TRANSFORMATIONAL LEADERSHIP AND POSITIVE DEVELOPMENT: ASSESSING THE CASCADE EFFECT IN UNIVERSITY SPORT

OLIVIA HAWKINS
Bachelor of Science, University of Lethbridge, 2023

A thesis submitted in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE

in

KINESIOLOGY

Department of Kinesiology and Physical Education
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

TRANSFORMATIONAL LEADERSHIP AND POSITIVE DEVELOPMENT: ASSESSING THE CASCADE EFFECT IN UNIVERSITY SPORT

OLIVIA HAWKINS

Date of Defence: July 3rd, 2025

Dr. S. Rathwell Thesis Supervisor	Associate Professor	Ph.D
Dr. P. Pope Thesis Examination Committee Member	Associate Professor	Ph.D
Dr. S. Turgeon Thesis Examination Committee Member	Associate Professor	Ph.D
Dr. R. Kossuth Chair, Thesis Examination Committee	Assistant Professor	Ph.D

ABSTRACT

The Full-Range Leadership Model (FRLM) stipulates that transformational leadership is effective because the behaviours of the leaders cascade down throughout the organization, creating more transformational leaders. However, this phenomenon has yet to be studied within the sport context. The purpose of this study was to examine the influence of the cascade effect on the relationship between coaches' transformational leadership and university student-athletes' (SAs) positive development (PD) over time. Using a longitudinal design, 30 athletes (20 female, M_{age} = 20.47) from various U SPORTS teams completed surveys at three points during their season assessing their coaches' transformational leadership behaviors (DTLI), the transformational qualities of their teammates, and their own PD outcomes (USES). Correlational analyses were used to test whether a) the number of transformational team leaders relates to changes in athletes PD, b) coaches' TFL behaviours are related to changes in PD, and c) coaches' TFL behaviours are related to changes in the number of transformational team leaders. Results indicated that higher levels of coaches' transformational leadership were associated with reductions in negative sport-related experiences such as negative peer interactions and inappropriate adult behavior. Furthermore, teams with a greater density of transformational peer leaders reported stronger development in areas such as initiative, basic skills, and social capital. Evidence of a cascade effect—whereby transformational coaches influenced the emergence of transformational team leaders—was found primarily between the start and midpoint of the season. However, mediation analyses did not support the cascade effect as a mechanism linking coach leadership to PD outcomes. These findings offer novel insight into how transformational leadership functions within university sport and provide practical implications for leadership development among student-athletes.

CONTRIBUTION OF AUTHORS

Olivia Hawkins – Conceptualized study design, conducted literature review, developed research questions, adapted scales and designed surveys, completed and submitted ethics application, led recruitment, managed study organization, collected and analyzed the data, interpreted the findings, and took a lead role in writing the report.

Dr. Scott Rathwell – Assisted with: conceptualization of study design; development of research questions; revision of ethics application; study management/organization; interpretation of the findings. Reviewed and contributed drafts of the written report.

Dr. Paige Pope – Assisted with: conceptualization of the study design; development of the research questions.

Dr. Stéphanie Turgeon – Assisted with: conceptualization of study design, development of research questions.

ETHICS STATEMENT

Work described in this thesis received research ethics approval from the University of Alberta Research Ethics Board, Project Name "TRANSFORMATIONAL LEADERSHIP AND POSITIVE DEVELOPMENT: ASSESSING THE CASCADE EFFECT IN UNIVERSITY SPORT", Pro00142215, September 26th, 2024.

PREFACE

The work presented in this thesis is based on the research of Olivia Hawkins and was conducted at the University of Lethbridge through the Psychology for Active Living and Sport (PALS) lab. I, Olivia Hawkins, was the principal investigator and main contributor to all elements of the research and writing presented in this thesis, bearing responsibility for revision of the literature, study design, recruitment, data collection and analysis, interpretation of results, and composition of the thesis. Dr. Scott Rathwell of the University of Lethbridge supervised this project, providing guidance throughout the entirety of the process and feedback on all aspects. Further, Dr. Paige Pope of the University of Lethbridge and Dr. Stéphanie Turgeon of the Université de Québec on Outaouais provided feedback on the study design, as well as methodological and theoretical suggestions to improve the strength of the project.

ACKNOWLEDGEMENTS

Dr. Scott Rathwell – Thank you so much for your guidance and encouragement, not only through my graduate career, but my undergrad as well. If it wasn't for you, I never would have even considered pursuing a Master's degree and I am so grateful that I did. The lessons I have learned and that you have taught me are things I will carry with me for the rest of my life.

Dr. Paige Pope & Dr. Stéphanie Turgeon – Thank you so much for your continued insight and support throughout this whole process. I really appreciated the opportunity to hear other perspectives and opinions, and this project wouldn't have been the same without your help.

My family – It has been a long 7 years apart, but I appreciate your constant love and support throughout my journey in Southern Alberta more than you know. Thank you for listening to my Facetime rants, proofreading my job applications, and just giving me advice on life (even when I didn't ask for it).

PALS Lab – I am so grateful to have gotten to the opportunity to meet and work with all of you. Having this sense of community and friendship was a huge part of my graduate experience, and I will forever cherish the relationships we have built. Without your constant support and encouragement I would not have been able to get where I am today, and I definitely would not have survived statistics.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Abbreviations

PD	Positive Development
TFL	Transformational Leadership
FRLM	Full-Range Leadership Model
SA	Student-athletes

Chapter 1: Introduction

The positive development (PD) framework takes a proactive approach to youth development and focuses on educating and engaging youth (ages 12-17) in productive activities (Lerner et al., 2005). In contrast to reductionist approaches, the PD framework sees individual as resources to be developed rather than problems to be fixed, whereby a young person's ability to make positive, healthy contributions to family, community, and civil society are positive developmental outcomes (Lerner & Benson, 2003). Within the youth sport domain, youth can develop transferable personal and social life skills, along with physical competencies that will enable them to thrive and contribute to their communities (Holt, Deal, & Smyth, 2016). Of note, PD has been predominantly studied in youth and adolescent contexts, with less focus on older populations such as emerging adults (Deal & Camiré, 2016; Rathwell & Young, 2018a).

Emerging adulthood

Between the ages of 18 to 25, emerging adulthood is a considered the final transition period from youth to adulthood, where emerging adults undergo a significant change in work, housing, education, and relationships, in the absence of typical markers of adulthood (marriage, childbirth, etc.). Emerging adulthood is characterized by a growing sense of independence from others and a necessity for self-experimentation, where individuals seek to discover the consequences of their own actions (Arnett, 2000). The relevance of personal development (PD) for emerging adults stems from the uncertainty that emerging adults face in various life domains such as housing, education, work, and interpersonal relationships (Arnett, 2000, 2006). Consequently, the skills, attributes, and relationships cultivated during this period play a crucial role in an individual's success and their ability to transition into adulthood and contribute as functional members of society. While commonalities exist between PD associated with sports during adolescence and those in emerging adulthood, numerous PD outcomes exist that are uniquely significant for emerging adults (Arnett, 2000; Rathwell & Young, 2018a).

Positive development in university sport

In addition to having unique PD outcomes, the contexts through which PD is achieved in emerging adulthood are also different from in youth and adolescence. Thus, there is value in exploring how theses unique contexts affect PD (Rathwell & Young, 2018a). One setting that has been argued to promote PD in emerging adulthood is university sport. University sport differs from youth sport in that student-athletes (SAs) are tasked with balancing sport, academics, and navigating the new responsibilities (e.g., grocery shopping, working, etc.)

In Canada, U SPORTS is the governing body that oversees fifty-six universities and over twelve-thousand athletes. The goal of U SPORTS is outlined in their mission statement: "U SPORTS leads and collaborates with our membership and conferences, to optimize uniquely Canadian experiences for student-athletes, coaches and staff to thrive to their full potential" (U SPORTS Strategic Plan, 2025). U SPORTS' ongoing commitment to excellence is further reflected the core values, which include *being SA focused*, *diverse and inclusive experiences*, *being performance-driven*, *safety on and off the field of play*, *collaboration*, and *service excellence* (U SPORTS Strategic Plan, 2025). Notably, most of the literature on PD and university sport is largely based in Canada (Rathwell & Young, 2016; Harris et al., 2018).

Athletes who participate in university sport have been shown to report clear PD benefits (Rathwell & Young, 2016; Potuto & O'Hanlon, 2007; Harris et al., 2018). When asked about the contributions of athletics to overall development, SAs identified that participation in athletics promoted skills such as time management, as well as the ability to make decisions and take responsibility for oneself (Potuto & O'Hanlon, 2007). A quantitative study by Harris et al. (2018)

sampled 198 Canadian university SAs from a variety of sports and had them fill out a questionnaire pertaining to the use of academic advising, tutoring, extracurricular involvement, sport -related experiences, coaching, and PYD outcomes. They found when SAs perceived to practice different skills (such as responsibility, compromising, working as a group/team, etc.) through university sport, they also perceived to develop an internal sense of positive self-worth, a sense of empathy for others, positive bonds with others, respect for societal and cultural norms, and positive view of one's actions as a result. Based on this research, university sport is an environment in which SAs are able to foster and further develop skills that will help them succeed in the future.

To measure athletes' PD in university sport, Rathwell and Young (2016) created the University Sport Experience Survey (USES), a 46-item tool assessing six PD outcomes (initiative, basic skills, interpersonal relationships, teamwork and social skills, adult networks and social capital), and four negative experiences (stress, negative peer interactions, social exclusion, and inappropriate behaviours) associated with university sport. When looking at athletes' experience in university sport using the USES, Rathwell and Young (2016) found that on average athletes "agreed" they improved their initiative, teamwork, and social skills. They "somewhat agreed" that they developed interpersonal skills and adult networks and social capital, and they were "uncertain" whether they developed basic skills and experienced stress. The student athletes also generally reported that they "somewhat disagreed" that they experienced social exclusion and "disagreed" that they experienced negative peer interactions. This tool provides researchers with a way to measure SAs PD within the specific context of university sport, and the findings of this study further support university sport as a domain in which development is occurring.

Importance of coaches

PD does not simply occur by participating in sport. Instead, it is through the interactions with others, as well as the environment and developmental opportunities that athletes are exposed to. Of the individuals athletes interact with, coaches have been identified as one of the most important PD agents in youth sport settings (Vella et al., 2011; Deal & Camiré, 2016). A study by Gould and Carson (2010) explored the link between the perceived actions and behaviours of high school coaches and athletes positive and negative experiences in high school sport. They found that participants reported higher levels of development of emotional regulation, cognitive skills, and linkages to community when they perceived higher levels of coaching behaviours related to practicing goal setting, connecting sport lessons to life, and positive rapport with the athletes. On the other side, participants were less likely to perceive their coach as someone who helped them work on mental preparedness, goal setting, competition strategies, and model good sportsmanship when they reported greater levels of negative rapport. These athletes were also more likely to report experiences of social exclusion and negative group dynamics in their high school sport.

Research has also shown that coaches are aware of their responsibilities to further PD (Gould et al., 2013; Vella et al., 2011). Coaches ranked helping young people develop psychologically and socially as one of the most important coaching objectives, and agreed or strongly agreed that teamwork, the value of hard work, time management, and goal setting were developed through high school sport participation (Gould et al., 2013). Results from this study also revealed that participants perceived that coaches as a general group have considerable influence over the values and behaviours of their athletes. Further, qualitative work by Vella et al. (2011) revealed eight outcomes that coaches saw themselves as responsible for developing in adolescents: competence, character, connection, life skills, positive affect, positive psychological capacities, and positive team climate. Together, these studies illustrate that not only are coaches important for PD, but they recognize their impact on their athletes.

