of PYD and GPA as a measure of academic achievement). As this study was exploratory in nature, no hypotheses were outlined.

## Methods

**Participants**

One hundred and ninety-eight student-athletes were recruited for the study from a large Canadian university. Participants were between the ages of 18 and 30 years old (110 male, 88

female; $M_{age}$ = 20.52 years, $SD$ = 1.97). Student-athletes were from a variety of sport teams including football (31.8%), track and field (26.3%), hockey (9.6%), soccer (8.1%), basketball (7.1%), volleyball (6.6%), tennis (3.0%), field hockey (2.5%), rugby (2.5%), and wrestling (2.5%). Additional descriptive information is available in Table 1. During the data collection period, which took place at the end of the 2015-2016 season, a total of 501 student-athletes were directly or indirectly approached to take part in the study (see procedure below); thus, the overall return rate within the university's varsity program was 40%.

**Procedure**

Prior to data collection, this study was reviewed and approved by the Human Participants Review Board at the affiliated university. Participants were recruited using two methods. The first method involved the principal investigator contacting coaches via email and scheduling team meetings with student-athletes from each team. These team meetings typically occurred at the end of a team practice session at a time determined by the coach. During these meetings, the participants were informed of the study's purpose and provided with a packet containing (a) a letter describing the study assuring confidentiality, (b) an informed consent form, and (c) the questionnaire. Participants were asked to complete the questionnaire and return it to the principal investigator at that time. As data collection coincided closely with the end of the term and exam period, some teams were not practicing regularly, and some individuals were unable to attend their team session. As such, the second recruitment method involved approaching student-athletes individually at the university athletic facility on campus. These individuals were provided with the same information and packet and asked to complete the questionnaire and return it to the principal investigator. In some cases, when the student-athletes' were unable to complete the questionnaire at the same time, the principal investigator arranged for an alternate time within the same day to collect the questionnaire and informed consent form. Data collection occurred at the end of every team's competitive season ensuring that all athletes were able to reflect on and include the experiences of the 2015-2016 season when responding to the questionnaire. All participants were informed about the voluntary nature of the study and that their decision not to participate would not affect their relationship with the researchers, study staff, coaches, or their involvement in their team.

**Measures**

Each participant completed a 5-page survey that contained six sections: (a) demographics, (b) academic support services, (c) sport-related experiences, (d) coaching, (e) extracurricular involvement, and (f) positive development. Additionally, academic achievement (i.e., GPA) was collected through the university's athletics department's records, for which permission was granted by the student-athletes.

**Demographics.** Participants were asked basic demographic questions related to age, sex, race, sport, and year of eligibility. Additionally, given potential conflict between PYD and high performance sport (e.g., Fraser-Thomas et al., 2017; Fraser-Thomas & Strachan, 2015), participants were also asked to report athletic honours and distinctions they had achieved while competing for the university in order to explore potential relationship between level of athletic performance and PYD outcomes. Specifically, athletes were asked to report all Ontario University Athletics and University Sports (U Sports; formerly Canadian Interuniversity Sport) rookie, first team, second team, and player of the year recognitions achieved during the student-athlete's

university career. Top performing varsity athletes were those that had achieved one or more of these recognitions during their time competing in university sport (i.e., dichotomized yes/no).

**Student Athlete Academic Support Evaluation Instrument (SAASEI).** Academic support services were measured using a modified version of the SAASEI (Jordan, 2005). To measure academic advising, nine items were used (e.g., "My academic coordinator knows the academic requirements for my major"). In the SAASEI, a lower score represented a more positive experience with both academic advising services. For example, when asked the question "I was given the necessary support from academic support staff during my academic career at [university name]" a response of 1 indicated agreement with this statement. Each question also included a 'Didn't use' option, which was represented by a score of 5. Given academic support services were available to all athletes, it was important to include those who chose not to use the services in the analyses; however, since the response of 'Didn't use' indicated that students were not able to agree or disagree with each statement, for analyses, 'Didn't use' was recoded as a 3, representing student-athletes having no perception of the academic advising services offered; scores of 3 and 4 were recoded to 4 and 5, respectfully. Tutoring was measured as a one-item binary variable indicating whether student-athletes used tutoring services during their academic career at the current university. Sub-sections that were excluded related to services that were not available specifically from the athletics department at the specific institution at the time of data collection such as computing facilities, study hall, and career services. Reliability analyses of the advising subscale in the current study produced Cronbach alpha value of 0.93.

