

Characteristics of Strength and Conditioning Coaches in Canada

by

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ABSTRACT

The formal field of strength and conditioning (S&C) is relatively young in Canada when compared to the United States of America (USA). Identifying the characteristics of Canadian S&C coaches will serve as an evaluation and point of comparison for future strategy and direction. The primary purpose of this study was to gather information about the demographic characteristics of S&C coaches in Canada including age, sex, minority status, salary, education, and certification. Secondly, this study compared expert and non-expert Canadian S&C coaches. While the demographics of S&C coaches has been examined in the National Collegiate Athletic Association (NCAA) in the USA, this study was the first to our knowledge to examine characteristics of Canadian S&C coaches. The criteria and study of expert coaches has been done on Canadian sport coaches but not for S&C coaches. This research aimed to combine both concepts of defining the characteristics of Canadian S&C coaches while also categorizing them as expert and non-experts based on a working definition of coaching expertise.

Keywords: strength and conditioning, demographics, coaching, expert

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LIST OF ABBREVIATIONS

ACSM-EP	American College of Sports Medicine – Exercise Physiologist
ASCA	Australian Strength and Conditioning Association
CAC	Coaching Association of Canada
CATA-CAT	Canadian Athletic Therapy Association – Certified Athletic Therapist
CSCA	Canadian Strength and Conditioning Association
CPTN	Certified Personal Trainer’s Network
CPTN-CPT	Certified Professional Trainers Network – Certified Personal Trainer
CPU – C	Canadian Powerlifting Union – certified status
CPU – T	Canadian Powerlifting Union – trained status
CSEP	Canadian Society of Exercise Physiology
CSEP-CEP	Canadian Society of Exercise Physiology – Certified Exercise Physiologist
CSEP-CPT	Canadian Society of Exercise Physiology – Certified Personal Trainer
CFP-PTS	Can-fit Pro-Personal Trainer Specialist
NCAA	National Collegiate Athletic Association
NSCA	National Strength and Conditioning Association
NSCA-CPT	National Strength and Conditioning Association – Certified Personal Trainer
NSCA-CSCS	National Strength and Conditioning Association – Certified Strength and Conditioning Specialist
NSO	National sport organization
NCCP WL -C	National Coaching Certification Program Weightlifting – certified status
NCCP WL -T	National Coaching Certification Program Weightlifting – trained status
PSO	Provincial sport organization
S&C	Strength and conditioning
UKSCA	United Kingdom Strength and Conditioning Association
USAW	United States of America Weightlifting

Chapter 1: Review of Literature

1.1 Introduction

The Canadian Strength and Conditioning Association (CSCA) was founded in October 2018 in order to support and serve strength and conditioning (S&C) coaches in Canada (Canadian Strength and Conditioning Association, 2020). There are several related organizations in Canada such as Coaching Association of Canada (CAC), Canadian Society of Exercise Physiology (CSEP), and the Certified Personal Trainers Network (CPTN), however none of these are truly specific to S&C in the Canadian setting. Other countries also have dedicated S&C associations in addition to their exercise science and coaching associations. In particular, the United States (USA) has the National Strength and Conditioning Association (NSCA), the United Kingdom has the United Kingdom Strength and Conditioning Association (UKSCA), and Australia has the Australian Strength and Conditioning Association (ASCA). While these non-Canadian associations are beneficial to S&C coaches in Canada, the sporting context and culture in these countries differ from those in Canada, which is why the formation of the CSCA is a step towards supporting the specific needs of Canadian S&C coaches. Even with the formation of the CSCA, the characteristics and profile of Canadian S&C coaches is still unknown and yet to be studied. Therefore, it is necessary to define and research the characteristics of S&C coaches in Canada as well as the process for becoming a Canadian S&C coach. Furthermore, comparing with research done on National Collegiate Athletic Association (NCAA) S&C coaches would help to determine the next steps in the development of the field. This would better allow the CSCA to serve coaches working towards achieving expertise with the knowledge of the current characteristics of expert Canadian S&C coaches. The focus of comparison will be with similar work done in the USA with NCAA S&C coaches.

The examination of coaches' characteristics will aim to look at two main areas: the demographic characteristics of S&C coaches in Canada as well as a measure of coaching expertise. The demographic characteristics will closely mirror work done with NCAA S&C coaches completed by Haggerty (Haggerty, 2005), Martinez (Martinez, 2004), and Pullo (Pullo, 1992). In these studies, the authors examined NCAA Division I, II, and III S&C coaches for information pertaining to their demographic characteristics, educational background, competitive and coaching experiences, duties, and opinions of the head S&C coaches. Pullo (1992) studied NCAA Division I Football S&C coaches, Martinez (2004) looked at NCAA Division I head S&C coaches, and Haggerty (2005) examined NCAA Division II and Division III head S&C coaches.

Since the NCAA and S&C organizations in the USA are many years ahead with respect to acceptance and professionalism, it will be crucial to compare the metrics of coaches in the NCAA to those that are examined in Canada. One such example of the divide is that the NSCA was formed in 1978 (National Strength and Conditioning Association, 2020), whereas as mentioned above, the CSCA was only recently formed in 2018. That in and of itself is a 40-year gap in the domestic acknowledgement of professionalization of the field of S&C. It is important to mention that the NSCA does service internationally, including Canada, but does not aim to specifically meet the needs of a certain country or region other than the USA. The examination of Canadian S&C coaches specifically will serve as an evaluation and point of comparison upon which future strategy and direction can be applied in order to progress Canadian S&C towards coaching expertise and in comparison, to the more established formalized S&C coaching field in the USA.

In determining what characteristics are needed to attain S&C coaching expertise, the literature must be examined pertaining to both sport coaching and S&C coaching. A coach's level is often determined by the level of achievement of his/her athletes, the athletes' perception and satisfaction

of the coach or the amount of time that the coach has engaged in coaching and coaching behaviours (Côté & Gilbert, 2009). There are some limitations in determining whether a coach is an expert or not, especially in S&C. The success of an athlete is determined by their physical, mental, emotional, tactical, and technical preparation of which the main area of focus for S&C coaches is on physical development. There can certainly be some overlap in other areas of development, but that is not typically the focus of this profession. Given the large number of factors, it would be difficult to use the athletes' sport success as a main component of defining an expert S&C coach. The other two factors addressed by Côté and Gilbert (2009) can be applied to an S&C coach in a similar way that it would be applied to a sport coach to determine expertise.