Coaches have been shown to facilitate PD in emerging adult populations as well. They do so through employing a number of strategies, such as by creating a team culture and/or providing opportunities to apply skills learned in sport to outside domains (Deal & Camiré, 2016; Vella et al., 2011). Within the university sport context, researchers have found that coaches believe sport could be used as a tool to develop PD outcomes such as tolerance, dealing with diversity, teamwork, perseverance, and caring for others. Many indicated that in order to do so, it is critical to create a positive climate, where athletes felt included and were able to learn valuable life skills (Lima et al., 2021). They also described employing implicit (i.e., modeling) and explicit (i.e., providing appropriate support, and positive feedback) strategies to support PD (Banwell & Kerr, 2016; Rathwell & Young, 2018b). Additionally, coaches provide direct opportunities to contribute (e.g., inviting athletes to help out at their sport camps) and made athletes aware of opportunities to contribute within the community (e.g., raising funds for cancer research) (Deal & Camiré, 2016). By facilitating these opportunities, coaches allowed athletes to further develop organizational and life skills that allow them to thrive in all areas of life. These findings indicate that while a large portion of the research has taken part in youth sport, university coaches also impact their athletes PD. University coaches continue to influence their athletes by teaching skills that extend beyond sport and transfer to athletes' everyday lives.

Transformational leadership

Given the importance of coaches' role in athletes' development, researchers have begun to use leadership theories to explore how coaches foster PD. One particularly fruitful leadership theory may be the Full-Range Leadership Model (Avolio & Bass, 2002), which highlights three forms of leadership: *laissez-faire*, *transactional*, and *transformational. Laissez-faire* leaders are considered to be the most inactive leaders. They avoid making decisions and take an absent hands-off approach to leading. *Transactional* leaders lead through exchange relationships (Avolio & Bass, 2002). They use contingent reward to set expectations and provide rewards or consequences based on followers' performance. Transactional leaders manage behaviours in an active or passive form. When using active management by exception, the leader monitors for errors and makes corrections when necessary in real time. When using passive management by exception, the leader waits for errors to occur before correcting behaviour. *Transformational* leadership is widely considered to be the most effective leadership profile (Bass et al., 1987).

Transformational leaders are defined as those who set challenging goals and expectations. In addition, they motivate others to achieve more than they originally thought possible. Such leaders transform their followers into leaders and encourage them to put the interest of the group before their own. There are four components to transformational leadership (Avolio & Bass, 2002). Idealized leadership involves behaving as role models, encouraging followers to emulate their actions. Inspirational motivation inspires others by providing meaning and challenge in their work. Intellectual stimulation encourages innovation and creativity by prompting followers to question assumptions and reframe problems. Individualized consideration focuses on each individual's growth needs, with leaders acting as mentors. In this study, we focus on transformational leadership.

When examining links with different PD outcomes, coaches' transformational leadership has been associated with athlete's perceived levels of competence (Price & Weiss, 2013), as well as life skill development (de Albuquerque et al., 2021). For instance, Vella et al. (2013) found that athletes whose coaches participated in transformational leadership training reported higher abilities to self-navigate, set goals, and work with others. Furthermore, when athletes perceived their coaches to display a more transformational leadership profile (higher levels of democratic, social support, and positive feedback), they were more likely to score higher on the development of personal, social, and cognitive skills, goal setting, and initiative (Albuquerque et al., 2021). Conversely, when athletes perceived their coaches to display greater autocratic behaviours, they were less likely to score higher on development of personal and social skills, and goal setting (Albuquerque et al., 2021). Notably, these studies demonstrate associations between coaches' transformational leadership and athletes' PD but were not conducted in the university sport context.

Empirical research on transformational leadership and PD in the university sport context, is limited. Most studies on university and emerging adult populations have focused on the impact of transformational leadership on team performance and performance-related outcomes, such as task cohesion (Mach et al., 2022; Charbonneau et al., 2001; Smith et al., 2013; Cronin et al., 2015). One study by Rathwell and Young (2018b) explored coaches' perspectives on behaviors they believed facilitated positive development in their athletes. Notable, the coaches studied were all recommended by athletes across Canada as being individuals who invested considerable time, effort, and concern towards athletes personal and psychosocial development. Through interviews, they found that these coaches used several transformational behaviours. They exhibited individual consideration by establishing a support network, having an open-door policy, and believed themselves to be a counselor or life coach to their athletes. Inspirational motivation was displayed by building a team culture and reinforcing a shared identity. They exhibited idealized leadership by modeling desired behaviours and holding athletes accountable to team values. Finally, they used intellectual stimulation by exposing athletes to developmental experiences, involving athletes in decision making, and stimulated athletes through the use of questioning. Together, these findings suggest a link between transformational behaviors and PD. However, few studies have investigated the causal mechanisms underlying this relationship (Turnnidge et al., 2016).

Cascade effect

According to the Full Range Leadership Model, one reason transformational leadership is effective is that it creates a cascade effect that permeates throughout the ranks of an organization. In essence, when transformational leaders model favourable behaviours, they are hypothesized to be replicated by their immediate followers (e.g., athlete leaders), and this trend continues down through an organizational ladder (Bass et al., 1987). This phenomenon, however, has only been studied cross-sectionally and has not been examined in sport (Bass et al., 1987; Byun et al, 2020). Bass et al. (1987) examined transformational leadership at two levels of management within a government agency and found significant positive correlations between transformational behaviours displayed by supervisors and their managers.

More recently, the trickle-down effect of leadership was investigated by Byun et al. (2020). They surveyed supervisors and their direct subordinates from six major companies in South Korea and found that the empowering leadership behaviours of higher-level leaders was positively associated with empowering leadership behaviour of lower-level leaders. Although the abovementioned studies suggest a cascade effect, they were limited by their cross-sectional design. Without a longitudinal assessment of the cascade effect, it is not possible to know whether the leaders' use of transformational leadership caused their followers to be more transformational, or whether another explanation existed (the organization simply hired transformational people at each level).

Another limitation of the above-mentioned literature is that the cascade effect has not been explore in sport. However, there is reason to believe that this effect will be beneficial for athletes' positive development should it result in more transformational athlete leaders. For instance, through semi-structured interviews Santos et al. (2019) found that team captains recognize the need to become positive role models and focus on life-skill development. Another study by Hoffman et al. (2017) interviewed 14 elite athletes aged 20 to 34 (M = 26.36, SD = 3.43) who reported being peer mentored by other athletes throughout their sporting careers. According to the athletes, the mentoring they received facilitated their personal growth, enhanced their perception of competence, and clarified their identity, both inside and outside of the sport setting. Furthermore, they described that the guidance they received from their mentors was instrumental in increasing their sport confidence, performance and development, and willingness to mentor other teammates or athletes.

Furthermore, transformational peer leaders have been shown to effectively promote positive individual and group outcomes (Price & Weiss, 2013). More specifically, when athlete leaders were rated as more transformational, they were more likely to have teammates who enjoyed their sport, were motivated to pursue challenging tasks, and were interested in learning skills. Within the university setting, coaches have also described using senior athletes to reinforce team culture (Rathwell & Young, 2018b). This tactic may lend to a larger phenomenon that mediates the relationship between transformational leadership and positive development in sport. Together, these findings indicate that transformational athlete leaders have the potential to influence the behaviours of their peers, and that the creation of transformational athlete leaders (cascade effect) may help explain the positive links between transformational leadership and PD found in past studies.

The current study aimed to examine whether or not the cascade effect exists within a university sport setting, and whether or not this phenomenon facilitates coaches' influence on athletes' positive development. To do this, we employed a longitudinal study design, where athletes were asked to fill out surveys regarding their positive development, their coach's transformational leadership, and the transformational leadership of the members of their team at three points throughout their season.

CHAPTER 2: TRANSFORMATIONAL LEADERSHIP AND POSITIVE DEVELOPMENT: ASSESSING THE CASCADE EFFECT IN UNIVERSITY SPORT

Olivia Hawkins, University of Lethbridge

Introduction

Sport has long been identified as a setting in which an individual is able to undergo positive development (PD). Research on youth (ages 12-17) has shown that through sport they develop life skills that further their ability to thrive in society (Holt, Deal, and Smyth, 2016). Emerging adults (ages 18-25) also derive positive developmental benefits through sport, however this population is underrepresented in the literature (Arnett, 2000; Rathwell & Young, 2018a). They are described as undergoing a period of their lives that consists of a lot of change, typically in housing, education, work, and a growing number of responsibilities (Arnett, 2000; 2006). Therefore, they are required to develop certain skills in order to be successful. These skills can differ from those developed in youth sport (Rathwell & Young, 2016), and so it is important to examine what these skills are and the contexts in which they occur.

One context that has been argued to promote PD in emerging adults is university sport. University SAs also face a greater number of responsibilities, such as balancing work, academics and sport. In the literature, there is evidence that supports participation in university sport as facilitating PD in athletes (Harris et al., 2018; Potuto & O'Hanlon, 2007; Rathwell & Young, 2018a). Specifically, athletes have reported that their involvement in university sport promoted skills such as initiative, teamwork, social skills, and time management (Rathwell & Young, 2016; Potuto & O'Hanlon, 2007). They also described enhancing their abilities to make decisions and take responsibility for themselves (Potuto & O'Hanlon, 2007). When they had the opportunity to practice different skills (responsibility, compromising, working as a group/team, etc.) they perceived themselves to develop an internal sense of positive self-worth, empathy for others, and positive views of one's actions as a result.

While the research clearly supports the existence of PD in university sport, it also emphasizes that this does not simply occur through participation. Instead, a large part of their development occurs through interactions, experiences, and the environment that the athlete is exposed to. Coaches, specifically, have been identified as one of the most important influences on athletes PD (Vella et al., 2011; Deal & Camiré, 2016). In youth sport, coaches that were perceived to display higher levels of goal setting, competition strategy, relating sport lessons to life, and positive rapport were linked to athletes that reported greater development of skills, such as emotional regulation, cognitive skills, prosocial norms, and linkages to community (Gould & Carson, 2010). In university sport, quantitative literature is limited on coaches' effect on athletes' PD. However, through interviews, researchers have found that coaches believe that creating a positive team climate, as well has employing strategies, like modeling behaviours, providing appropriate support, and positive feedback, are crucial for facilitating PD outcomes in sport, such as tolerance, teamwork, perseverance, dealing with diversity, and caring for others (Lima et al., 2021; Banwell & Kerr, 2016; Rathwell & Young, 2018b).

With coaches having such an important role in athletes' PD, there has been an emphasis in the research on leadership theories that may help to explain this. One leadership theory is the Full-Range Leadership Model (FRLM; Avolio & Bass, 2002). The FRLM identifies three types of leadership that exist on a continuum: *laissez-faire*, transactional, and transformational. These forms of leadership range in involvement and effectiveness, with *laissez-faire* being the least and transformational being the most effective. Transformational leadership is broken down into four components (Avolio & Bass, 2002): (a) Idealized leadership refers to behaving as a role models encouraging followers to emulate their actions; (b) Inspirational motivation involves inspiring others by providing meaning and challenge in their work; (c) Intellectual stimulation revolves around encouraging innovation and creativity by prompting followers to question assumptions and reframe problems; (d) Individualized consideration focuses on each individual's growth needs, with leaders acting as mentors. We will be focusing on transformational leadership for the purposes of this study due to its links with different PD outcomes (Albuquerque et al., 2021; Price & Weiss, 2013). In youth sport, when athletes perceived their coaches to display a more transformational leadership profile, they were more likely to score higher on several skills, such as goal setting, initiative, and cognitive and social skills (Albuquerque et al., 2021). Quantitative research on transformational coach behaviours and PD is limited in the university sport context. However qualitative findings are more salient. Through interviews, researchers found that coaches who are perceived as having devoted time, effort, and concern towards their athletes PD were reported using several transformational behaviours (Rathwell & Young, 2018b). They established support networks, reinforced a shared identity, acted as a role model, and involved athletes in decision making.

These findings help advocate that transformational coaches can facilitate PD in their athletes, however, the mechanism through which this occurs is still misunderstood (Turnnidge et al., 2016). The FRLM suggests that transformational leadership is effective because it creates a cascade effect of leadership throughout an organization. Essentially, an effective leadership models favourable behaviours (e.g., considering each athlete as an individual, or receiving input from others before making a decision), which are replicated by their immediate followers (Figure 1.). This trend continues downward through levels of followers until they themselves become effective leaders as well (Bass et al., 1987). This phenomenon, however, has only been studied cross-sectionally and in an occupational setting (Byun et al., 2020), but there is reason to believe that it may exist within a sport setting as well. Coaches have been shown to use athletes as peer mentors and to create a shared team culture (Rathwell & Young, 2018b). Furthermore, transformational athlete leaders have been linked to personal and group outcomes such as self-navigation, goal setting, and working with others (Price & Weiss, 2013), and team captains have reported recognizing the importance of being positive role models and focusing on life-skill development (Santos et al., 2019). These findings support that transformational athlete leaders can help to further PD outcomes of their peers, and lend to the idea that the creation of transformational athlete leaders (cascade effect) may be a mechanism that influences these links between coaches' transformational leadership and athletes' PD.