**Youth Experience Survey for Sport.** To measure personal development experiences facilitated through sport participation, the Youth Experience Survey for Sport (YES-S; Macdonald, Côté, Eys, & Deakin, 2012) was used. The tool is comprised of five subscales that measure five independent constructs: (a) personal and social skills (14 items; e.g., "Others in this activity counted on me"), (b) cognitive skills (five items; e.g., "I improved skills for finding information"), (c) goal setting (four items; e.g., "I set goals for myself in this activity"), (d) initiative (four items; e.g., "I put all my energy into this activity"), and (e) negative experiences (10 items; e.g., "I got stuck doing more than my fair share"). The negative experiences subscale was excluded given the study's focus on positive developmental experiences. The modified version with four subscales consisted of a total of 27 items. The stem was written in a way to ensure that athletes reflected solely on their experiences within at the given university: 'Through my involvement with my current varsity team'. Student-athletes were asked to respond to statements on a 4-point Likert-type scale ranging from 1 (Not at all) to 4 (Yes, definitely). Higher scores on this scale indicate greater positive outcomes achieved through sport. Reliability analyses of the personal and social skills, cognitive skills, goal setting, and initiative subscales in the current study were good with Cronbach alpha values of 0.88, 0.78, 0.79, and 0.79, respectively. Although the YES-S was originally developed for use within a youth population (e.g., high school), at the time of data collection, it was the only validated tool available to measure perceived developmental outcomes through sport experiences. Recent research has led to the development of a tool specific to university populations (i.e., University Sport Experiences Survey [USES], Rathwell & Young, 2016).

**Coach-Athlete Relationship Questionnaire.** To measure the nature of the coach-athlete relationship, the 11-item Coach-Athlete Relationship Questionnaire (CART-Q) by Jowett and Ntoumanis (2004) was used. This tool uses self-report to measure affective, cognitive, and behavioural aspects of the coach-athlete relationship. All items were measured on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), which reflected the student-athletes'

perceptions regarding the nature of the coach-athlete relationship; higher scores indicate more positive perceptions. With the current sample, the internal consistency for the CART-Q was high ($\alpha = 0.96$).

**Extracurricular Involvement.** Time spent in non-sport extracurricular activities was of interest given past research showing associations between diverse extra-curricular activities and PYD (e.g., Forneris et al., 2015; Zarrett et al., 2008). Time spent in extracurricular activities was calculated by first categorizing different types of extracurricular activities using current student clubs and organizations listed on the websites of several Canadian and American universities, and piloting these lists for feedback among current students at the institution to ensure that categories encompassed all types of extracurricular involvement. The final six categories of extracurricular involvement were: (a) paid work off campus, (b) paid work on campus, (c) volunteering/community service, (d) cultural/ethnic/religious group involvement, (e) interest/hobby, and (f) social awareness/political activism/advocacy group. Student-athletes were asked to indicate the average number of hours per week during the university academic calendar year, from September to April that they participated in each of the six categories. For analyses, extracurricular involvement was operationalized as the sum of hours spent in all six categories of extracurricular categories throughout the current academic year.

**Positive Youth Development–Very Short Form.** In this study, the 5 C's were used to measure PYD, as this framework has been broadly embraced as aligning with key outcomes of optimal youth development (Lerner et al., 2005). The 5 Cs were measured using the Positive Youth Development Very Short Form (PYD-VSF) for older adolescence (Geldhof et al., 2014). This tool was created to be a shorter measure for a previous tool that included over 70 items to measure the 5 Cs, and includes only 17 items. The PYD-VSF consisted of five subscales: (a) competence (three items), (b) confidence (three items), (c) caring (three items), (d) character (four items), and (e) connection (four items). Different anchors such as 1 (not important/not at all like me) to 5 (extremely important/very much like me) were used on a 5-point Likert scale. Six items were measured on a 4-point Likert scale and required participants to identify which of two individuals they were more like and were then asked if they were somewhat or very much like that person. As the PYD-VSF was created for late adolescence, the wording was altered slightly to be more relevant to university-aged student-athletes (e.g., 'friends' was changed to 'peers'). The 5 Cs were summed to create a total score representing a holistic, overall score representing positive development. Reliability analyses of the overall positive development score in the current study produced a Cronbach alpha value of 0.71.