The main function of an S&C coach is to educate and train athletes to improve their sport performance (Gilbert & Baldis, 2014). This may include but is not limited to the development of speed, power, strength, endurance, flexibility, and injury prevention. As with all coaches, S&C coaches will aid in the development of other characteristics outside their focus area. The characteristics of an expert S&C coach are similar to that of an expert sport coach with the main difference being that an S&C coach would possess specific knowledge and skills surrounding how to plan and implement physical training to improve sport performance.

The purpose of this research is to identify what characteristics are possessed by S&C coaches in Canada. The inquiry will focus on the coaches' demographic characteristics, educational background, competitive and coaching experiences, duties, and opinions of the head S&C coaches similar to the work completed on NCAA S&C coaches (Haggerty, 2005; Martinez, 2004; Pullo, 1992). A few additional questions based on the work of Côté, Salmela, Trudel, Baria, & Russell (1995) will examine years of experience, coaching level, coaching athletes that reach the national or international level, and acknowledgement from a provincial sporting organization (PSO) or

national sporting organization (NSO). Based on this work, S&C coaches will be classified as experts based upon possessing 10 years of experience, having been an assistant or head S&C coach for a PSO or NSO, and reported that athletes they have coached progressed to the next competitive level within their sport.

This will help create a developmental model for aspiring expert S&C coaches in Canada instead of having to rely on resources from other countries that have a sporting and educational system that differs from Canada. While we have information and definitions concerning what consists of expert coaching and what is needed to be an effective S&C coach, we do not have information that specifically pertains to becoming an expert S&C coach within the Canadian sporting system. By researching this particular area, we can create a blueprint for aspiring S&C coaches seeking expertise. Not only will it aid aspiring coaches seeking expertise, it can be used as a qualification system by athletes, parents, coaches, institutions, and governing bodies in Canada when looking to use an S&C coach to improve sport performance. With the help of the CSCA, this analysis and information will serve to define the S&C profession in Canada. In addition, the profile of an expert S&C Coach in Canada can be compared to sport coaches and S&C coaches in other countries in order to find ways to improve upon the characteristics, and therefore level of expertise, of S&C coaches in Canada.

1.2 Demographics of S&C Coaches

Given this information has not been gathered in the Canadian S&C setting, the results of the research of Pullo (1992), Martinez (2004), and Haggerty (2005) will serve as the backbone of this research study as it pertains to the demographics and characteristics of S&C coaches.

There are significant differences in the American and Canadian sporting systems, including distinct differences between NCAA Divisions I, II, and III. Considering the differences in national sport systems and the fact the NCAA is a specialized educational sport governing body, I expect that the results of this study will vary from the previous studies conducted in the USA (Martinez, 2004 & Haggerty, 2005), but these studies provide a useful template for comparisons. Additionally, comparisons across S&C settings can be useful as coaches progress through their careers and opt to shift their area of focus. This comparison will allow them to know what to aim for and expect when moving between different divisions, systems, or countries in the S&C profession.

There are observed differences among the demographic characteristics of S&C coaches at the Division I, II, and III levels within the NCAA. Pullo (1992) observed that S&C coaches at the I-A level on average were 33 years old and at the I-AA level were 32 years old, while Martinez (2004) noted that S&C coaches averaged 37 years of age at the I-A level, and 34 years of age at the I-AA and I-AAA levels. With regards Divisions II and III, S&C coaches averaged 35 and 34 years of age respectively (Haggerty, 2005). S&C coaches were reported as primarily white and male across Divisions I, II, and III (Haggerty, 2005; Martinez, 2004; Pullo, 1992).

The salaries did vary across the Divisions, but it must also be noted that Pullo's work was completed significantly earlier in 1992 from the other compared studies in 2004 and 2005. The salaries reported by Pullo (1992) for Division I was \$20,000 (\$37,568.66 USD adjusted 2020) - \$39,999 (\$75,135.44 USD adjusted 2020) and Martinez (2004) recorded them as \$50,000 (\$67,700.41 USD adjusted 2020) - \$59,999 (\$81,239.13 USD adjusted 2020). Reported salaries for

Division II and III S&C coaches were \$30,001(\$40,621.60 USD adjusted 2020) -\$40,000 (\$54,160.32 USD adjusted 2020) (Haggerty, 2005).

The most common certification among all three divisions was the NSCA Certified Strength and Conditioning Specialist (CSCS) (Pullo, 1992; Martinez, 2004; Haggerty, 2005). The highest proportion of level of education recorded among participants was a master's degree with 67.5% of Experience S&C coaches at the Division I-A level (Martinez, 2004), 56.5% at the Division II level (Haggerty, 2005), and 47.1% of S&C coaches at the Division III level.

S&C coaches at the Division I level reported having previous experience as an assistant S&C coach with much higher frequency. They were as follows, 76.25% at the Division I level (Martinez, 2004), 39.1% in Division II (Haggerty, 2005), and 29.4% in Division III (Haggerty, 2005). All Divisions reported as employing support staff but the composition of such staff varied greatly across Divisions. Division I-A reported that 85% of the schools had full-time assistant S&C coaches (Martinez, 2004) compared to Division II at 17% (Haggerty, 2005), and Division III at 5.9% (Haggerty, 2005). S&C coaches at the Division I level were most likely to have the job title of Head S&C Coach (Martinez, 2004), whereas at Division II and III institutions S&C coaches were likely to have an additional title along with their S&C title such as instructor, assistant coach, or another role in the physical education or athletic department (Haggerty, 2005). All of the Division I coaches in the Martinez study were full-time employees with the majority, 92%, being contracted for periods of at least 10 months (Martinez, 2004), while Pullo had recorded that 91.8% at the Division I-A level and only 36.7% at the Division I-AA level (Pullo, 1992) were full-time. Compare this with Division II S&C coaches at 60.9% (Haggerty, 2005), and Division III at 61.8% (Haggerty, 2005) with full-time status.