It is evident that there is a gap in the literature when it comes to coaches' role in facilitating PD in the university sport context. A large portion of the research being done is qualitative, and there is a need for quantitative research in order verify their findings. There is also evidence that points towards the trickle-down effect of transformational leadership having influence over this relationship, however there is limited research to back it up. This study is one of few to not only assess the cascade effect, but to quantitively and longitudinally assess the relationship between coaches' transformational leadership and athletes' PD in university sport.

Purpose

The purpose of this study was to examine the influence of the cascade effect on the relationship between coaches' transformational leadership and athletes' positive development over time. The research questions are: (a) are coaches' transformational behaviours related to positive developmental outcomes for athletes, (b) are coaches' transformational behaviours related to the density transformational leadership on a team (i.e., the number of transformational leaders on a team), (c) is the density of transformational leadership on a team related to positive developmental outcomes for athletes, and (d) is the impact of coaches' transformational behaviours on athletes' positive development mediated by the density of transformational leadership on a team.

Methodology

Procedure

Once university ethical approval was received, the primary researcher contacted the athletic departments and head coaches at universities in Alberta via email in order to recruit student athletes. Coaches from 23 U SPORTS teams (Women's and Men's basketball, Women's and Men's soccer, Women's rugby, Women's ringette, wrestling, track and field, and swimming, Men's and Women's volleyball, Men's and Women's hockey, football, and cross country) were emailed. They were sent a recruitment letter (Appendix B) and asked to connect the researcher with student-athletes for participation in the study. The researcher was able to connect with 12 head coaches, who passed on the information (Appendix A) to their athletes.

Participants were contacted by the primary researcher via email at three points throughout their sporting season. At each point, participants received a link to fill out the surveys online. Once they provided consent, participants were asked to fill out a demographics questionnaire, the University Sport Experience Survey (Rathwell & Young, 2016), Differentiated Transformational Leadership Inventory (Callow et al., 2009), and asked to rate how well a definition of transformational leadership (Bass & Riggio, 2006) applies to each of their team members. At time-point one, athletes were also asked to complete the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982). Time-point one (S1) occurred prior to the commencement of the regular season. Time-point two (S2) took place approximately in the middle of the regular season. Time-point three (S3) took place at the end of the regular season, during postseason. Due to the differences in season start/end times and length, participants received the surveys at different times according to their sport. Please refer to (Appendix H) for a timeline illustrating when each team participated in each time point.

Participants

A priori power analyses were conducted using G*Power version 3.1.9.7 (Faul et al., 2007) to determine the minimum sample size required for this study. Results indicated that 55 participants were required for linear multiple regressions using a medium effect size, a power of .8, and an alpha of 0.05.

A total of 55 people filled out the surveys at Time-point one, however 12 were deemed ineligible due to incomplete data and were removed, giving us an initial sample of 43 participants. At Time-point two, seven people dropped out, leaving us with 36 participants. At Time-point three, six more participants dropped out, leaving us with our final sample of 30 participants. Of the 30 participants who completed all three time points, they ranged from 17-25 years of age (M = 20.47, SD = 1.98). Participants were predominantly Female (Female, 66.7%, n = 20; Male, 33.3%, n = 10) and identified as Caucasian (Caucasian, 93.3%, n = 28; Black/African, 3.3%, n = 1; Mixed, 3.3%, n = 1.) For sport type, 40.0% of participants played soccer (n = 12), 30.0% played ringette (n = 9), 13.3% played rugby (n = 4), 10.0% played basketball (n = 3), and 6.7% wrestled (n = 2). For status, 20.0% indicated being a varsity athlete at their current institution for less than one year (n = 6), while 13.3% were one year (n = 4), 10.0% were two years (n = 3), 23.3% were three years (n = 7), 13.3% were four years (n = 4), and 20.0% were five+ years (n = 6). Most participants (63.3%, n = 19) indicated not being in a formal leadership role on their sport team, such as captain or assistant captain. When asked about which coach they interacted with the most, 90.0% (n = 27) participants reported it being their head coach, 6.7% (n = 2) reported it being their assistant coach, and 3.3% (n = 1) reported their position coach.

Measures

Social Desirability Scale

Participants completed the short form of the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982) at Time-point one. This is a 13-item scale comprised of items such as *No matter who I am talking to, I'm always a good listener* and *I am always courteous, even to people who are disagreeable* (Appendix G). These items were answered in a true-false format, with a score of one point for true and zero points for false. This scale has shown evidence for concurrent validity ($r = 0.93$, $r^2 = 0.86$) with the standard 33-item Marlowe-Crowne Social Desirability Scale, and internal consistency reliability ($r_{KR20} = 0.76$) when used with a university population (Reynolds, 1982).

University Sport Experience Survey

Positive development was measured using the USES (Rathwell & Young, 2016) at each time point. The USES is a 46-item survey measured with nine subscales that address developmental outcomes as the relate to participation in sport: Initiative (e.g., I am better at setting goals for myself), Basic Skills (e.g., I feel that I have improved my skills for finding information), Interpersonal Relationships (e.g., I have become better acquainted with someone from a different ethnic group), Teamwork and Social Skills (e.g., I am more aware of how my emotions and attitude affect others in group situations), Adult Networks and Social Capital (e.g., I believe I have come to know more people in the off-campus community), Stress (e.g., I am frequently unable to study enough for tests), Negative Interactions (e.g., I often do things that are morally inappropriate), Social Exclusion (e.g., I often feel like I don't belong), and Inappropriate

Behaviour (e.g., I am frequently exposed to leaders who are controlling and manipulative). Participants respond to the stem “As a result of my involvement in university sport:” on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) (Appendix D). The USES has been shown have strong internal consistency reliability, with each factor having a CR score above .65, and good factorial validity when using data from the Canadian university sport context (χ^2/df = 1.78, CFI = 0.91, RMSEA = 0.40; Rathwell & Young, 2016). Athletes PD was assessed according to subscale. Scores were computed for each individual subscale by summing the scores for each question that pertained to that particular subscale.

Differentiated Transformational Leadership Inventory

Coaches’ leadership behaviours were measured using the DTLI (Callow et al., 2009). The DTLI consists of 31 items that measure seven transformational behaviours: Individualized Consideration (e.g. Recognizes that different athletes have different needs), Inspirational Motivation (e.g. Talks in a way that makes me believe I can succeed), Intellectual Stimulation (e.g. Challenges me to think about problems in new ways), Fostering Acceptance of Group Goals and Promoting Teamwork (e.g. Encourages athletes to be team players), High Performance Expectations (e.g. Expects us to achieve high standards), Appropriate Role Modeling (e.g. Is a good role model for me to follow), and Contingent Reward (e.g. Praises athletes when they show improvement). Participants responded to the stem “In my experience, my coach:” on a 5-point Likert scale that ranges from 1 (*not at all*) to 5 (*all of the time*) (Appendix E). Support for the internal consistency reliability (each factor had a CR score above .66) and factorial validity (χ^2 = 499.1, CFI = 0.98, RMSEA = 0.05) of the DTLI has been reported (Callow et al., 2009). Coaches’ transformational leadership score was computed by summing the scores for each question and dividing that by the total number of questions (31). For example, if a coach received a total score of 128, their transformational leadership value would be 4.13 (128/31 = 4.13).

Density of transformational Team Leadership

To measure the density of transformational team leadership on a team, players were provided an operational definition of transformational leadership (Appendix F; Bass & Riggio, 2006), which includes an overview of transformational leaders and describes the four I's as follows: Transformational leaders inspire followers to commit to a shared vision and goals for an organization or unit, challenge them to be innovative problem solvers, and develop followers' leadership capacity via coaching, mentoring, and provision of both challenge and support. Transformational leaders behave in ways that allow them to serve as role models for their followers, as well as motivate and inspire them by providing meaning to their work. Transformational leaders also stimulate their followers' efforts to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways. Finally, transformational leaders pay special attention to e ach individual follower's needs for achievement and growth by acting as a coach or mentor.

Participants were provided a roster of their teammates and coaching staff and asked to rate each person according to how strongly they feel that they displayed the behaviours described in the definitions. Participants rated each team member on the definitions provided above using a 7-point Likert scale, ranging from one (*strongly disagree*) to seven (*strongly agree*). For the purpose of this study, only team members with an average rating of six or above were considered transformational leaders. We then divided the number of team members rated as a six or higher by the total number of team members, giving us a score that is standardized to team size. For example, if a soccer team has 26 members, and a participant rates seven people as being a six or higher on the transformational scale, we would have a leadership score that is proportionate to the team size of 0.27 (7/26 = 0.27).

Preliminary analysis

Preliminary analyses were conducted using SPSS 25 software (IBM, 2025). No missing values were found. In order to account for the longitudinal data, change scores were calculated for the independent (i.e., DTLI), dependent variables (i.e., USES), and the mediator variable (i.e., (density of transformational team leadership). Change scores for our variables were calculated by subtracting scores at Time-point one from Time-point two by, Time-point two from time point Three, and Time-point one from Time-point three. For example, if a participant scored a four for Initiative at Time-point one and a five at Time-point two, their value for the change in Initiative from Time-point one to Time-point two would be one (5 – 4 = 1). Next, descriptive statistics were calculated for each time point (see Table 1.).

Paired sample t-tests were run to determine whether there were significant changes in the mean level values of each of our variables of interest between Time-point one and Time-point two, Time-point two and Time-point-three, and Time-point one and Time-point three. To test whether mediation analyses were appropriate, Pearson correlations were calculated at each time point using coaches' transformational leadership (i.e., DTLI), athletes' positive development (i.e., USES), and the density of transformational team leadership. In mediation, the effect of an independent variable on a dependent variable is transmitted through an intervening or mediating variable (Fritz & MacKinnon, 2007). In order for mediation to occur, there must be a relationship with a medium effect size ($r = \geq .30$) or greater between the independent variable and the dependent variable, the independent variable and the mediator, and the mediator and the dependent variable.

Results

T-tests

We calculated paired sample t-tests to determine whether there were differences in coaches' transformational leadership, athletes PD, and the density of transformational leadership across the different points of the season. There was a significant difference found between Initiative at T1 ($M = 5.31$, $SD = 0.87$) and Initiative at T3 ($M = 5.62$, $SD = .075$), $t(29) = -1.96$, $p = 0.03$. There was also a significant difference found between Social Exclusion at T1 ($M = 3.61$, $SD = 1.30$) and Social Exclusion at T3 ($M = 3.16$, $SD = 1.32$), $t(29) = 1.78$, $p = 0.04$. We also found Social Exclusion at T2 ($M = 3.51$, $SD = 1.25$) was significantly higher than Social Exclusion at T3 ($M = 3.16$, $SD = 1.32$), $t(29) = 1.72$, $p = 0.05$. Finally, coaches' transformational leadership at T1 ($M = 4.42$, $SD = 0.44$) was found to be significantly higher than coaches' transformational leadership at T3 ($M = 4.19$, $SD = 0.62$), $t(29) = 2.30$, $p = 0.01$.

Correlations

We calculated Pearson correlations at each time point between coaches' transformational leadership and each of the dependent variables (i.e., nine subscales of athlete's positive development, and the density of transformational team leadership), as well as between the density of transformational and the nine subscales of athletes' positive development[1] (see Table 2.). Of note, due to the small sample size of this study, we inferred meaningful relationships as ones that either had a statistically significant relationship, or a correlation with a medium or greater effect size ($r = \geq .30$).

In this section, all results will be reported according to the relationships between coaches' transformational leadership and athlete PD outcomes, coaches' transformational

[1] Adding the Marlowe-Crowne Social Desirability Scale as a covariate did not impact our relationships. Therefore, to maximize power, we chose to omit it from our analysis.

leadership and the density of team transformational leadership, and the density of team transformational and athlete PD outcomes according to the independent variable at each time point, as well as its change between time points.

Coaches' Transformational Leadership

The following results section is organized according to how (Δ Time 1-Time 2, Δ Time 2-Time 3, and Δ Time 1-Time 3) the independent variable was measured.