**Academic Achievement.** Academic achievement was also of interest as a positive developmental outcome, particularly given the gap in the understanding of factors influencing student-athletes' academic success (Comeaux & Harrison, 2011). Academic achievement was measured through overall cumulative GPA. GPA was calculated by summing the product of the point-value of each letter grade achieved throughout the undergraduate career at the current institution by the credit weight of each course. This sum was then divided by the total number of credits earned and represented as a number ranging from 0 (F) to 9 (A+). With participants' consent, the primary investigator extracted GPAs from the university's athletic department's database, using participants' self-reported sex, birthday, and sport as identifiers.

**Data Analysis**

For data analysis, IBM SPSS version 23 was used. In cases of missing data (<3 %), a multiple imputation technique using an expectation-maximization method was employed

(Tabachnick & Fidell, 2013). Descriptive statistics were calculated for the gathered demographic information and subscales of all measures. Two separate backwards linear regressions were conducted to determine factors that predicted positive developmental outcomes, as measured by the PYD-VSF and GPA respectively. Given the relationships between factors contributing to the positive development of varsity athletes had not yet been established, a method that builds a model was preferred over a method that tests a model (Tabachnick & Fidell, 2007, as cited in Weeks, Keefe & Macdonald, 2012). The independent variables included in each analysis were the academic advising subscale of the SAASEI (Jordan, 2005), whether or not the student-athlete has used tutoring services, four subscales of the YES-S (personal and social skills, cognitive skills, goal setting, initiative; MacDonald et al. 2012), the CART-Q (Jowett & Ntoumanis, 2004), and extracurricular involvement (measured in total hours). Additionally, age, sex, year of eligibility, race, and top athletic performer (yes/no) were also included in both models as independent variables. Due to the exploratory nature of this study, the *p* value criterion used in analyses was set to 0.50. Babyak (2004) has suggested that a more liberal *p* value criterion is able to improve power to detect important predictors, making it more likely to retain predictors in the model.

## Results

### Pre-Analyses and Descriptive Statistics

Frequencies and percentages for all demographic variables are presented in Table 1. Mean and standard deviation values for all predictor variables and/or each subscale with corresponding reliability coefficients are presented in Table 2. Student-athletes reported moderate-to-high utility and usefulness of academic advising services provided by the university ($M = 1.97 \pm 0.74$) and high levels of sport-facilitated experiences in relation to initiative, goal setting, and personal and social skills ($M = 3.68 \pm 0.49$, $3.47 \pm 0.56$, $3.33 \pm 0.50$ respectively on 4.0 scale). Student-athletes reported a relationship with their coach that was of a moderate quality ($M = 5.45 \pm 1.44$ on 7.0 scale). Student-athletes reported that the extracurricular activity in which they engaged in the most was paid work ($M_{\text{off campus work}} = 12.82 \pm 8.24$ hours/week, $M_{\text{on campus work}} = 9.38 \pm 7.31$ hours/week), followed by volunteering ($M = 4.07 \pm 3.23$ hours/week). The average GPA was a $5.50 \pm 1.47$ on a 9.0 scale, reflecting a C+ average amongst student-athletes. Finally, mean values of the PYD-VSF demonstrate that student-athletes generally self-reported moderate-to-high levels of each of the 5 Cs (total score $M = 62.40 \pm 7.41$ of possible 79). Correlations between predictor variables ranged from .00 and .69.