Duties of S&C coaches across Divisions I, II, and III varied. Division I S&C coaches reported that the testing of athletes was their most important job task (Martinez, 2004) where Divisions II and III reported 87% and 91.2% respectively as completing sport-specific testing (Haggerty, 2005). Division I schools were most likely to have two training facilities exclusively for varsity athlete use (Martinez, 2004). Division II institutions reported as 52.2% having a dedicated facility for the athletic department (Haggerty, 2005) while 67.6% of Division III institutions reported as not having facilities dedicated to student athletes (Haggerty, 2005).

The highest reported preference of S&C coaches at the Division I level was to remain in their position as head S&C coach with moving on to be an S&C coach in professional sport to be the second most desired role (Martinez, 2004; Pullo, 1992). Division II S&C coaches surveyed aspired to move on to the Division I level with 26.1% of respondents and 21.7% of respondents wishing to stay at the Division II level (Haggerty, 2005). This differed significantly in the Division III respondents in that 35.3% wished to become a sport specific coach while continuing to be an S&C coach at the Division III level was the second most desired (Haggerty, 2005).

1.3 What Makes an Expert Coach?

Many factors need to be examined to determine the expertise of a coach. These factors can include being regarded as experts by other coaches and athletes, along with being successful at multiple levels of competition (Wiman, Salmoni, & Hall, 2010). In a study of gymnastics coaches, expertise was attained by having at least 10 years of coaching experience, coaching at the provincial level or higher, developing at least one international or two national level athletes and being recognized by the national sporting organization as a coach who develops elite athletes (Côté, Salmela, Trudel, Baria, & Russell, 1995). The definition of expert coaching can vary based

upon the level of competition that the coach participates in. Although some of the characteristics are similar, the developmental focus at younger ages of sport can lead to differences when defining expertise and it is suggested that a coach could be considered an expert while coaching at non-elite levels of sport such as high school or below (Wiman, Salmoni, & Hall, 2010). Expert coaches are said to consistently apply professional, interpersonal, and intrapersonal knowledge across sporting environments with the goal of improving their athletes' performances and enjoyment (Côté & Gilbert, 2009).

1.4 Role of Education and Knowledge for Coaches

There are three main areas of education and knowledge needed to be an expert coach according to Côté and Gilbert (2009): professional, interpersonal, and intrapersonal. A sport coach must possess specific professional knowledge that is often the focus of seminars and clinics (Collinson, 1996). For the attainment of interpersonal and intrapersonal knowledge and education needed to be effective with their athletes, coaches often turn to teacher expertise literature (Côté & Gilbert, 2009). Through a combination of knowledge and education from sport specific resources and teaching expertise literature, a coach can possess the professional, interpersonal, and intrapersonal skills needed to attain coach mastery.

1.5 Role of Athletic History for Coaches

The role of a coach's athletic past has long been a topic of discussion and debate for coaches, athletes and the general public with the thought that knowledge accumulated while playing the sport will allow the coach to ascend the levels of coaching more quickly (Cushion, Armour, & Jones, 2003). While past or present athletic ability does not correlate to coaching success (Sloane, 2007), it is observed as being extremely rare for a professional sports team to hire a coach who has not competed as an athlete at an elite level (Mielke, 2007). The overemphasis on

past athletic experience and lack of emphasis on interpersonal and intrapersonal knowledge may be an explanation for the high turnover rates associated with coaches at the collegiate and professional level (Côté & Gilbert, 2009). While past experience as an athlete can certainly help mold a coach and their development, it is uncertain as to how much of an impact it has and whether it is absolutely necessary. As with other characteristics of expert coaches, it is the combination of these characteristics that compose the coach and not just a singular characteristic or trait.

1.6 Role of Practical Experience, Mentorship and Collaboration for Coaches

Coaching is a dynamic activity where the setting and variables are constantly changing. For these reasons, accumulating practical experience is considered a necessity to become an expert coach (Grant and Dorgo, 2014). In order to become a successful coach, Côté and Gilbert (2009) identify that coaches have to regularly operate in an ever changing environment to interact with their athletes, other coaches, parents and other professionals. The dynamic nature of these tasks demand that to become an expert coach one must accumulate practical experience in a variety of settings over an extended period of time. Practical experience can be attained while completing an internship or while working with a mentor coach. Research has shown that elite coaches value daily hands-on learning over formalized learning when developing coaching expertise (Gilbert, Côté, & Mallett, 2010). In addition to the practical learning taking place at a daily interval, it is most valuable when the aspiring expert coach focuses his/her interactions and learning on coaches that possess higher levels of coaching expertise and success (Gould, Krane, Giannini, & Hodge, 1990). The mentoring process has also been shown to be reciprocal in nature in that the mentor coach is encouraged to take advantage of the role by developing new strategies and refining their practices which in turn contribute to a higher level of coaching expertise (Bloom, Durand-Bush,

Schinke, & Salmela, 1998). The combination of benefit to the mentee and mentor make it an extremely effective means of contributing to the attainment of coaching expertise.

1.7 What Makes an Expert S&C Coach?

It is apparent that there are many similarities between an expert sport coach and an expert S&C coach (Gilbert & Baldis, 2014). The main differences will appear in the specific professional knowledge of physical training for sport performance, while the interpersonal and intrapersonal knowledge will be similar to that of sport coaches. In a study of NCAA Division 1 S&C coaches, it was the opinion of several coaches that the relationship side of coaching was far more important than the specific professional knowledge needed to impact their athletes (Massey, & Vincent, 2013). While the interpersonal and intrapersonal knowledge are similar to that of sport coaching, the context of S&C may present some challenges that are different from sport coaching and success will be dependent on developing expertise in the setting in which they have to coach (Gilbert & Baldis, 2014). In my 15+ years of experience as an S&C coach, the characteristics needed to be an S&C coach at a developmental level (e.g, high school) will vary from that of an S&C coach at and elite level in a national or professional team setting.

1.8 Role of Education and Knowledge for S&C Coaches

As stated by Côté and Gilbert (2009), there are three main areas of education and knowledge needed to become an expert S&C coach: professional, interpersonal, and intrapersonal. This section will focus on the professional educational characteristics since the interpersonal and intrapersonal knowledge have significant overlap with sport coaching as discussed in previous sections.