Δ Time 1-Time 2. The change in coaches' transformational leadership had a positive association with the change in Inappropriate Adult Behaviour from T2 to T3 ($r = .45$, $p = .01$). The change in coaches' transformational leadership also had a positive relationship with a medium effect size with the change in Initiative from T1 to T3 ($r = -.33$, $p = .08$), and the change in Stress from T1 to T3 ($r = -.32$, $p = .09$). The change in coaches' transformational leadership had a positive association the change in the density of transformational team leadership from T1 to T2 ($r = .38$, $p = .04$). There was also a relationship with a medium effect size with the change in the density of transformational team leadership from T1 to T3 ($r = .30$, $p = .11$,).

Δ Time 2-Time 3. The change in coaches' transformational leadership had a significant negative relationship with the change in Inappropriate Adult Behaviour from T2 to T3 ($r = -.42$, $p = .02$,). There was also a medium effect size present with the change in Negative Peer Interactions from T2 to T3 ($r = -.35$, $p = .06$), and the change in Inappropriate Adult Behaviour from T1 to T3 ($r = -.34$, $p = .07$). The change in coaches' transformational leadership had a relationship with a medium effect size with the change in the density of transformational team leadership from T1 to T2 ($r = -.31$, $p = .09$), and the change in the density of transformational team leadership from T2 to T3 ($r = .36$, $p = .05$).

Δ Time 1-Time 3. The change in coaches' transformational leadership had a significant negative relationship with the change in Inappropriate Adult Behaviour from T1 to T3 ($r = -.45$, $p = .01$), and the change in Negative Peer Interactions from T2 to T3 ($r = -.45$, $p = .01$). The change in coaches' transformational leadership had a relationship with a medium effect size with the change in density of transformational team leadership from T2 to T3 ($r = .30$, $p = .11$)

Density of Transformational Team Leadership

The following results section is organized according to how (Δ Time 1-Time 2, Δ Time 2-Time 3, and Δ Time 1-Time 3) the mediator variable was measured.

Δ Time 1-Time 2. The change in the density of transformational team leadership was not associated with any of the athlete PD outcomes.

Δ Time 2-Time 3. The change in the density of transformational team leadership was found to have a significant positive relationship with the change in Initiative from T2 to T3 (r .52, $p = .00$), as well as the change in Adult Networks and Social Capital from T2 to T3 ($r = .57$, $p = .00$).

Δ Time 1-Time 3. The change in the density of transformational team leadership was found to be significantly positively associated with the change in Basic Skills from T2 to T3 ($r = .40$, $p = .03$).

Mediation

Our results indicated an absence of relationships needed to justify mediation. That is, in no instance did we concurrently find a relationship between the independent variable and a dependent variable, the independent variable and the mediator, and the mediator and a dependent variable. Therefore, mediation was not tested. Given that our study was under powered, we also evaluated whether mediation was warranted using medium effect sizes in lieu of significant relationships. That is, if the effect size between the independent variable and a dependent variable, the independent variable and the mediator, and the mediator and a dependent variable were all medium or greater, we would consider exploring mediation. Results did not support pursuing mediation analyses.

Discussion

The purpose of this study was to examine the influence of the cascade effect on the relationship between coaches' transformational leadership and athletes' positive development over time. Over the course of a season, we asked university student athletes to report on their coaches' transformational leadership, the transformational leadership of their teammates, and their positive development. Several important findings were recorded. First, there did not appear to be a lot of overall growth in athletes PD or the density of transformational team leadership across a season, and coaches transformational leadership decreased significantly from the beginning of the season to the end. Second, our results indicated that higher levels of transformational leadership from coaches was correlated with positive developmental outcomes at different time points. Third, growth in the number of transformational leaders on a team was also positively correlated to a corresponding increase in positive developmental outcomes. Finally, our results indicated some evidence for the existence of the cascade effect, however, the cascade effect did not appear to be necessary for positive development to occur when coaches used transformational coaching behaviours.

Does TFL and PD increase over a season?

Altogether, there was very little change in the mean level values of athletes PD across the season. The exceptions being *Initiative* and *Social Exclusion*, where there were significant medium effects of time. Athletes were more likely to become better at setting and achieving goals, problem-solving, managing their time, and setting priorities over the course of the season. They also experienced fewer instances of social cliques and feeling left out, or like they didn't belong. University sport has been previously shown to be a setting where SAs had to develop strategies to balance sport and school (Rathwell & Young, 2018). They also learned to set sport-specific goals, which translated to goal setting within their everyday lives (Rathwell & Young, 2018). Their experiences in university sport may have contributed to the increase we found in *Initiative*-based outcomes across the sport season, as the athletes made efforts to overcome the demands of athletics and academics. SAs have also described that being on a university sport team felt like a family, where they felt connected to their teammates (Rathwell & Young, 2018). As these relationships develop over the course of the season, SAs may be less likely to experience instances of being left out due to the friendships they have cultivated, contributing to reductions in *Social Exclusion.*

The density of transformational team leadership did not appear to increase or decrease substantially over the course of the season. One potential explanation is how transformational leaders were operationalized in this study. Specifically, identifying a transformational leader as someone rated six or higher on the Likert scale prevented us from capturing changes occurring below that threshold. For instance, a player who was rated as a two at the start of the season and a five at the end would have shown a notable increase in transformational leadership, yet this improvement would not be reflected in our results because they still did not meet the cutoff of six. This suggests that while the number of athletes rated as high in transformational leadership (i.e., six or above) may remain relatively stable throughout the season, increases may be occurring among athletes who present lower levels of transformational leadership (scores of five or below).

This interpretation aligns with previous research on athlete leadership. Loughead et al. (2006) found that athletes nominated as team or peer leaders at the beginning of the season were highly likely to remain leaders at the end of the season. Although they did note some leader turnover within teams, this was largely attributed to teams responding to specific needs across the season. For example, teams with strong chances of success might be more inclined to rely on veteran players rather than rookies; veterans are also more likely to receive higher transformational leadership ratings. Consequently, transformational team leadership may appear stable over the course of a season because athletes with consistently high leadership ratings remain in key roles.

Finally, mean-level values for coaches' transformational leadership decreased significantly from the beginning of the season to the end. This is somewhat concerning, given that previous research has demonstrated that higher levels of coach transformational leadership are associated with a range of positive athlete outcomes, including personal development and prosocial behaviour (Albuquerque et al., 2021; Price & Weiss, 2013). Thus, a decline in coaches' transformational leadership is counter to what one might expect or hope to see across a season. Interestingly, similar findings have been reported in prior literature. Kao et al. (2020) found that football coaches initially rated as highly transformational exhibited a decrease in perceived coaching competency over the course of a season, whereas coaches low in transformational leadership showed increases in competency ratings. They proposed this may reflect the nature of transformational leadership: by fostering athletes' autonomy, growth, and development, athletes may become increasingly independent and less reliant on the coach over time.

One dimension that may explain this shift is intellectual stimulation, which involves encouraging athletes to think for themselves and gradually assume more responsibility and leadership within the team (Avolio & Bass, 2002). If coaches are effectively engaging in intellectual stimulation early in the season, athletes may increasingly take ownership of decision-making and leadership roles as the season progresses. In the present study, coaches were rated as highly transformational at the beginning of the season (M = 4.42 on a five-point Likert scale). Although this mean decreased significantly by season's end, it remained relatively high (M = 4.19). Therefore, it is possible that the decrease in perceived transformational leadership may reflect developmental shifts in athlete independence. As athletes grew and required less guidance, coaches' transformational behaviours may have been perceived as less prominent—not necessarily because coaches were less transformational, but because their athletes had developed and now required fewer transformational behaviours from them.

Transformational coaches can influence athlete PD in the university setting

Coaches' transformational leadership was related to several positive developmental outcomes. Most consistently, when athletes reported that their coach's transformational leadership increased over different time points of the season, they also reported experiencing fewer perceptions of inappropriate behaviours, interactions, or expectations from their sport leaders. Athletes also reported reductions in experiences of immoral, or risky behaviour, and mental and emotional strain related to their university sport experience. Thus, transformational leadership from coaches can have an impact on mitigating negative relationships for athletes.

It is interesting to note that our findings mainly highlighted the reduction in negative experiences, rather than the improvement in positive outcomes. This may be due to the increased association between university sport and stressors for university athletes (Rathwell and Young, 2016). Specifically, when they had a coach who displayed higher levels of transformational leadership, they reported fewer instances of partaking in immoral behaviours, and consuming alcohol or drugs. They also reported fewer exposures with leaders who were controlling or manipulative, put down their ideas, or talked down to them. This is important given that the increased demands that emerging adults face, coupled with the need to balance academics and athletics, has been shown to lead to mental and physical exhaustion (Young et al., 2023). As a result, student athletes might more easily notice a greater reduction in negative experiences like immoral peer interactions and inappropriate adult behaviour if they have a good support system (i.e., transformational coach).

In previous literature, when the athletes felt that their coach supported them and they could talk to them without judgement, their perceptions of their mental health were more positive (Young et al., 2023). Similarly, when rating coaches on transformational leadership, athletes in this study responded to items related to how much their coach treats each team member as an individual, gives them praise when they do good work, and is a good role model for them to follow. Therefore, it is understandable that when coaches exhibited these transformational behaviours, athletes appeared to be more aware of fewer incidents of leaders who treat them poorly and were dissuaded from engaging in behaviours that are morally inappropriate.

Having transformational athletes on the team matters

The change in density of transformational team leadership was also correlated with a number of positive developmental outcomes. Most notably, when athletes reported that the density of transformational leaders on their team increased from the middle to the end of the season, they also reported increased feelings of having developed off-campus social networks and a feeling of support and belongingness in their community during the same time frame. They also reported fewer instances of being left out. These results suggest transformational athlete leaders are especially important for developing social capital. This may stem from the athlete leader's role in guiding their teammates and helping them make connections outside of the university sport context. For instance, athlete leaders have been previously identified individuals who facilitate opportunities for their teammates to contribute to their communities (i.e., volunteering, community engagement, etc.; Deal and Camiré, 2016). Sports have been shown to promote linkages to the community (Fraser-Thomas & Côté, 2009), and these findings suggest that athlete leaders are instrumental in facilitating these relationships.

Athletes also reported that their self-navigation, creativity, and ability to find information also increased with the density of transformational team leadership. More specifically, they were better at setting goals, problem solving, time-management, and their artistic and creative skills improved. Previous studies have examined the effect of transformational athlete leaders and had similar findings, describing that transformational athlete leaders were more likely to have teammates who were interested in learning skills and pursue challenging tasks (Price & Weiss, 2013). However, Price and Weiss (2013) examined an adolescent population and did not assess the growth of athlete leadership networks. When looking at our longitudinal data, we found developmental outcomes improved as the number of transformational leaders on their team increased, suggesting that having a greater number of transformational leaders is conducive to positive development. Previous research has supported this sentiment of "the more the merrier" (Neubert, 1999), and athletes have reported that the ideal number of leaders on a team is 85% (Crozier et al., 2013), making up almost the entire roster. Taken together, these studies emphasize the importance of transformational peer leaders and suggest that more transformational athletes one can have on a team the better.

There is some evidence for that the cascade effect exists, but it doesn't make leaders more effective at facilitating developmental outcomes.

According to Bass et al. (1987), transformational leaders are effective in part because they foster a network of transformational leaders among their followers. That is, when leaders display transformational behaviours, these behaviours tend to be replicated by immediate followers, and the trend continues throughout the organization. This "cascade effect" is believed to amplify the positive impacts of transformational leadership.

To evaluate the cascade effect, two aspects must be examined: (1) whether transformational leadership spreads across an organization, and (2) whether this spread enhances leadership effectiveness. Mean-based analysis suggested that overall, the density of transformational team leadership did not change over the course of the season, and coaches' transformational leadership was generally found to decrease significantly from the beginning to the end of the season. However, we found that when coaches' transformational leadership did increase from the beginning to the middle of the season, it was significantly associated with increases in the number of transformational team leaders during the same period. Moreover, relationships with medium effect sizes suggest that when coaches become more transformational from the middle of the season to the end, the number of transformational team leaders increases across the full season. However, growth in coaches' transformational leadership from the beginning of the season to the end did not appear to be associated with growth in the density of transformational team leadership.