Table 1
*Descriptive Information of the Student-Athletes*

| Variable | Frequency | % |
|---|---|---|
| Sex | | |
| Male | 110 | 55.6 |
| Female | 88 | 44.4 |
| Year of eligibility[1] | | |
| 1 | 81 | 41.5 |
| 2 | 40 | 20.5 |
| 3-5 | 74 | 37.9 |
| Race[2] | | |
| Caucasian | 130 | 65.7 |
| Non-Caucasian | 68 | 34.3 |
| Tutoring Use | | |
| Yes | 83 | 41.9 |
| No | 113 | 57.1 |
| Top Athletic Performer | | |
| Yes | 34 | 17.2 |
| No | 164 | 82.8 |

[1] Year of eligibility was grouped into three groups based on the small number of participants in third, fourth, and fifth year of eligibility compared to the other two groups.
[2] Race was dichotomized as student-athletes who reported being Caucasian versus being non-Caucasian because of the small proportion of several groups of non-Caucasian student-athletes.

Table 2
*Means and Standard Deviations; Cronbach Reliability Coefficients of the SAASEI, YES-S, CART-Q, and PYD-VSF Subscales*

| | Questionnaires and Subscales | M | SD | $\alpha$ |
|---|---|---|---|---|
| Independent Variables | Student Athlete Academic Support Evaluation Instrument (SAASEI) | | | |
| | Academic Advising[a] | 1.97 | .74 | .93 |
| | Youth Experience Survey for Sport[b] – (YES-S) | | | |
| | Personal and social skills | 3.33 | .50 | .88 |
| | Cognitive skills | 2.90 | .80 | .78 |
| | Goal setting | 3.47 | .56 | .79 |
| | Initiative | 3.68 | .49 | .79 |
| | Coach-Athlete Relationship Questionnaire[c] (CART-Q) | 5.45 | 1.44 | .96 |
| | Extracurricular involvement hours/week | | | |
| | Off campus work | 12.82 | 8.24 | |
| | On campus work | 9.38 | 7.31 | |
| | Volunteering | 4.07 | 3.23 | |
| | Cultural | 2.42 | 1.77 | |
| | Hobby | 8.32 | 7.35 | |
| | Social awareness | 2.76 | 2.66 | |
| Dependent Variables | Positive Youth Development – Very Short Form (PYD-VSF) | 62.40 | 7.41 | .71 |
| | Competence | 9.17 | 1.51 | |
| | Confidence | 10.55 | 1.72 | |
| | Character | 13.18 | 1.63 | |
| | Connection | 16.12 | 2.73 | |
| | Caring | 12.91 | 1.62 | |
| | Grade point average (GPA) | 5.50 | 1.47 | |

a Likert scale anchors between 1-5
b Likert scale anchors between 1-4
c Likert scale anchors between 1-7

Table 3
*Correlation Matrix of Independent Variables*

| | Age | Academic advising | Personal and social skills | Cognitive skills | Goal setting | Initiative | Coaching | Extracurricular hours |
|---|---|---|---|---|---|---|---|---|
| Age | 1 | .12 | -.00 | .06 | -.04 | -.02 | -.08 | .15 |
| Academic advising | | 1 | -.16* | -.20** | -.09 | -.11 | -.15* | .04 |
| Personal and social skills | | | 1 | .63** | .69** | .59** | .25** | -.04 |
| Cognitive skills | | | | 1 | .58** | .41** | .26** | .03 |
| Goal setting | | | | | 1 | .63** | .36** | -.02 |
| Initiative | | | | | | 1 | .31** | -.07 |
| Coaching | | | | | | | 1 | -.11 |
| Extracurricular hours total | | | | | | | | 1 |

* Correlation is significant at the .05.
** Correlation is significant at the .01 level.

**Regression Analyses**

Several tests were conducted to verify that data met the assumptions of multiple regressions. The histogram of standardized residuals indicated that the data contained normally distributed errors. Tests also indicated that multicollinearity was not a concern (PYD, $M_{Tolerance}$ = .81, $M_{VIF}$ = 1.30; GPA, $M_{Tolerance}$ = .80, $M_{VIF}$ = 1.31). The data met the assumption of independent residuals (Durbin-Watson values for PYD and GPA were 2.00 and 1.82 respectively). Finally, the scatterplot of standardized residuals showed that the data met the assumptions of homogeneity of variance and linearity.