A combined list from Garhammer (1998) and Massey (2010) have identified the following areas as curricular elements needed to be an expert S&C coach: human anatomy and physiology,

sport physiology, kinesiology/biomechanics, sport psychology, sport nutrition, scientific principles of strength and conditioning, resistance training and conditioning, exercise technique and prescription, program design in S&C, sport pedagogy, motor learning, cardio-pulmonary resuscitation (CPR) and first aid, athletic injuries, performance testing, administration, and management in S&C. This list serves as a guide for acceptable professional curriculum knowledge in S&C. The inclusion of curricular elements such as developing budgets and communication skills (Vescovi, Binkley, & Kerksick, 2004) along with teaching and pedagogy (Plisk, 2003) are supported as being crucial elements in becoming an expert S&C coach. While the above list is extensive, the specific content of this list has been challenged by Stone, Sands, and Stone (2004) due to the listed curriculum containing general exercise science-based content instead of more specific performance-based sports science information, principles, and methods. Stone et al. (2004) believe that there would be a more direct carryover of professional knowledge if the curriculum was more sports, rather than exercise, science-based. Massey and Maneval (2014) believe that a curriculum based on sports science is the foundation of the professional knowledge needed to become an expert S&C coach and this is also supported by Gilbert and Baldis (2014) in that sports science-based information would more accurately duplicate the working context of a S&C coach when compared to exercise science-based information.

1.9 Role of Athletic History for S&C Coaches

As with sport coaching, the role of the past athletic history of S&C coaches is of particular interest. Similarly, to sport coaching, it is a common belief that it is necessary to have been a competitive athlete to be successful in the field of S&C (Haff, 2010). When outlining three stages of expertise, from beginner to competent to expert, Grant, Dorgo, and Griffin (2014) suggest that beginner level S&C coaches may have had some experience in S&C programs as an athlete in

addition to educational and certification credentials. This experience as an athlete would serve as the practical context of their knowledge as a beginner coach until they are able to accumulate some actual coaching experience and progress towards competence and expertise. As with sport coaching, the athletic history of coaches varies greatly and, in a study, where seven elite National Rugby League S&C coaches were surveyed, their athletic past ranged across subjects from recreational up to the international level (Hanratty & O'Connor, 2012).

1.10 Role of Practical Experience, Mentorship and Collaboration for S&C Coaches

It has been outlined above that practical experience, mentorship and collaboration are critical components in becoming an expert coach and that is no different for the field of S&C. Despite the importance, Stone et al. (2004) has pointed out that many students that have applied for internships at the United States Olympic Training Centre lack the practical experience needed to train athletes. This is despite possessing the exercise science knowledge to conduct laboratory-based tasks, and that it requires significant additional training to get the interns up to practical standards. While these practical experiences are often not attained through formal educational pathways, an aspiring S&C coach or one that is looking to increase their coaching expertise is expected to obtain knowledge through practical coaching experiences (Massey & Maneval, 2014). While gaining this practical knowledge it is useful to do so under a mentor in S&C as with sport coaching as discussed above.

In order to achieve expert coaching status, the process of self-improvement must be a constant, life long process. This process can involve elements from professional, interpersonal, and intrapersonal knowledge as outlined by Côté and Gilbert (2009), and this process can be enhanced through collaboration with other professionals by sharing experiences that have a high level of relevance to each other's contextual situation (Gilbert, & Baldis, 2014).

Objectives

The primary purpose of this study is to gather information about the demographic characteristics of S&C coaches in Canada. The use of this information will be twofold. It will serve as a blueprint for aspiring S&C coaches in Canada with respect to the target in which they are trying to achieve and how to get there. Additionally, this information will be compared with that of the research conducted on NCAA S&C coaches in order to compare and contrast the profession in different countries with diverse sporting environments and organizations. Secondly, this study will assess coaching expertise by asking about years experience, PSO/NSO experience, and athlete progression. This will further allow us to create a profile of Canadian S&C coaches at certain levels, but also further describe expert coaches within those levels to discover whether there are discernable differences between the demographics and characteristics of expert and non-expert S&C coaches at each level.

Research Questions

1. What are the necessary education and experience to become an S&C coach in Canada?
2. How do the demographics of Canadian S&C coaches differ from S&C coaches in the USA?
3. What differences in the demographics of Canadian S&C coaches exist between expert and non-expert Canadian S&C coaches?

Hypotheses

The education and experience required to become an S&C coach in Canada will be similar to that of the NCAA coaches with the exception of graduate assistant experience. These do not seem to be as prevalent in Canada, and it is expected that this will be demonstrated by this study.

The demographics will be similar to that of the USA S&C coaches but will show a larger proportion of S&C coaches identifying as female. This may be related to the recency of this study compared to the NCAA studies or be representative of a true difference.

It is expected that the expert coaches will have more years of experience and have engaged in more professional development in the form of both education and mentorship, both informal and formal, when compared to the non-expert S&C coaches.

1.11 Methodology

Participants

The participants of this study were S&C coaches that work in Canada that chose to answer the survey. S&C coaches were recruited for participation via the Canadian Strength and Conditioning Association as well as through the author's professional network.

Instrumentation

A survey instrument was adapted from those used by Pullo (1992), Martinez (2004), and Haggerty (2005) and combined with one from Côté, Salmela, Trudel, Baria, & Russell (1995). By adapting these instruments it allowed the use of a validated instrument that allowed for consistent comparison to previous research. In addition to covering demographics, education, coaching experience, facility characteristics, and staffing in S&C, the instrument included questions pertaining to sport coaching expertise. The survey was set up to be administered and completed electronically via Qualtrics survey software.

Population, Distribution, and Return of Pilot Study and Survey Instrument

Five S&C coaches were administered a pilot instrument electronically and asked to complete and submit feedback about the efficacy of the instrument. recommended portions that need to be removed or included and any other ideas that they may have to improve the instrument. The pilot survey responses were used to make appropriate changes before moving forward.

The completed instrument was posted on the CSCA website and sent out to recipients of their newsletter. Additionally, the survey was distributed among professional email lists of S&C coaches in Canada as well as shared on social media encouraging respondents.