One possible explanation for this temporal pattern is that 36.7% (n = 11) of athletes reported being coached by their current coach for less than one year, and 20% (n = 6) were new to the institution. This suggests that the beginning-to-middle of the season represented the athletes' initial interactions with their coach. Shipherd et al. (2018) found that coaches undergoing successful transitions often prioritize relationship-building and time investment, which may have increased athletes' exposure to transformational behaviours. Additionally, the arrival of a new coach may have encouraged athlete leaders to take on greater leadership responsibilities to help maintain team stability. As such, the most pronounced growth in transformational team leadership likely occurred during this early-season period, coinciding with the establishment of new coach-athlete dynamics.

Although the associations we found provided some evidence for the existence of the cascade effect (Bass et a., 1987), they suggest that the cascade effect doesn't help coaches foster athletes' positive developmental outcomes when using transformational leadership. Specifically, in all cases where coaches' transformational leadership was related to athlete positive development, their transformational leadership was either not related to the number of transformational athletes on the team, or the number of transformational athletes was not related to the positive developmental outcome in question.

A potential explanation may lie in the nature of the dependent variable examined. Much of the existing research on the cascade effect has focused on performance-related outcomes. For example, Byun et al. (2020) found indirect effects of employer's transformational leadership on employee task performance. Similarly, Mach et al. (2022) reported that transformational leadership enhanced team performance via increased team cohesion—a construct closely related to transformational athlete leadership, which also involves inspiring commitment to shared goals and prioritizing collective over individual success. Taken together, these studies suggest that a higher number of transformational athlete leaders may be more likely to impact the relationship between coaches' transformational leadership and team performance than the positive developmental outcomes measured in this study.

Limitations and future directions

Longitudinal research presents a number of advantages. It allows researchers to follow changes in groups over time, limits recall bias by collecting data prospectively, and establishes a sequence of events (Caruana et al., 2015). While longitudinal research is a more comprehensive approach, it can result in less people participating or greater levels of attrition (Caruana et al., 2015). This can result with incomplete data or reduced participation at each successive time point, a problem we faced. For this study, our power analysis indicated that we required a minimum of 55 participants to achieve a power of .8 and an alpha of 0.05. We completed this study with only 30 participants.

Since we required multiple defined time points of the season, we had to set a strict cutoff date for the completion of the first survey. Moreover, once athletes played their first games, they could no longer be recruited. This meant that, during their preseason, players had to agree to take part in the study, as well as complete survey one. This is a known busy time in a student-athletes calendar and previous studies have shown increases in training load during preseason compared to regular season (Wellman et al., 2019). Athletes also had to be willing to participate in surveys two and three in the future, while they were in the midst of their season and school semester, balancing academics and their training schedule. As a result, we saw significant dropout from T1 to T2 ($n = 7$) and T2 to T3 ($n = 6$). As the sample sized decreased, our power to detect a real relationship decreased. This is important to consider because the absence of significant relationships negated our rationale to explore mediation. Thus, it is possible that with a larger sample size we might have found more potential for mediated pathways, but our findings suggest that this is unlikely. With this said, we did also explore justification for mediation using effect sizes in the absence of significant relationships and they supported our decision. These secondary analyses give us more confidence in our final decision not to pursue mediation.

Another limitation was that we only acquired data from one institution. Having data from only one institution limits our ability to generalize the results. Specifically, coaches from the host institution were rated as highly transformational at the beginning of their respective seasons (*M* = 4.42). Therefore, it may be that within this program, coaches with similar values and coaching philosophies were hired. This may not apply to all institutions. Thus, future research on the cascade effect and positive development would benefit from including a number of athletic programs, where coaching profiles may differ.

Another limitation was that our sample was disproportionately female (66.7%). This has potential to affect our findings, as previous literature has reported differences in the positive developmental outcomes that females and males have in sport (Kilic & Ince, 2021; O'Connor et al., 2020). Specifically, males have scored higher on self-confidence, competence, and cognitive skills (O'Connor et al., 2020), while females have scored higher on connection and character (Kilic & Ince, 2021) as a result of their participation in sport. A previous study by Nuzzo et al. (2023) investigated the different factors that differentiated males and females when it came to deciding to participate in research studies. They found women were more concerned about the impact of the study on society and their confidence in the researchers, and men were more largely influenced by the impact of the study on their own health and learning something new about themselves.

Females were also more likely to participate in survey-based studies than males. In order to appeal to the male population, future researchers can try to incorporate a way to place a greater emphasis on explaining the benefits of transformational leadership and how the results of the study may directly impact the participants. In the case of this study, there weren't very many implications that directly influenced the individual participants, but the findings do benefit the student athlete population, which could have been better articulated during recruitment.

We also had an uneven representation of sport. A disproportionate number of participants played either soccer or ringette (70%), and only 6.7% (*n* = 2) of participants were involved in an individual sport. Previous studies have shown athletes in individual sports develop higher levels of self-esteem, self-efficacy, resilience, and perseverance than athletes on team sports (Šagát et al., 2021; Laborde et al., 2016), while team sports have been shown to foster skills such as communication, cooperation, and conflict resolution (Jones, D., 2024). Future studies could benefit from ensuring a wider variety of participants in order to improve the generalizability of their results. Different sports may experience different relationships with their coaches (e.g., rugby teams have a large number of players and not all of them will have the same relationship with their coaches), and therefore, evaluating a range can give researchers a better insight into how transformational leadership will impact their PD.

Another limitation concerns the way transformational team leadership density was assessed. Of note, we provided our own definition of transformational leadership, which has not been previously validated. As a result, participants may not have fully understood the construct when reflecting on their teammates. A limitation also existed in how we analyzed the data. Specifically, we classified team members as either transformational leaders or not based on a cutoff of six or higher on the Likert scale. This dichotomous approach may have restricted our ability to detect the cascade effect of transformational leadership throughout the team by limiting the variability in our measure. For example, an athlete who was rated as a one at the beginning of the season and a five at the end would have meaningful growth in transformational leadership; yet, because they did not cross the threshold of six, this improvement would not be captured by our analysis. Future research would benefit from assessing transformational team leadership with a continuous measure, or by using the average level of transformational leadership across the team. These approaches may allow researchers to identify increases in transformational leadership among student-athletes that fall below the dichotomous threshold but still reflect important development and social contagion effects.

A final limitation was that we focused only on psychosocial development and did not assess metrics that have been more closely tied to the cascade effect in the past. As noted earlier, the evidence that exists for the cascade effect is tied to performance outcomes (e.g., Byun et al., 2020). This is important because we had some evidence to suggest the cascade effect does exist in the university sport context. However, our findings suggest that the cascade effect does not exist for the PD related variables we examined in this study.

CHAPTER 3: GENERAL DISCUSSION

Theoretical Contributions

Our results make several notable contributions to the sport and leadership literature. In sport, there is a large body of literature on the positive effects of transformational coaching and athletes' positive development. For instance, transformational coaches have been linked to improvements in their athletes' goal setting, teamwork, social and cognitive skills, and initiative (Vella et al., 2013; Albuequerque et al., 2021). However, there has been a lack of studies investigating the mechanisms through which this occurs (Turnnidge et al., 2016). This study is the first to our knowledge to provide evidence for the existence of the cascade effect in sport. Our findings suggest that it is likely that the cascade effect does exist in a sport setting, however it does not appear to be mechanism through which we can learn more about the positive impact that coaches' transformational behaviours have on athletes' positive development. Due to our small sample size we may have been lacking the power to identify these relationships, and therefore more work is needed to know why/how transformational leadership promotes PD.

In the leadership domain, our findings add to the knowledge about the FRLM (Avolio & Bass, 2002). Our findings support previous notions that transformational leadership cascades throughout organizations. We showed this in a novel university sport setting. Our results also showed that although transformational leadership does create a trickle-down effect in the university sport setting, it does not add to or subtract from the initial benefits of using transformational leadership alone when promoting positive development in university athletes. These findings suggest that the cascade effect may only be an explanatory construct for performance-based outcomes, which have typically been studied in occupational settings (Byun et al., 2020; Bass et al., 1987).

Methodological Contributions

This study also makes a significant methodological contribution to the literature. Previous studies have only examined the cascade effect using a cross-sectional study design (Byun et al., 2020; Bass et al., 1987). This study is the first to examine the cascade effect longitudinally. Collecting data longitudinally allowed a more nuanced understanding of the cascade effect. For instance, we were able to see that growth in coaches' transformational leadership was more important that their ratings at time one. We were also able to detect when this growth was most impactful. Notably, growth in coaches' transformational leadership from the beginning to the middle of the season had the most significant effect on the growth in transformational team leaders during the same time frame. There was also a relationship with a medium effect size that suggested growth in coaches' transformational leadership from the beginning to the middle of the season was related to growth in transformational athlete leadership from the beginning to the end of the season. The longitudinal nature of this study helps to further our understanding of the FRLM (Avolio & Bass, 2002) in sport, suggesting that a coach's behaviours may be the most impactful for developing leadership in the early stages of an athlete's season.

Practical Contributions

This study provides several practical implications for coaches and athletic programs. First, it provides further support for the use of transformational behaviours in a sport setting, which may contribute to improvements in mental health and overall wellbeing for the athletes. This is true at all levels of leadership assessed in this study. For example, our results suggest that developing transformational coaching can mitigate some of the negative experiences of university sport that student-athletes experience. These include reduced experiences of inappropriate adult behaviour and immoral or risky behaviour. This study also provides evidence that an increased number of transformational team leaders has positive developmental benefits, especially related to developing adult networks and social capital, basic skills, and initiative. Together, these findings suggest coaches and programs should aim to create environments conducive to the development of transformational leadership on their teams in order to help improve athletes' perceptions of social capital, initiative, and basic skills.

Second, this study indicated that athletes adopted and emulated the transformational behaviours of their coaches. Thus, it is likely that interventions that target coaches' transformational leadership will have an additional benefit of resulting in more transformational athlete leaders. While this did not seem to mediate the relationship with positive development, it does not mean that we should disregard the benefits of transformational leadership. Previous studies have shown that effective athlete leaders contribute to increasing team confidence, goal setting, communication, and success (Fransen et al., 2014; Crozier et al., 2013), and our study helps further illustrate the importance of developing transformational leadership to capitalize on these benefits.

Conclusion

Overall, the findings from this study offer support for the use of transformational coaching and some initial evidence of the cascade effect in a sport setting. Specifically, we found transformational coaching created a healthier, more empowering environment that helps athletes grow as people. Our results shows that transformational coaching doesn't just impact athletes directly – it also shapes team culture in a way that spreads leadership, fosters personal growth, and protects athletes from negative experiences. When coaches lead with inspiration, support, and a focus on development, it creates a ripple effect: team leaders adopt similar behaviors, which in isolation benefits the whole team. Although the impact of transformational coaching is not mediated by the cascade effect, having more transformational teams (coaches and athlete leaders) can create an environment where athletes feel more connected socially, gain important life skills, and face fewer harmful experiences.

References

Albuquerque, L. R. d., Scheeren, E. M., Biscaia, R. R., Vagetti, G. C., & Oliveira, V. d. (2021). Positive development of young futsal players is influenced by the coach's method and leadership profile. *International Journal of Sports Science & Coaching, 16*(3), 500-508. https://doi.org/10.1177/1747954120979474

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480. doi:10.1037/0003-066X.55.5.469

Arnett, J. J. (2006). Emerging adulthood: Understanding the new way of coming of age. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 3–19). American Psychological Association. https://doi.org/10.1037/11381-001

Avolio, B. J. & Bass, B. M. (2002). *Developing potential across a full range of leadership: cases on transactional and transformational leadership*. Lawrence Erlbaum Associates. https://go.exlibris.link/xtK0LqNT

Banwell, J., & Kerr, G. (2016). Coaches' perspectives on their roles in facilitating the personal development of student athletes. *Canadian Journal of Higher Education/ Revue Canadienne d'Eseignement Supérieur, 46*(1), 1–18.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership (2nd edition).* Lawrence Erlbaum.