Results of the two backwards regressions are presented in Table 4, indicating that a number of variables contributed to each model. Specifically, the model for PYD (5 C's), which included variables of race, academic advising, tutoring, personal and social skills, goal setting and total extracurricular hours, was found to be significant ($F(6,136) = 10.36$, $p < .01$), accounting for 31% of the variation in PYD scores. The variables able to significantly predict PYD were personal and social skills (as measured by the YES-S) ( $\beta$ = .39, $p < .01$) and total extracurricular hours ( $\beta$ = -0.16, $p$ = .03). These results indicated student-athletes that experienced more personal and social skill development within their sport environment, and engaged in fewer hours of extracurricular involvement outside of school and sport, scored better on the 5 C's of competence, confidence, connections, character, and compassion/caring. The model for GPA was also found to be significant ($F(6,136) = 4.22$, $p <.01$), with age, sex, eligibility, race, academic advising, cognitive skills, initiative, total extracurricular hours and athletic performance accounting for 24% of the variation on GPA. Four variables significantly predicted GPA: being in one's second year of eligibility ($\beta = 0.20$, $p$ =.02), being in one's third year of eligibility or higher ($\beta$ = .42, $p <.01$), self-identifying as Caucasian ($\beta$ =-0.16, $p$ = .05), and using academic advising less frequently (and having less positive perceptions of academic advising) ( $\beta$ = .20, $p$ = .01).

Table 4

*Backwards Multiple Linear Regression Predicting PYD and GPA as Outcomes*

| Outcome | Model information | B [95% CI] | $\beta$ | $p$ |
|---|---|---|---|---|
| PYD | Model: $F(6,136)=10.36$, $p<0.01$; $R^2=31.4\%$ | | | |
| | Race | -0.97 [-2.6 to .6] | -0.09 | .23 |
| | Academic advising | -0.55[-1.6 to .5] | -0.08 | .30 |
| | Tutoring | -0.7 [-2.2 to .9] | -0.06 | .38 |
| | Personal and social skills | 4.2 [2.1 to 6.2] | 0.39 | .00* |
| | Goal setting | 1.6 [-0.4 to 3.6] | 0.15 | .12 |
| | Total extracurricular hours | -.07 [-0.1 to -0.0] | -0.16 | .03* |
| GPA | Model: $F(10,132)=4.22$, $p<.01$; $R^2$ =24.2% | | | |
| | Age | -0.1 [-0.3 to 0.1] | -0.12 | .21 |
| | Sex | -0.4 [-0.9 to 0.1] | -0.15 | .09 |
| | Year 2 eligibility | .8 [0.1 to 1.4] | 0.20 | .02* |
| | Year 3+ eligibility | 1.3 [0.6 to 1.9] | 0.42 | .00* |
| | Race | -0.5 [-1.0 to -0.0] | -0.16 | .05* |
| | Academic advising | 0.4 [0.1 to 0.7] | 0.20 | .01* |
| | Cognitive skills | -0.1 [-0.4 to 0.2] | -0.07 | .46 |
| | Initiative | 0.3 [-0.3 to 0.9] | .08 | .99 |
| | Total extracurricular hours | -0.0 [-0.0 to 0.0] | -.10 | .20 |
| | Athletic performance | 0.4 [-0.2 to 1.0] | .11 | .16 |

## Discussion

The purpose of this study was to examine the factors within the inter-university sport environment that are associated with student-athletes' overall positive development. Findings identified personal and social skills and extracurricular involvement as important contributors of positive psychosocial development (i.e., 5 C's of PYD), and eligibility, academic advising, and race as predictors of academic achievement (i.e., GPA); however, the directionality of these relationships was not always as might be expected. Below, we discuss these findings in relation to current literature, and highlight strengths, limitations, future areas of research, and practical implications emerging from this study.