Design and Analysis

Frequency distribution and descriptive statistics were used to analyze the data.

1.12 Summary

The primary objective of this research was to determine the demographics of Canadian S&C coaches, with a secondary objective of comparing the experts and non-expert Canadian S&C coaches. Currently, the demographics of Canadian S&C coaches is unknown and has not been studied to our knowledge. Additionally, there is no accepted universal definition of an expert S&C coach.

The demographic characteristics will closely mirror work done with NCAA S&C coaches completed by Haggerty (Haggerty, 2005), Martinez (Martinez, 2004), and Pullo (Pullo. 1992). In these studies, the authors examined NCAA Division I, II, and III S&C coaches for information pertaining to their demographic characteristics, educational background, competitive and coaching experiences, duties, and opinions of the head S&C coaches. Pullo (1992) studied NCAA Division I Football S&C coaches, Martinez (2004) looked at NCAA Division I head S&C coaches, and Haggerty (2005) examined NCAA Division II and Division III head S&C coaches.

In determining what characteristics are needed to attain S&C coaching expertise, the literature was examined pertaining to both sport coaching and S&C coaching. A coach's level is often determined by the level of achievement of his/her athletes, the athletes' perception and satisfaction of the coach or the amount of time that the coach has engaged in coaching and coaching behaviours (Côté & Gilbert, 2009). There are some limitations in determining whether a coach is an expert or

not, especially in S&C. Based on the work of Côté, Salmela, Trudel, Baria, & Russell (1995), questions examined years of experience, coaching level, coaching athletes that reach the next competitive level, and acknowledgement from a PSO/NSO. Based on this work, S&C coaches were classified as experts based on the following criteria; possessing 10 years of experience, having been an assistant or head S&C coach for a PSO or NSO, and reported that athletes they have coached progressed to the next competitive level within their sport.

Defining the demographics of Canadian S&C coaches will help create a developmental model for aspiring S&C coaches in Canada instead of relying on resources from other countries that have a differing sporting and educational system. While we have information and definitions concerning what consists of expert coaching and what is needed to be an effective S&C coach, we do not have information that specifically pertains to becoming an expert S&C coach within the Canadian sporting system. By identifying the demographics of expert Canadian S&C coaches, we can create a blueprint for aspiring S&C coaches seeking career progression and expertise. Not only will it aid aspiring S&C coaches seeking expertise, it can be used as a qualification system by athletes, parents, coaches, institutions, and governing bodies in Canada when looking for an S&C coach to improve sport performance. With the help of the CSCA, this analysis and information will serve to define the S&C profession in Canada, and provide a profile for an expert S&C Coach in Canada. This information can then be used to compare sport coaches and S&C coaches in Canada to other countries, as a means to determine ways to progress the S&C field in Canada.

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Chapter 2: Co-Authorship Statement

The following details my role in the authorship of the manuscript.

Research Design

Methodology was developed based on previous work done in the NCAA by Pullo (1992), Martinez (2004), and Haggerty (2005) and combined with ideas from Côté, Salmela, Trudel, Baria, & Russell (1995). Dr. Erin McGowan, Dr. David Behm, and Dr. Karl Erickson assisted with the development of the survey instrument used for this study. With assistance from Dr. David Behm, I was granted approval from the Interdisciplinary Committee on Ethics in Human Research (ICEHR) to conduct this research.

Data Collection

Data collection was done by myself via Qualtrics survey software.

Data Analysis

I conducted all data analysis procedures.

Manuscript

With the assistance of Dr. David Behm, I wrote the manuscript.

Chapter 3: Manuscript

Title: Demographics of Canadian Strength and Conditioning Coaches

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3.1 Abstract

The demographic characteristics of Canadian strength and conditioning (S&C) coaches are unknown and are needed in order to assess the current state of the field. A sample of 215 Canadian S&C coaches were recruited through the Canadian Strength and Conditioning Association's (CSCA) newsletter, the National Strength and Conditioning Association's (NSCA) Canadian facebook group, and the principal investigator's professional network. Mean age of the participants was 34.1 years (± 8.6), 77.7% were male and with a small segment of the participants identifying as a visible minority (9.3%). Participants most commonly reported working in the private sector (34.9%), university (19.1%), and PSO/NSO (19.1%). The most common salary range reported was both \$40,001-\$50,000 and \$50,001-\$60,000 at 13.5% each. The most common certifications reported by Canadian S&C coaches was the NSCA-CSCS (84.4%). The highest education obtained was reported as Bachelor's degree (54.9%) and Master's degree (37.8%), and 83.6% reported having degrees directly related to the field of S&C. Of respondents,

18.6% were classified as experts with 81.4% in the non-expert category. The overall demographics of Canadian S&C coaches presented as middle-aged, male, non-visible minority, with a Bachelor's degree, and the NSCA –CSCS certification.

Keywords: strength and conditioning, demographics, coaching, expert

3.2 Introduction

The Canadian Strength and Conditioning Association (CSCA) was founded in October 2018 in order to support and serve Strength and Conditioning (S&C) Coaches in Canada (Canadian Strength and Conditioning Association, 2020). There are several related organizations in Canada such as Coaching Association of Canada (CAC), Canadian Society of Exercise Physiology (CSEP), and the Certified Personal Trainers Network (CPTN), however none of these are truly specific to S&C in the Canadian setting. Other countries also have dedicated S&C associations in addition to their exercise science and coaching associations. In particular, the United States of America (USA) has the National Strength and Conditioning Association (NSCA), the United Kingdom has the United Kingdom Strength and Conditioning Association (UKSCA), and Australia has the Australian Strength and Conditioning Association (ASCA). While these non-Canadian associations are beneficial to S&C coaches in Canada, the sporting context and culture in these countries differ from those in Canada, which is why the formation of the CSCA was considered to be essential by many in the Canadian S&C profession. Even with the formation of the CSCA, the characteristics and profile of Canadian S&C coaches lacks clarity, and to our knowledge has yet to be studied. This is why it is necessary to define and research the characteristics of S&C coaches in Canada in order to inform the process for becoming a Canadian S&C coach. Furthermore, comparing and contrasting with research done on National Collegiate Athletic Association (NCAA) S&C coaches would help to determine potential next steps in the

development of this field in Canada. This would better allow the CSCA to serve developmental coaches working towards achieving expertise with the knowledge of the current characteristics of Canadian S&C coaches and that of more established organizations in other countries. The focus of comparison will be on NCAA S&C coaches and Canadian university S&C coaches.