Bass, B. M., Waldman, D. A., Avolio, B. J., & Bebb, M. (1987). Transformational leadership and the falling dominoes effect. *Group & organization studies, 12*(1), 73-87. https://doi.org/10.1177/105960118701200106

Byun, G., Lee, S., Karau, S. J., & Dai, Y. (2020). The trickle-down effect of empowering leadership: a boundary condition of performance pressure. *Leadership & Organization Development Journal, 41*(3), 399-414. https://doi.org/https://doi.org/10.1108/LODJ-06-2019-0246

Callow, N., Smith, M. J., Hardy, L., Arthur, C. A., & Hardy, J. (2009). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of applied sport psychology, 21*(4), 395-412. https://doi.org/10.1080/10413200903204754

Camiré, M., Trudel, P., & Forneris, T. (2012). Coaching and transferring life skills: Philosophies and strategies used by model high school coaches. *The Sport psychologist, 26*(2), 243-260. https://doi.org/10.1123/tsp.26.2.243

Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of thoracic disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63

Charbonneau, D., Barling, J., & Kelloway, E. K. (2001). Transformational leadership and sports performance: The mediating role of intrinsic motivation. *Journal of applied social psychology*, *31*(7), 1521-1534.

Cronin, L. D., Arthur, C. A., Hardy, J., & Callow, N. (2015). Transformational leadership and task cohesion in sport: The mediating role of inside sacrifice. *Journal of Sport & Exercise Psychology, 37*(1), 23-36. https://doi.org/10.1123/jsep.2014-0116

Crozier, A. J., Loughead, T. M., & Munroe-Chandler, K. J. (2013). Examining the benefits of athlete leaders in sport. *Journal of Sport Behavior*, *36*(4), 346-364.

Deal, C. J., & Camiré, M. (2016). University student-athletes' experiences of facilitators and barriers to contribution: A narrative account. *The Qualitative Report, 21*(11), 2097-2102. doi:10.46743/2160-3715/2016.2360

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39,* 175–191. https://doi.org/10.3758/BF03193146

Fransen, K., Vanbeselaere, N., De Cuyper, B., Coffee, P., Slater, M. J., & Boen, F. (2014). The impact of athlete leaders on team members' team outcome confidence: A test of mediation by team identification and collective efficacy. *The Sport Psychologist*, *28*(4), 347-360.

Fraser-Thomas, J. L., & Côté, J. (2009). Understanding adolescents' positive and negative developmental experiences in sport. Sport Psychologist, 23(1), 3-23.

Fritz, M. S., & Mackinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological science*, *18*(3), 233–239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

Gould, D., & Carson, S. (2010). The relationship between perceived coaching behaviors and developmental benefits of high school sports participation. *Hellenic journal of psychology, 7*(1), 298-314.

Gould, D., Voelker, D. K., & Griffes, K. (2013). Best coaching practices for developing team captains. *The Sport psychologist, 27*(1), 13-26. https://doi.org/10.1123/tsp.27.1.13

Harris, S., Bean, C., & Fraser-Thomas, J. (2018). Factors associated with psychosocial development and academic success among university student athletes. R*evue* *phénEPS/PHEnex Journal, 9*(3), 1-22. Retrieved from https://ojs.acadiau.ca/index.php/phenex/article/view/1773

Hoffmann, M. D., Loughead, T. M., & Bloom, G. A. (2017). Examining the experiences of peer mentored athletes competing in elite sport. *The Sport Psychologist*, *31*(2), 134-146.

Holt, N. L., Deal, J. D., & Smyth, C. L. (2016). Future directions for positive youth development through sport. In N. L. Holt (2nd), *Positive development through sport* (pp. 229-236). Routledge.

IBM (2025). *IBM SPSS Statistics 25*. Retrieved March 6th, 2025, from https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-25

Jones, D. (2024). Impact of team sports participation on social skills development in youth. *American Journal of Recreation and Sports*, *3*(2), 24-34.

Kao, S.F., Tsai, C.Y., & Schinke, R. (2020). Investigation of the interaction between coach transformational leadership and coaching competency change over time. *International Journal of Sports Science & Coaching*, *16*(1), 44-53. https://doi.org/10.1177/1747954120953946

Kilic, K., & Ince, M. L. (2021). Youth athletes' developmental outcomes by age, gender, and type of sport. *Journal of human sport and exercise, 16*(1), 212-225. https://doi.org/10.14198/jhse.2021.161.19

Laborde, S., Guillén, F., & Mosley, E. (2016). Positive personality-trait-like individual differences in athletes from individual-and team sports and in non-athletes. *Psychology of sport and exercise*, *26*, 9-13.

Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development a view of the issues. *The Journal of early adolescence, 25*(1), 10-16. https://doi.org/10.1177/0272431604273211

Lerner, R. M., & Benson, P. L. (2003). *Developmental assets and asset-building communities: Implications for research, policy, and practice*. Portland: Copyright Clearance Center.

Lima, R., Santos, F., Gobbi, V., Gaion, P., Rathwell, S., & Trindade, A. (2021). Brazilian coaches' role in facilitating positive development through university sport. *Retos,* (40), 186-197. http://dx.doi.org/10.47197/retos.v1i40.82353

Loughead, T. M., Hardy, J., & Eys, M. A. (2006). The nature of athlete leadership. *Journal of Sport Behavior*, *29*(2).

Mach, M., Ferreira, A. I., & Abrantes, A. C. M. (2022). Transformational leadership and team performance in sports teams: A conditional indirect model. *Applied Psychology: An International Review, 71*(2), 662-694. https://doi.org/10.1111/apps.12342

Neubert, M. J. (1999). Too much of a good thing or the more the merrier? Exploring the dispersion and gender composition of informal leadership in manufacturing teams. *Small group research*, *30*(5), 635-646.

Nuzzo, J. L., & Deaner, R. O. (2023). Men and women differ in their interest and willingness to participate in exercise and sports science research. *Scandinavian Journal of Medicine & Science in Sports*, *33*(9), 1850-1865.

O'Connor, D., Gardner, L., Larkin, P., Pope, A., & Williams, A. M. (2020). Positive youth development and gender differences in high performance sport. *Journal of sports sciences*, *38*(11-12), 1399–1407. https://doi.org/10.1080/02640414.2019.1698001

Potuto, J. J. R., & O'Hanlon, J. (2007). National study of student-athletes regarding their experiences as college students. *College Student Journal, 41*(4), 947–966. Retrieved from https://eric.ed.gov/?redir=http%3a%2f%2fwww.projectinnovation.biz%2fcsj_2006.html

Price, M. S., & Weiss, M. R. (2013). Relationships among coach leadership, peer leadership, and adolescent athletes' psychosocial and team outcomes: A test of transformational leadership theory. *Journal of applied sport psychology, 25*(2), 265-279. https://doi.org/10.1080/10413200.2012.725703

Rathwell, S., & Young, B. W. (2016). An examination and validation of an adapted youth experience scale for university sport. *Measurement in physical education and exercise science, 20*(4), 208-219. https://doi.org/10.1080/1091367X.2016.1210152

Rathwell, S., & Young, B. (2018a). Athletes' Perceptions of Positive Development Resulting from Canadian Intercollegiate Sport: A Content Analysis. *Qualitative report*, *23*(2), 470. https://doi.org/10.46743/2160-3715/2018.3093

Rathwell, S., & Young, B. W. (2018b). Coaches' perspectives on personal and psychosocial development in university sport. *International sport coaching journal, 5*(1), 1-13. https://doi.org/10.1123/iscj.2017-0018

Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-crowne social desirability scale. *Journal of Clinical Psychology, 38*(1), 119-125. https://doi.org/10.1002/1097-4679(198201)38:1%3C119::AID-JCLP2270380118%3E3.0.CO;2-I

Šagát, P., Bartik, P., Lazić, A., Tohănean, D. I., Koronas, V., Turcu, I., Knjaz, D., Alexe, C. I., & Curițianu, I. M. (2021). Self-esteem, individual versus team sports. *International journal of environmental research and public health*, *18*(24), 12915.

Shipherd, A. M., Wakefield, J. C., Stokowski, S., & Filho, E. (2018). The influence of coach turnover on student-athletes' affective states and team dynamics: An exploratory study in collegiate sports. *International Journal of Sports Science & Coaching, 14*(1), 97-106. https://doi.org/10.1177/1747954118766465

Smith, M. J., Arthur, C. A., Hardy, J., Callow, N., & Williams, D. (2013). Transformational leadership and task cohesion in sport: The mediating role of intrateam communication. *Psychology of Sport and Exercise, 14*(2), 249-257. https://doi.org/10.1016/j.psychsport.2012.10.002

Turnnidge, J., Evans, B., Vierimaa, M., Allan, V., & Côté, J. (2016). Coaching for positive youth development. In N. L. Holt (2nd), *Positive youth development through sport* (pp. 137-150). Routledge.

U SPORTS Strategic Plan. (2025). Updated on February 19th, 2025. Retrieved from https://en.usports.ca/general/2024-25/releases/2025-02-21_Stratplan

Vella, S. A., Oades, L. G., & Crowe, T. P. (2011). The role of the coach in facilitating positive youth development: Moving from theory to practice. *Journal of Applied Sport Psychology, 23*(1), 33-48. doi: 10.1080/10413200.2010.511423.

Vella, S. A., Oades, L. G., & Crowe, T. P. (2013). A pilot test of transformational leadership training for sports coaches: Impact on the developmental experiences of adolescent athletes. *International journal of sports science & coaching, 8*(3), 513-530. https://doi.org/10.1260/1747-9541.8.3.513

Wellman, A. D., Coad, S. C., Flynn, P. J., Siam, T. K., & McLellan, C. P. (2019). Comparison of preseason and in-season practice and game loads in National Collegiate Athletic

Association Division I football players. *The Journal of Strength & Conditioning Research*, *33*(4), 1020-1027.

Young, R. D., Neil, E. R., Eberman, L. E., Armstrong, T. A., & Winkelmann, Z. K. (2023). Experiences of current national collegiate athletic association division 1 collegiate student-athletes with mental health resources. *Journal of athletic training*, *58*(9), 704–714. https://doi.org/10.4085/1062-6050-0180.22

Table 1. *Descriptives Table*

Variable	Mean	SD	Skew	Kurt
T1				
Initiative	5.31	0.87	-1.35	-0.83
Basic Skills	4.63	0.86	-3.35	2.73
Interpersonal Relationships	5.53	0.78	-0.70	-0.87
Teamwork	5.70	0.56	0.26	-0.94
Adult Networks and Social Capital	4.46	1.51	-0.93	-0.72
Stress	4.80	1.03	-0.67	-0.58
Negative Peer Interactions	2.18	0.86	2.14	0.45
Social Exclusion	3.61	1.30	-1.16	-1.16
Inappropriate Adult Behaviour	2.35	1.04	1.14	-0.55
Density of Team TFL	0.31	0.19	4.28	4.20
Coaches TFL	4.42	0.44	-2.67	0.81
T2				
Initiative	5.47	0.73	-1.42	-0.81
Basic Skills	4.66	0.88	-1.26	0.23
Interpersonal Relationships	5.39	0.71	-0.74	-0.75
Teamwork	5.81	0.65	-3.77	5.70
Adult Networks and Social Capital	4.46	1.59	-0.77	-0.94
Stress	4.88	0.91	-1.60	-0.81
Negative Peer Interactions	2.18	0.94	1.00	-0.92
Social Exclusion	3.51	1.25	-0.72	-1.06
Inappropriate Adult Behaviour	2.54	1.31	2.26	0.63
Density of Team TFL	0.30	0.22	3.02	2.47
Coaches TFL	4.38	0.51	-3.00	0.78
T3				
Initiative	5.62	0.75	-3.63	2.69
Basic Skills	4.74	1.03	-1.84	-0.36
Interpersonal Relationships	5.49	0.85	-2.07	0.66
Teamwork	5.76	0.67	-0.93	-0.53
Adult Networks and Social Capital	4.49	1.60	-1.12	-0.88
Stress	4.85	1.03	-1.21	0.23
Negative Peer Interactions	2.13	0.81	0.70	-0.55
Social Exclusion	3.16	1.32	0.95	-0.02
Inappropriate Adult Behaviour	2.58	1.23	2.14	0.20
Density of Team TFL	0.33	0.20	1.88	-0.25
Coaches TFL	4.19	0.62	-1.93	-0.04