### Understanding Facilitators of Positive Development in University Athletes

Findings suggest that sport experiences fostering personal and social skills are associated with the 5 Cs of PYD (i.e., confidence, competence, connections, character, caring/compassion) among university student-athletes. While sport is often considered a context ripe for facilitating personal and social skills (Hellison, 2003; Holt et al., 2017), findings of this study offer additional insight into the processes within the sport environment that may facilitate these outcomes. Specifically, university student-athletes' perceptions of their development through sport experiences, measured through the YES-S (MacDonald et al., 2012), advanced understanding of activities and interactions within the environment that facilitated personal and social skill development. The items comprising the personal and social skills subscale encompass experiences within sport related to taking responsibility, learning to compromise, giving/receiving feedback, regulating emotions, working as a group/team, focusing on community/diversity, and making new friends.

Currently, there is some debate within the literature regarding processes of facilitation of psychosocial outcomes through sport. Holt and colleagues (2017) hypothesized that the creation of a PYD climate (i.e., strong relationships with parents, coaches, peers) can facilitate PYD outcomes, but that intentional teaching of life skills through sport could further enhance PYD outcomes and transfer of skills to other domains. Findings of the current study outline specific processes within the sport environment, which could be experienced in both implicit and explicit manners (e.g., taking responsibility, learning to compromise, giving/receiving feedback, regulating emotions, working as a group/team, focusing on community/diversity, and making new friends), which appear to be facilitating PYD. It is however interesting to note that student-athletes' relationship with coaches (as measured by the CART-Q; Jowett & Ntoumanis, 2004) was not a significant predictor of PYD or GPA in this study. Recent research has highlighted that university athletes can play an active role in their own development (Rathwell & Young, 2017). As such, it is possible that emerging adults may be more likely to thrive (i.e., experience PYD outcomes) in an implicitly focused sport environment, than youth. Collectively, these findings offer preliminary insight into how sport may facilitate PYD, specifically among emerging adults at the high performance level.

Findings also demonstrated that spending more time in extracurricular activities outside of sport was predictive of poorer PYD scores. This finding was somewhat surprising given past research suggesting that non-sport extracurricular involvement in combination with sport involvement can foster more positive developmental outcomes (Forneris et al., 2015; Zarrett et al., 2008). A possible explanation derives from the inclusion of paid work as an extracurricular activity (i.e., paid work was included given the study's focus on emerging adulthood, and the key role of

employment within this period of life; Arnett, 2000). Specifically, extracurricular involvement was measured as the total number of hours spent in different domains, and paid work (on and off-campus) made up the largest portion of student-athletes' extracurricular time. Bachman and Schulenberg (1993) found that time spent in part-time work was correlated with poorer indicators of positive functioning among high school seniors, including higher interpersonal aggression, higher alcohol use and lower educational success. In this way, the lack of distinction between paid work and other extracurricular activities (i.e., volunteering, cultural groups, hobbies, social action) may have blurred potentially important effects of extracurricular involvement on positive developmental outcomes, indicating an important area for further investigation among emerging adults.

It is interesting to note that predictors of academic achievement (i.e., GPA) were different than those of PYD (i.e., 5 Cs), signifying the unique elements of each outcome (Catalano et al., 1999). Specifically, academic advising, provided by the university's athletic department, was one of three predictors found to significantly predict academic performance. Since a higher score on this scale represents student-athletes having less frequent interactions with, and lower expectations of their academic advisor, this implies that students with higher GPAs were not using academic advising services as frequently and/or did not consider the services to be as helpful. This contrasts a study conducted by Hale, Graham, and Johnson (2009) in the United States, which found that nearly 80% percent of over 400 undergraduate students surveyed indicated they had a personal relationship with their academic advisor, who helped with personal and career goals in addition to academic goals. Although Hale and colleagues' (2009) study was not specific to student-athletes, their findings suggest academic advisors have the potential to act as life-coaches through the development of personal relationships, suggesting future research may be necessary to better understand processes that lead to the most positive and meaningful interactions between athletes and their academic advisors. Further, in the present study, tutoring was not found to be a significant predictor of GPA. This may be because the measure to assess tutoring was a one-item binary variable asking if student-athletes used tutoring during their academic career. Since this measure did not assess the student-athletes' perceptions regarding how useful they found the tutoring services or the frequency in which they received tutoring, we are unable to draw conclusions on how these factors may be related to GPA. Future research should investigate the relationship between these factors and GPA.