The objective of this research was to examine the demographic characteristics of S&C coaches in Canada and to assess their coaching expertise. Assessing the demographic characteristics of S&C coaches in Canada closely mirrors research conducted with NCAA S&C coaches (Haggerty, 2005; Martinez, 2004, & Pullo. 1992). In these studies, the authors examined NCAA Division I, II, and III S&C coaches for information pertaining to their demographic characteristics, educational background, competitive and coaching experiences, duties, and opinions of the head S&C coaches. Pullo (1992) studied NCAA Division I Football S&C coaches, Martinez (2004) looked at NCAA Division I head S&C coaches, and Haggerty (2005) examined NCAA Division II and Division III head S&C coaches.

Since the NCAA and S&C organization in the USA are many years ahead with respect to acceptance and professionalism, it was crucial to compare the metrics of coaches in the NCAA to those that are examined in Canada. One such example of the divide is that the NSCA was formed in 1978 (National Strength and Conditioning Association, 2020), whereas as mentioned above, the CSCA was only recently formed in 2018. This represents a 40 plus year gap in the domestic acknowledgement of professionalization of the field of S&C. It is important to mention that the NSCA does service internationally, including Canada, but does not aim to specifically meet the needs of a certain country or region other than the USA. The examination of Canadian S&C coaches specifically will serve as an evaluation and point of comparison upon which future

strategy and direction can be applied in order to progress the field of Canadian S&C in comparison to the more established S&C coaching field in the USA.

In determining what characteristics are needed to attain S&C coaching expertise, we have to examine the literature pertaining to both sport coaching and S&C coaching. A coach's level is often determined by the level of achievement of his/her athletes, the athletes' perception and satisfaction of the coach or the amount of time that the coach has engaged in coaching and coaching behaviours (Côté & Gilbert, 2009). There are some limitations in determining whether a coach is an expert or not, especially in S&C. The success of an athlete is determined by their physical, mental, emotional, tactical, and technical preparation of which the main area of focus for S&C coaches is that of physical development. There can certainly be some overlap into other areas of development, but that is not typically the focus of this profession. Given the large number of factors, it would be difficult to use the athletes' sport success as a main component of defining an expert S&C coach. The other two factors addressed by Côté and Gilbert (2009) can be applied to a S&C coach in a similar way that it would be applied to a sport coach to determine expertise. The work of Côté, Salmela, Trudel, Baria, & Russell (1995) examined years of experience, coaching level, coaching athletes that reach the national or international level, and acknowledgement from a national sporting organization (NSO). Based on this work, S&C coaches were classified as experts based upon possessing 10 years of experience, having been an assistant or head S&C coach for a provincial or national sporting organization (PSO/NSO), and reported that athletes they have coached progressed to the next competitive level within their sport.

The main function of an S&C coach is to educate and train athletes to improve their sport performance (Gilbert & Baldis, 2014). This may include but is not limited to the development of speed, power, strength, endurance, flexibility and injury prevention. As with all coaches, S&C

coaches will aid in the development of other characteristics outside their focus area. The characteristics of an expert S&C coach are similar to that of an expert sport coach with the main difference being that an S&C coach would possess specific knowledge and skills surrounding how to plan and implement physical training to improve sports performance.

This will help create a developmental model for aspiring expert S&C coaches in Canada instead of relying on resources from other countries that have a sporting and educational system that differs from Canada. While we have information and definitions concerning expert coaching and what is needed to be an effective S&C coach, we do not have information that specifically pertains to becoming an expert S&C coach within the Canadian sporting system. By researching this particular area, we can create a blueprint for aspiring S&C coaches seeking career progression and expertise. Not only will it aid aspiring coaches seeking expertise, it can be used as a qualification system by athletes, parents, coaches, institutions, and governing bodies in Canada when looking to use an S&C coach to improve sport performance. With the help of the CSCA, this analysis and information will serve to define the S&C profession in Canada, after which time, the profile of an expert S&C Coach in Canada can be compared to sport coaches and S&C coaches in other countries in order to find ways to improve upon the characteristics, and therefore level of expertise, of expert S&C coaches in Canada.

3.3 Methods

Participants

Ethical approval was granted by the host institutions Interdisciplinary Committee on Ethics in Human Research (Approval #: 20210399-HK). The study consisted of a cross-sectional online study for Canadian S&C coaches. Inclusion criteria for participation included: participant was a Canadian S&C coach and could read and understand English.

Participants were recruited for participation via the Canadian Strength and Conditioning Association, the NSCA Canada facebook page, and the principal investigator's professional network. The survey was posted on the CSCA website and sent out to recipients of their newsletter. Additionally, the survey was distributed among professional email lists of S&C coaches in Canada, as well as shared on social media encouraging respondents. The principal investigator contacted several prominent coaches personally and asked for their help in sharing the survey.

Measures

A survey was developed for this study by adapting surveys from previous S&C research studies (Pullo, 1992; Martinez, 2004 & Haggerty, 2005) and coaching expertise (Côté, Salmela, Trudel, Baria, & Russell, 1995). Adapting these previous surveys allowed the use of an instrument that permitted consistent comparison to previously researched groups. The surveys consisted of questions related to demographics, education, coaching experience, facility characteristics, and staffing in S&C, the instrument included questions pertaining to sport coaching expertise, and took roughly 20-45 minutes to complete. The survey also included questions about S&C educational resources, how to progress the S&C field in Canada, and COVID-19 related S&C questions. The COVID-19 questions are not included in this manuscript, however this data will be analyzed for future publications. The survey was administered and completed electronically via Qualtrics survey software.

Population, Distribution, and Return of Pilot Study and Survey Instrument

To assess the acceptability and efficacy of the questionnaire, five S&C coaches were administered the survey electronically and asked to provide feedback. Feedback was provided to improve the survey and focused on efficacy, content, formatting, and wording of the survey. This feedback was used to make modifications before finalizing the survey.