Table 1. *Descriptives Table Ctd.*

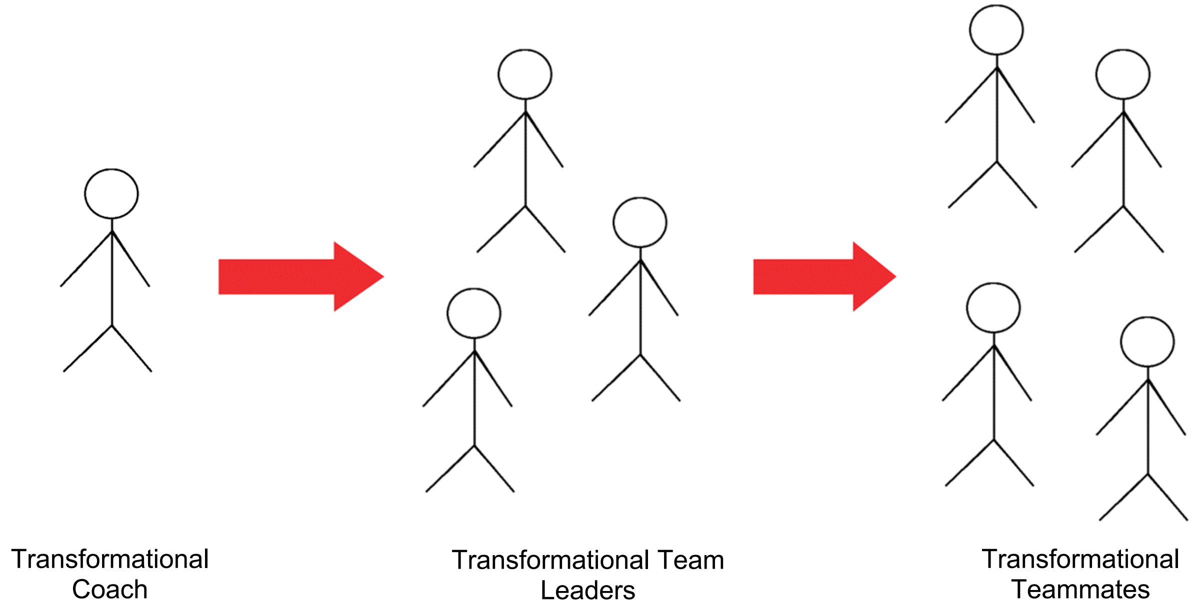
Variable	Mean	SD	Skew	Kurt
ΔT1-T2				
Initiative	0.16	0.83	-0.88	2.01
Basic Skills	0.03	0.95	-0.12	0.07
Interpersonal Relationships	-1.40	0.62	-0.60	-0.08
Teamwork	0.11	0.72	-2.26	3.53
Adult Networks and Social Capital	0.00	1.72	-0.42	0.51
Stress	-0.08	1.16	-0.51	1.35
Negative Peer Interactions	0.00	0.92	-1.09	1.16
Social Exclusion	-0.10	1.27	0.03	0.64
Inappropriate Adult Behaviour	1.07	1.07	1.67	1.39
Density of Team TFL	0.20	0.20	1.74	2.57
Coaches TFL	-0.04	0.38	-1.47	1.16
ΔT2-T3				
Initiative	0.15	0.55	1.58	1.12
Basic Skills	0.08	0.65	-0.74	-0.10
Interpersonal Relationships	0.11	0.71	-0.47	-0.37
Teamwork	-0.05	0.68	0.33	-0.42
Adult Networks and Social Capital	0.03	1.06	0.88	1.53
Stress	-0.03	1.11	-1.98	2.80
Negative Peer Interactions	-0.04	0.84	2.35	3.46
Social Exclusion	-0.36	1.13	1.28	0.14
Inappropriate Adult Behaviour	0.04	0.66	-1.70	0.84
Density of Team TFL	0.04	0.17	4.40	10.81
Coaches TFL	-0.19	0.63	-2.19	4.02
ΔT1-T3				
Initiative	0.31	0.87	-0.44	1.04
Basic Skills	0.11	0.99	-1.09	1.12
Interpersonal Relationships	-0.03	0.57	0.49	1.12
Teamwork	0.07	0.64	-0.33	-0.17
Adult Networks and Social Capital	0.03	1.35	0.49	0.42
Stress	0.06	0.96	-0.91	0.61
Negative Peer Interactions	-0.04	0.59	-0.16	1.73
Social Exclusion	-0.46	1.40	-0.02	-0.05
Inappropriate Adult Behaviour	0.23	1.01	300	2.31
Density of Team TFL	0.02	0.17	0.40	1.59
Coaches TFL	-0.23	0.55	-2.79	0.80

Table 2. *Pearsons Correlation Table*

Dependent variable	Coaches TFL			Density of team TFL		
	ΔT1-T2	ΔT2-T3	ΔT1-T3	ΔT1-T2	ΔT2-T3	ΔT1-T3
ΔT1-T2						
Initiative	-.23	.03	-.13	.20	-.44*	-.21
Basic Skills	-.17	.13	.03	-.08	-.06	-.16
Interpersonal Relationships	.02	-.11	-.11	-.09	.07	-.04
Teamwork	.06	-.03	.01	-.08	-.18	-.28
Adult Networks and Social Capital	-.01	.16	.18	-.06	-.25	-.33
Stress	-.05	-.06	-.11	-.08	-.25	-.34
Negative Peer Interactions	-.12	.25	.20	-.18	.07	-.15
Social Exclusion	-.25	.05	-.12	.15	-.20	-.01
Inappropriate Adult Behaviour	-.37*	-.06	-.32	-.01	-.20	-.22
Density of Team TFL	.38*	-.31	-.09	1.00	-.61**	.59**
ΔT2-T3						
Initiative	-.17	.29	.22	-.24	.52**	.24
Basic Skills	.19	.00	.14	.24	.11	.40*
Interpersonal Relationships	-.17	.26	.17	.06	.00	.08
Teamwork	-.21	.20	.09	-.17	.22	.02
Adult Networks and Social Capital	.10	.07	.15	-.24	.57**	.28
Stress	-.22	.17	.04	-.09	.18	.07
Negative Peer Interactions	-.07	-.35	-.45*	.05	-.04	.02
Social Exclusion	.25	-.25	-.11	.20	-.28	-.04
Inappropriate Adult Behaviour	.45*	-.42*	-.17	.16	.02	.21
Density of Team TFL	-.16	.36	.30	-.61**	1.00	.28
ΔT1-T3						
Initiative	-.33	.21	.02	.04	-.09	-.04
Basic Skills	-.03	.12	.12	.08	.02	.11
Interpersonal Relationships	-.19	.19	.09	-.02	.07	.05
Teamwork	-.16	.18	.10	-.26	.02	-.30
Adult Networks and Social Capital	.06	.26	.34	-.27	.12	-.20
Stress	-.32	.12	-.09	-.20	-.08	-.33
Negative Peer Interactions	-.28	-.12	-.33	-.21	.05	-.20
Social Exclusion	-.03	-.16	-.20	.30	-.40*	-.05
Inappropriate Adult Behaviour	-.10	-.34	-.45*	.09	-.20	-.09
Density of Team TFL	.30	-.01	.19	.59**	.28	1.00

Note. * $p < 0.05$. ** $p < 0.01$

Figure 1. *The cascade effect in sport.*



Note. This figure demonstrates how transformational leadership cascades throughout an organization. It begins with a transformational leader (e.g. a coach), whose behaviours are replicated by their immediate followers (e.g. team leaders) and they become transformational themselves. This trend continues and creates more transformational leaders.

Appendix A
Coach Recruitment Letter

Subject line: Sport psychology research opportunity for athletes

To whom it may concern,

My name is Olivia Hawkins and I am a graduate student completing my Masters Thesis under the supervision of Dr. Rathwell in the Kinesiology department at the University of Lethbridge. I am reaching out to you because I am interested in including the athletes on your team in my study titled *Transformational leadership and positive development: Assessing the cascade effect in university sport*. This is a research study that aims to examine the effect of transformational team leadership on the relationship between coaches' behaviours and athlete positive development in the university sport context.

The athletes who choose to participate will be sent a link and asked to complete three rounds of surveys over the course of the season, at the beginning, middle and end. Each round should take the participants no longer than 20-30 minutes. Coaches are not allowed to participate in the surveys.

If possible, I would like to arrange a time before or after a practice, prior to the commencement of the season, where I can come and describe the study, so that the athletes have a better understanding of what I am asking of them. Following this, I would be sending you an athlete recruitment letter with my contact information to send out to the team.

This study is being conducted in accordance with the Human Participant Research Committee at the University of Lethbridge and has been reviewed for ethical acceptability and approved by the University of Alberta Research Ethics Office (Pro00142215). Athletes participation in this research will be completely voluntary. You and the athletes will also reserve the right to withdraw from the study at any time. There will be no negative consequences should you wish to withdraw from the study. If you withdraw from the study, any information collected from your team will be destroyed upon your request.

If you are interested in allowing your team to take place in this study, or if you have any questions, please reply back to the primary researcher, Olivia Hawkins, at this email (olivia.hawkins@uleth.ca). If you have any questions about your rights as a participant in research, you may also contact the Office of Research & Innovation Services at the University of Lethbridge by phone at 403-329-2431 or by email at oris@uleth.ca.

Thank you for your consideration,

Olivia Hawkins, BSc.
Scott Rathwell, PhD

University of Lethbridge
Faculty of Arts & Science
Department of Kinesiology & Physical Education
4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Appendix B
Athlete Recruitment Letter

Subject line: Sport psychology research opportunity for athletes

To whom it may concern,

You are being invited to participate in our current research study *Transformational leadership and positive development: Assessing the cascade effect in university sport*. This is a research study that aims to examine the effect of transformational team leadership on the relationship between coaches' behaviours and athlete positive development in the university sport context. Data for this study will be collected for the purposes of Olivia Hawkins' Master's Thesis at the University of Lethbridge under the supervision of Dr. Scott Rathwell.

For this study, you will be provided a link to complete the surveys. The first round will occur during your sport preseason, the second round of surveys will occur during the middle of your sport season, and finally, the third round of surveys will occur at the end of your sport season. At each time point you will be emailed a new link and asked to fill out three surveys regarding your coaches' transformational behaviours, the density of transformational leadership on your team, and your positive development. Each round of surveys should take approximately 20-30 minutes to complete.

This study is being conducted in accordance with the Human Participant Research Committee at the University of Lethbridge and has been revied for ethical acceptability and approved by the University of Alberta Research Ethics Office (Pro00142215). Your participation in this research will be completely voluntary. You will also reserve the right to withdraw from the study at any time. There will be no negative consequences should you wish to withdraw from the study. If you withdraw from the study, any information collected from you will be destroyed upon your request.

If you are interested in participating in this study, contact the primary researcher, Olivia Hawkins, via email at Olivia.hawkins@uleth.ca to inform her of your interest. Afterwards, you will be sent a Letter of Consent that will need to be signed and returned to Olivia Hawkins prior to participating. Once this form has been signed and returned, you will be emailed a demographic questionnaire that asks for various personal and sport-related information. Following this, the primary researcher will email you with a link for every round of surveys.

If you have any questions about the study, please feel free to email the primary researcher at Olivia.hawkins@uleth.ca. If you have any questions about your rights as a participant in research, you may also contact the Office of Research & Innovation Services at the University of Lethbridge by phone at 403-329-2431 or by email at oris@uleth.ca.

Thank you for your consideration,
Olivia Hawkins, BSc.
Scott Rathwell, PhD
University of Lethbridge

Faculty of Arts & Science
Department of Kinesiology & Physical Education
4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

University of Lethbridge

Appendix C
Letter of Consent

Title of Study: *Transformational leadership and positive development: Assessing the cascade effect in university sport.*

Principal Investigator (student):
Olivia Hawkins
Graduate Student
Department of Kinesiology
University of Lethbirdge
Lethbridge, AB
Olivia.hawkins@uleth.ca

Co-investigator (supervisor):
Dr. Scott Rathwell
Associate Professor
Department of Kinesiology
University of Lethbridge
Lethbridge, AB
Scott.rathwell@uleth.ca

We invite you to participate in a study conducted by Olivia Hawkins examining transformational behaviours of coaches and team leaders at the university. Data for this study will be collected for the purposes of a Master's Thesis at the University of Lethbridge for Olivia Hawkins under the supervision of Dr. Scott Rathwell. The purpose of this study is to explore if the relationship between coaches' transformational behaviours and athletes' positive development is mediated by the density of transformational leadership on a team.