Interestingly, one's year of eligibility and not one's age was found to be a significant predictor of GPA, with student-athletes in later years of eligibility having higher GPAs than those in their first year of eligibility. Although a positive correlation between age and GPA in university-aged students has been found in past work (Owen, 2003), findings of this study suggest there may be something unique about one's progression as a student-athlete that positively affects one's GPA. Specifically, U Sports regulates that in order for student-athletes to remain eligible to compete, they must be enrolled in a minimum of three courses in the term which they are competing and also successfully complete a minimum of three full courses or six half courses during the previous academic year (U Sports, 2017). At this institution, student-athletes must attain a minimum of a 2.0 GPA to remain academically eligible for the following season. Student athletes in their later years of eligibility may have had higher GPAs as a result of having to achieve minimum GPA markers at given points throughout their degrees in order to remain student-athletes, or to remain students within a particular program (i.e., those who were not able to maintain given GPA markers were no longer be able to compete in varsity sports in later years). Potuto and O'Hanlon (2007) found that when asked about the contributions of athletics to overall student

development, Division 1 student-athletes ($n$ = 930) identified that participation in athletics had influenced skills such as time management, as well as the ability to make decisions and take responsibility for oneself. The skills that are developed specifically throughout one's career as a university student-athlete may successfully contribute to not only athletic success but also academic success, and manifest in training and competition as well as regular class work. For example, items from the cognitive skills and initiative subscales of the YES-S encompass experiences such as learning how to find information, improving academic skills, and learning to focus attention and push oneself through sport, which are all skills that may be present in academic domains as well. Thus, it appears that the maturation process within the student-athlete experience may facilitate the development of a number of skills, which positively influence academic success independent of age; this area also warrants further investigation.

Additionally, self-identifying as being Caucasian was predictive of having a higher GPA. An extensive body of research has highlighted differences in academic achievement based on race, with complex and extensive sociocultural factors contributing to this disparity (e.g., Maldonoda, 2010; Kao & Thompson, 2003). Findings of this study suggest that the university sport context does not appear to serve as a protective factor against this concern, indicating further research is needed to better understand how to advance opportunities for student-athletes of minority groups.

Interestingly, the relationship between athletic performance and both PYD and GPA was not found to be significant. This could be due to the homogeneity of the sample and the fact that being a university student-athlete indicates an already high level of athletic ability. In this way, stratification based on provincial and national achievements did not further differentiate levels of athletic performance at this level of competition. Similarly programs' facilitation of cognitive skills, goal setting and initiative, as measured by the YES-S, were not significant in either model. This again could be due to student-athletes entering varsity sport programs with these skills already well developed, as this sample lacked variability in these skills, and thus differentiating between different levels of these skills was somewhat problematic within analyses.

**Strengths, Limitations, and Future Directions**

In this study, we expand upon current PYD literature by focusing on factors within the sport environment that may facilitate positive developmental outcomes. It has been argued that more research is needed to better understand the relationship between PYD of high performance athletes beyond childhood and adolescence (Fraser-Thomas et al., 2017; Fraser-Thomas & Strachan, 2015); findings of this study contribute towards a preliminary understanding of this issue, as this is one of the first studies to identify factors associated with PYD outcomes and academic success, among emerging adults, in a high performance sport context.

Key strengths of the study include the total number of participants, the recruitment of a relatively high proportion of potential participants from the institution, and approximately equal male-female split, across varied varsity sports and years of eligibility, ensuring broad representation of the student-athlete population at this particular university within the sample. Additionally, this was among the first studies to examine developmental outcomes in Canadian university student-athletes, with the majority of research in this area having been done in American (i.e., NCAA) contexts (Carodine, Almond, & Gratto, 2001; Ferris, Finster, & McDonald, 2004; Gaston-Gayles, 2004; Potuto & O'Hanlon, 2007). The timing of the data collection (i.e., as most teams were concluding their season) was seen as a strength given participants were able to retrospectively reflect upon their entire year (and previous years in the case of upper year students). The recruitment of student-athletes from this one particular institution was deliberate; by focusing

on one of the largest post-secondary institutions within Canada, we were afforded the opportunity to recruit a large sample of varsity athletes, while also eliminating variability in contexts or supports for athletes that may exist at different institutions.