Design and Analysis

Frequency distribution and descriptive statistics was used to analyze the data. The focus of this analysis was on the demographic characteristics of Canadian S&C coaches, a comparison of the demographics of Canadian S&C coaches to NCAA S&C coaches, and a comparison of expert and non-expert Canadian S&C coaches. The comparison to NCAA S&C coaches was somewhat limited due to the type of data available from the previous NCAA studies and unless otherwise noted was focused on comparing the modal responses in order to create comparative profiles for each of NCAA division I-A, NCAA division II, NCAA division III, and Canadian university S&C coaches.

3.4 Results

Participants

A total of 215 out of 259 respondents were included in the analysis. Subjects that did not complete the survey were eliminated from the sample and incomplete surveys were analyzed for the complete portions. The cut off for inclusion was the survey had to be 19% complete, which included survey questions related to their primary work environment, age, sex, salary, and years of experience. No response rate can be calculated, as no specific mailing or recruiting list was used.

Demographic Characteristics

Demographic characteristics are presented in Tables 1 & 2. To summarize, participants mean age was 34.1 years (± 8.6), 77.7% were men, and 90.7% were non-visible minority. Participants identified their primary work environments were: private sector (34.9%), university (19.1%), and PSO/NSO (19.1%). The mode salary range reported was both \$40,001-\$50,000 and \$50,001-\$60,000 at 13.5% each.

Certification

The top 3 certifications reported by Canadian S&C coaches included the National Strength and Conditioning Association Certified Strength and Conditioning Specialist (NSCA-CSCS) (84.4%), followed by National Coaching Certification Program Weightlifting (Trained or Certified, NCCP WL) (24.5%), and Canadian Society of Exercise Physiology Certified Exercise Physiologist (CSEP-CEP) (14.1%) (see Table 3).

Educational Background

The highest education obtained by Canadian S&C coaches was reported as Bachelor's degree (54.9%) and Master's degree (37.8%) (see Table 4). A large majority (83.6%) of Canadian S&C coaches reported having degrees directly related to the field of strength and conditioning with Kinesiology being the highest (45.0%) (see Table 5).

Professional Status and Experience

The majority of Canadian S&C coaches categorized their job title as head S&C coach (64.2%), followed by performance lead/manager/director at 20.9%, and assistant S&C coach at 17.1% (see Table 6). Respondent head S&C coaches reporting having a mean of 2.9 paid full-time assistant S&C coaches, 3.1 paid part-time assistant S&C coaches, 3.1 graduate assistant S&C coaches, 7.0 intern S&C coaches, and 7.0 volunteer S&C coaches (see Table 7).

Canadian S&C coaches reported a mean of 2.2 years of experience as an intern/co-operative work experience S&C coach, 2.2 years of experience as a graduate assistant S&C coach, 2.2 years of experience as a volunteer S&C coach, 2.9 years of experience as an assistant S&C coach, and 6.4 years of experience as a head S&C coach (see Table 8).

When reporting on total years of S&C coaching experience 17.2% reported having 1-3 years, 24.2% had 4-6 years, 18.6% had 7-9 years, 11.6% had 10-12 years, 9.8% had 13-15 years, and 18.6% had 16+ years of total S&C coaching experience (see Table 8).

Duties

In addition to S&C coaching, 67.0% of Canadian S&C coaches reported as having other duties. The most commonly reported duties included athlete testing (91.6%), nutrition counselling (82.7%), weight room maintenance (65.4%), substance/drug abuse counselling (59.2%), and recruiting (40.8%) (see Table 9).

Career Goals

Among Canadian S&C coaches that wanted to remain in their current sector, the top reported categories were private sector S&C coaches (22.9%) and PSO/NSO coaches (20.3%) (see Table 10). A large number of coaches responded that they wish to become S&C coaches in the professional sector (26.1%) and athletic administrators (20.9%) (see Table 10). Notably, 13.7% of respondents reported as being uncertain about their career goals at that time.

3.5 Discussion

The major finding of the survey was the establishment of the previously unknown demographic characteristics, certification, and educational backgrounds of Canadian S&C coaches. This information would be pertinent to provide information for those individuals looking for a path into this career in Canada. Canadian S&C coaches showed uncertainty

surrounding career sustainability and longevity based on the decline in years of experience beyond the reported range of 4-6 years. Another major finding surrounded other duties of Canadian S&C coaches with a particular interest in counselling athletes in areas not directly within the scope of practice of an S&C coach. An emergent theme that was not expected was that of the performance lead/manager/director position as the reported job title among Canadian S&C coaches and the associated salaries in these positions.

The “typical” Canadian S&C coach presented as a middle aged, predominantly male, and not identifying as a visible minority. Of the 215 respondents, the largest group identified by primary work environment was private sector S&C coaches at 34.9% followed by university, and PSO/NSO S&C coaches at 19.1% each. Majority of Canadian S&C coaches reported making between \$30,001-\$80,000 (57.7%), possessing the NSCA-CSCS certification (84.4%), and a Bachelor’s degree as their highest education (54.9%). The salary ranges presented seem acceptable and appropriate when looked at overall but can certainly be questioned in the case of a head S&C coach with specific education and certification working for multiple years in the lower salary ranges.

Regarding certification, the majority of Canadian S&C coaches possess the NSCA - CSCS certification which is based out of the USA from an organization formed in 1978 (National Strength and Conditioning Association, 2020) and based on the profession in a country that has a very different athletic landscape than Canada. While the CSCS was the predominant certification, the next two most popular were Canadian certification and training programs in the NCCP WL and CSEP-CEP. This is important information for those that are either aspiring to be a Canadian S&C coach as well as those that mentor future coaches. It is well established that young Canadian S&C coaches are advised by mentors to get the CSCS, and the CEP if coming

from an academic or laboratory background. While it is notable that the second and third most popular certifications are Canadian in NCCP WL at 24.5% and CSEP-CEP at 14.1%, there is a significant gap to that of the NSCA-CSCS at 84.4%.