<u>Procedures & Participant Responsibilities</u>

Participation involves three points of contact in which the participant will receive a link to fill out three surveys. Each data collection point should take 20-30 minutes each.

Participation includes the following:

> The first round of surveys will occur during your sport preseason. For the first round, you will be asked to complete two brief questionnaires, one that asks questions about demographic information and one that assesses social desirability. Your answers are strictly confidential and will be used to ensure that you are eligible to participate in the study. Your responses to this questionnaire will also be used during data analysis to adjust for variables that may affect the results of this study. You will also be asked to fill out three surveys regarding your coaches' transformational behaviours, the density of transformational leadership on your team, and your positive development. In total, the surveys should take approximately 20-30 minutes. Your answers are strictly confidential and will be used to ensure that you are eligible to participate in the study. Your responses

will be used during data analysis. All analyses will be completed in the Psychology for Active Living and Sport Lab.

The second round of surveys will occur during the middle of your sport season. You will be emailed a new link and asked to fill out three surveys regarding your coaches' transformational behaviours, the density of transformational leadership on your team, and your positive development. In total, the surveys should take approximately 20-30 minutes. Your answers are strictly confidential and will be used to ensure that you are eligible to participate in the study. Your responses will be used during data analysis. All analyses will be completed in the Psychology for Active Living and Sport Lab.

Finally, the third round of surveys will occur at the end of your sport season. You will be emailed a new link and asked to fill out three surveys regarding your coaches' transformational behaviours, the density of transformational leadership on your team, and your positive development. In total, the surveys should take approximately 20-30 minutes. Your answers are strictly confidential and will be used to ensure that you are eligible to participate in the study. Your responses will be used during data analysis. All analyses will be completed in the Psychology for Active Living and Sport Lab.

Potential Risks and Discomforts

There are no foreseeable risks as a result of participation in this study.

Benefits to Participants and/or Society

The benefits of this study may be the contribution of applied insight on the novel mediating process between coach leadership and athlete positive development. The results may provide useful information for coaches and athletic programs to apply transformational behaviours and facilitate positive development. You will not benefit directly from participation in this research.

Confidentiality

Your anonymity will be protected by assigning an ID number to you, which will be used within the data set and to label your survey data. A master list linking your name to your ID number will be stored on a password-protected computer, which will be kept in the principal investigator's locked laboratory. Only researchers associated with this study will have access to the master list and the data set, and all researchers will sign a confidentiality agreement. The master list and any other personally identifying information (such as consent forms) will be destroyed one year after the study has been completed. Other anonymous data including the DTLI, USES, and responses regarding the density of transformational leadership may be kept indefinitely. The data collected in this study will be used for research purposes only, which include a Master's thesis.

Freedom to Withdraw

Your participation in this research is **completely voluntary**. You are free to withdraw from this study at any time until the time of publication by contacting Olivia Hawkins (Olivia.hawkins@uleth.ca) or Scott Rathwell (Scott.Rathwell@uleth.ca). Upon withdraw, you may choose to have the data you have contributed until that point permanently destroyed (up until the time of publication).

Participants are also encouraged to skip questions that they do not feel comfortable answering. If you have any questions regarding your rights as a research participant, you may contact the University of Alberta Research Ethics Office at reoffice@ualberta.ca or 780-492-2615 and quote Ethics ID Pro00142215. This office is independent of the study investigators.

Anticipated uses of the data

The results from this study will be used for research purposes, including a Master's thesis. If you wish to receive a summary of the results from this study, you may contact Olivia Hawkins (Olivia.hawkins@uleth.ca).

If you have further questions about this research, please contact either:

Scott Rathwell, PhD
Dept. of Kinesiology
University of Lethbridge
(403) 329-5188
Scott.Rathwell@uleth.ca

Olivia Hawkins, BSc.
Dept. of Kinesiology
University of Lethbridge
(780) 667-8681
Olivia.hawkins@uleth.ca

I have read (or have been read) the above information regarding this research study, and consent to participate in this study.

- Yes
- No

Appendix D

The University Sport Experience Survey (USES)

Instructions: The following questionnaire will assess the experiences afforded to you through your participation in university sport. Based on your current or recent involvement, please rate the level to which you agree or disagree with the following statements as they relate to your participation in your university sport program.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Uncertain	Somewhat Agree	Agree	Strongly Agree

As a result of my involvement in university sport:

1. I am better at setting goals for myself
2. I am better at finding new ways of achieving my goals
3. I am more capable of putting all my energy into an activity that is important to me
4. I am better at pushing myself
5. I more capable of focusing my attention
6. I am better at developing plans for solving a problem
7. I am better able to organize my time and not procrastinate
8. I am better at setting my priorities
9. I am better at practicing self-discipline
10. I believe that I have improved my skills for finding information
11. I feel that I have improved my computer skills and ability to use the internet
12. I believe I have improve my creative skills
13. I believe my artistic skills have improved

14. I have a better understanding of what I have in common with people from different backgrounds
15. I have become better acquainted with someone from a different ethnic groups
16. I have made more friends that come from different social classes (richer or poorer)
17. I discuss morals and values more often with others
18. I am more aware of the different obstacles other people face
19. I am more appreciative of other people's backgrounds
20. I am more aware of how my emotions and attitude affect others in group situations
21. I am better at giving feedback
22. I am better at taking feedback
23. I know more about the challenges of being a leader
24. I am more confident that I can rise to the challenge when others are counting on me
25. I am better at being in charge of a group of peers
26. I am better at supporting others
27. I am more capable of standing up for myself
28. I believe I have come to know more people in the off-campus community
29. I feel more supported by the off-campus community
30. I feel more a part of my off-campus community
31. I am frequently unable to study enough for tests
32. I am unable to do things with family more often
33. I am often stressed
34. I often feel over-worked
35. I often do things that are morally inappropriate

36. I often consume alcohol

37. I frequently take drugs

38. I often feel like I don’t belong

39. I often feel left out

40. I am frequently exposed to social cliques

41. I am frequently exposed to leaders who are controlling and manipulative

42. I am frequently exposed to leaders who make inappropriate sexual comments or jokes

43. I am frequently exposed to leaders who put down my ideas

44. I am frequently exposed to leaders who blame me for things beyond my control

45. I am often exposed to leaders who play favorites

46. I am often exposed to leaders who talk down to me

Note. Initiative (items 1-9), Basic Skills (items 10-13), Interpersonal Relationships (items 14-19), Teamwork and Social Skills (items 20-27), Adult Networks and Social Capital (items 28-30), Stress (items 31-34), Negative Peer Interactions (items 35-37), Social Exclusion (items 38-40), Inappropriate Adult Behavior (41-46).

<u>Appendix E</u>

The Differentiated Transformational Leadership Inventory (DTLI)

Instructions: The following questionnaire will assess the leadership behaviors of your coach. Based on your current or recent involvement, please rate the level to which you agree or disagree with the following statements as they relate to your experiences with your coach.

1	2	3	4	5
Not at all	Rarely	Uncertain	Sometimes	All the time

In my experience, my coach:

1. Treats each team member as an individual
2. Leads by example
3. Talks enthusiastically about what needs to be accomplished*
4. Will not settle for second best
5. Tries to help us work out how to solve problems
6. Praises athletes when they show improvement
7. Encourages athletes to be team players
8. Talks optimistically about the future*
9. Recognizes that different athletes have different needs
10. Is a good role model for me to follow
11. Gets the team to work together for the same goal
12. Gets me to re-think the way I do things
13. Talks in a way that makes me believe I can succeed
14. Gives us praise when we do good work

15. Insists on only the best performance

16. Always recognizes our achievements

17. Always sets a good example

18. Considers that I have different strengths and abilities from others

19. Challenges me to think about problems in new ways

20. Expects a lot from us

21. Gives me positive feedback when I perform well

22. Leads by “doing” rather than simply “telling”

23. Expresses confidence that goals will be achieved*

24. Expects us to achieve high standards

25. Personally praises me when I do outstanding work

26. Shows performers how to looks at difficulties from a new angle

27. Leads from the front whenever they can

28. Develops a strong team attitude and spirit among athletes

29. Helps team members to develop their strengths

30. Always expects us to do our best

31. Gives me special recognition when I do very good work

Individual consideration: items 1, 9, 18, 29; Inspirational motivation: items 3, 8, 13, 23; Contingent reward: items 6, 14, 16, 21, 25, 31; Intellectual stimulation: items 5, 12, 19, 26; High performance expectations: items 4, 15, 20, 24; Appropriate role modelling: items 2, 10, 17, 27; Fostering acceptance of group goals and teamwork: items 7, 11, 28

Appendix F

Density of Transformational Team Leadership

Instructions: The following questionnaire will assess the density of transformational leadership on your team. After carefully reading the definition of transformational leadership provided below, please rate each team member and member of the coaching staff according to how strongly you feel that they display the behaviors described.

Transformational leaders inspire followers to commit to a shared vision and goals for an organization or unit, challenge them to be innovative problem solvers, and develop followers' leadership capacity via coaching, mentoring, and provision of both challenge and support. Transformational leaders behave in ways that allow them to serve as role models for their followers, as well as motivate and inspire them by providing meaning to their work. Transformational leaders also stimulate their followers' efforts to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways. Finally, transformational leaders pay special attention to e ach individual follower's needs for achievement and growth by acting as a coach or mentor.

After learning what a transformational leader is, please rate each team member according to how strongly you feel that they are transformational leaders.

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Uncertain	5 Somewhat Agree	6 Agree	7 Strongly Agree
Teammate 1							
Teammate 2							
Teammate....							

Appendix G

Marlowe-Crowne 13-item Social Desirability Scale

Instructions: The following questionnaire will assess social desirability. Listed below are statements concerning personal attitudes and traits. Read each item and decide how it pertains to you. Indicate your response by circling either TRUE (T) or FALSE (F) next to the item.

1. It is sometimes hard for me to go on with my work if I am not encouraged	T	F
2. I sometimes feel resentful when I don't get my way	T	F
3. On a few occasions, I have given up doing something because I thought too little of my ability	T	F
4. There have been times when I felt like rebelling against people in authority even though I knew they were right	T	F
5. No matter who I am talking to, I'm always a good listener	T	F
6. There have been occasions when I took advantage of someone	T	F
7. I'm always willing to admit when I make a mistake	T	F
8. I sometimes try to get even rather than forgive and forget	T	F
9. I am always courteous, even to people who are disagreeable	T	F

10. I have never been irked when people expressed ideas very different from my own	T	F
11. There have been times I was quite jealous of the good fortune of others	T	F
12. I am sometimes irritated by people who ask favours of me	T	F
13. I have never deliberately said something that hurt someone's feelings	T	F

Appendix H
Timeline

July 2024:	Reach out to coaches and recruit participants.
Beginning of August 2024:	Men's + Women's soccer: S1** Women's rugby: S1** Men's Football: S1** Women's Field Hockey: S1**
Beginning of September 2024:	Men's + Women's basketball: S1** Track and field: S1** Swimming: S1** Men's + Women's Hockey: S1** Men's Football: S2 Cross Country: S1** Wrestling: S1** Men's + Women's Volleyball: S1**
End of September 2024:	Men's + Women's soccer: S2 Women's rugby: S2 Women's Field Hockey: S2
End of October 2024	Men's Football: S3 Women's Field Hockey: S3 Cross Country: S2
Beginning of November 2024:	Men's + Women's soccer: S3 Women's rugby: S3 Cross Country: S3
December 2024:	Men's + Women's basketball: S2 Swimming: S2 Track and field: S2 Men's + Women's Hockey: S2 Men's + Women's Volleyball: S2
February 2024:	Wrestling: S2
March 2024:	Men's + Women's basketball: S3 Swimming: S3 Track and field: S3 Men's + Women's Hockey: S3 Men's + Women's Volleyball: S3 Wrestling: S3

Note. *USES, DTLI, and transformational team density questionnaire will be filled out at each time point. **Social Desirability Scale is filled out.