Some of the study's limitations afford direction for important future research. Evidently, our recruitment at only one institution eliminates the possibility of generalizing to any other context or population, highlighting the need for further research within different populations (e.g., smaller universities, smaller communities, different performance levels from recreational to national team members) to better understand how different sport environments may optimally foster PYD outcomes in emerging adults. Additionally, while our study allowed for retrospective reflection upon student athletes' university sport year or career, future research should draw upon longitudinal designs to prospectively capture key events and experiences that may be contributing to student-athletes' development over their entire athletic career. Additionally, the exclusion of measuring negative PYD outcomes is an important limitation to consider given the association between sport and negative PYD outcomes (Bean, Fortier, Post & Chima, 2014; Sønderlund et al., 2014). Future studies should assess the factors within interuniversity sport contributing specifically to these various negative sport outcomes. It is worth noting that the use of an overall composite score of the 5 Cs as a measure PYD could be seen as a limitation. Given the field of PYD research remains relatively new, future studies should investigate more specific PYD outcomes, including each of the 5 Cs in isolation. Finally, in line with recent models of PYD through sport (e.g., Holt et al., 2017), an important next step in the study of PYD and academic success among high performance emerging adult athletes would be focus on how the skills acquired within sport contexts transfer into other domains of life, and the potential role of the athlete, their peers, coaches, families (Rathwell & Young, 2017) and athletic departments in best facilitating this transfer among all student-athletes.

**Practical Implications**

Findings of this study offer preliminary information and insight for athletes, coaches, sport administrators, and institutions aiming to optimize student athletes' overall development within Canadian universities. In particular, athletes' perceived experiences in sport related to personal and social skills were shown to contribute to their positive psychosocial developmental outcomes. As such, coaches and athletic departments should aim to facilitate these skills among student-athletes through specific coach education and/or workshop training focused on teaching the specific processes by which personal and social skills may be facilitated, and by raising awareness of the inherent value of these skills to athletes' development (i.e., of competence, confidence, connections, character, caring/compassion). As most institutions take pride in their student athletes as current and future community models, the value of and approaches to facilitating personal and social skills will likely be welcomed. It is also interesting to consider findings that were not significant in relation to allocation of resources. While further research is necessary, sport programs' facilitation of cognitive skills, goal setting and initiative were not highlighted as significant predictors of PYD or GPA, indicating that some factors may be more important to address within coach training and institutional mandates, than others.

Findings regarding academic advisors in relation to GPA were somewhat surprising, as they were in the opposite direction as expected, and in contrast to past work in this area (e.g., Hale et al., 2009). This may be in part due to the large number of student-athletes at this institution ($n$=501), relative to the small number of academic advisors (n=1). Rathwell and Young's (2017) recent study highlighted the important roles of coaches, parents, and peers in facilitating the

development of life skills, while Elliot (2002) found that having a sense of belonging was one of the key determinants that students identified as being associated to their levels of satisfaction. As such, further research is necessary to determine if academic advisors may also be included among key supporters within this specific population (i.e., high performing emerging adults student-athletes), and what specific roles and conditions are necessary for academic advisors to be effective. Along these lines, the result that student-athletes in later years of eligibility had higher GPAs suggests that more experienced student-athletes also have the potential to play an important mentoring role among less experienced athletes. Finally, findings highlight academic support may be particularly important among student-athletes of visual minority groups, and further exploration is required to determine how this support is best delivered.

In sum, this study explored factors within inter-university sport, which contributed to PYD outcomes and academic success. Findings advance understanding of PYD among emerging adults engaged within a high performance context, while also offering information and insight for coaches, athletes, sport administrators, and institutions aiming to optimize the overall development of Canadian university student-athletes.

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