The results indicated that while approximately 55% of Canadian S&C coaches earned a Bachelor's degree, less than 40% had a master's or higher degree. However, a majority of the "expert" S&C coaches did possess a master's degree or higher and also reported a higher salary distribution. Overall, 83.6% of Canadian S&C coaches reported having degrees directly related to the field of strength and conditioning. The degrees included in this category were kinesiology (45.0%), exercise/health science (15.9%), physical education (9.5%), sports science/performance (5.3%), athletic therapy/training (4.2%), and strength and conditioning (3.7%). Hence, the majority of Canadian S&C coaches are working towards one of the pillars of becoming an expert coach by developing specific professional knowledge related to their field (Côté & Gilbert, 2009), which is consistent with the findings and recommendations of Stone et al. (2004) when examining American S&C coaches.

Based on the trends regarding total years of experience, it seems that there could be an issue with career longevity and sustainability of Canadian S&C coaching careers. Only 40% of the respondents reported as having 10 or more years of experience in the field even though the vast majority of Canadian S&C coaches have advanced education and certification and an industry specific accredited certification. Some explanations for this finding could revolve around the recent rapid growth in this new and young profession in Canada, the average age of respondents, and the possibility that many experienced coaches did not fill out the survey. Hopefully as the profession matures in Canada, there would be a greater proportion of experienced (i.e., 10+ years of experience) S&C professionals. Another possible factor

contributing to these numbers are coaches transitioning into administrative roles and no longer identifying as an S&C coach. Of the respondents, 20.9% said that they want to become an athletic administrator. Another potential issue regarding career longevity and sustainability, would be whether S&C coaches need to transition into administration? Do some of these S&C coaches decide that they would prefer to try and continue to have an impact by creating better environments and systems for S&C coaches through administration rather than dropping out of the profession? These are potential questions worth examining in the future surrounding Canadian S&C coach longevity, sustainability, and career progression.

S&C coaching is an all-encompassing support staff position and predictably, 67.0% of respondents reporting as having duties in addition to S&C coaching. What was notable in this section was that a large proportion of Canadian S&C coaches that reported being involved in nutrition counselling (82.7%) and drug/substance abuse counselling (59.2%). These duties could be considered outside an S&C coach's scope of practice, as well as outside their scope of expertise. Specialists, such as dietitians and counsellors, are typically responsible for nutrition and drug/substance abuse counseling, however it is not uncommon for S&C coaches to support and reinforce in these areas with athletes. Since the majority of Canadian S&C coaches are providing nutrition and drug/substance abuse counselling, it is important to acknowledge the need for proper training, appropriate hiring, and accurate definition of roles and responsibilities. As with most important issues, athletes/clients will engage with someone that they trust first. S&C coaches often spend many hours per week, year round, with their athletes and develop a trusting relationship. Therefore, it is not a surprise that Canadian S&C coaches are conducting these tasks but it is important to ensure they are prepared, meet liability requirements, and are

compensated for their ability to offer this support outside of what would be considered their standard duties.

Even though it was not a printed option, 20.9% of Canadian S&C coaches wrote performance lead, performance manager, or performance director as their job title. In many integrated sport or human performance environments it is common for there to be an individual that oversees all performance-related responsibilities and serves as the lead for the performance staff that can include S&C, therapy, sport science, and sport medicine. It has become a common progression for sport science and sport medicine practitioners, including S&C coaches, to work their way into these roles after several years in the field. Based upon the responsibilities in these roles and the experience that is required, the range of salaries reported by those in these roles was unexpected. While the majority (56.4%) of performance lead/manager/directors reported as making over \$90,000 many (20.6%) also reported as making under \$60,000 including some (5.2%) that make under \$30,000, which is simply not congruent with the qualifications and requirements of such an advanced role.

Canadian S&C coaches that identified “university” as their primary work environment were used to compare to previous studies conducted with the NCAA in the USA. This comparison was only made with “university” S&C coaches as their setting is most similar to the NCAA (e.g., part of an academic institution, offers athletics as an extra or co-curricular activity, and supported by the athletic department for their S&C training). A direct comparison is difficult due to the differences between the athletic departments in the NCAA and Canadian universities in addition to the time elapsed since the NCAA studies (Martinez, 2004, Haggerty, 2005).

The most often reported age of S&C coaches in NCAA division I-A was 37 years, NCAA division II was 35 years, NCAA division III was 34 years, and the mean for Canadian university

S&C coaches was 34.1 years. All 4 categories reported the mode as male and did not identify as visible minorities. The most often reported salary ranges (NCAA salaries adjusted for 2020 CAD and rounded to nearest \$1000) for NCAA division I-A was \$67,000-\$80,000, NCAA division II was \$35,000-\$47,000, for NCAA division III was \$35,000-\$47,000, and for Canadian university was \$50,001-\$60,000. All 4 categories reported NSCA-CSCS as the most common certification and NCAA division I-A and NCAA division II reported a Master's degree as the most common while NCAA division III and Canadian university reported Bachelor's degree as the mode. With regard to previous S&C coaching experience, all 4 categories reported having assistant S&C coaching experience and NCAA division I-A and NCAA division II also reported graduate assistant S&C experience while NCAA division III and Canadian university did not. Regarding staffing, the NCAA division I-A coaches reported having one each of graduate assistants and volunteer assistants but all other categories reported no additional staff as the most often occurring response. The NCAA division I-A and Canadian university reported "head S&C coach" as the mode job title while NCAA division II and NCAA division III reported "head S&C coach/additional title" as the modal response. All 4 categories reported as having full-time status, 12-month contracts, and employment status of staff as the mode responses. The number of weight rooms for athletic training recorded at NCAA division I-A was 2, NCAA division II was one, NCAA division III was zero, and Canadian university was one. The career goals of NCAA division I-A and Canadian university was to remain in their current positions while NCAA division II wanted to stay at division II or progress to division I and NCAA division III wanted to become an athletic coach. Across all 4 categories, the modal response was that the primary job responsibility of S&C coaches is to test athletes. Canadian university S&C coaches made substantially less salary than NCAA division I-A S&C coaches, presented a Bachelor's degree as

highest education compared to a Master's degree for NCAA division I-A and II, and did not have graduate assistant experience or on staff as with NCAA S&C coaches.

Canadian S&C coaches were classified as experts based upon possessing 10 years of experience, having been an assistant or head S&C coach for a PSO/NSO, and reported that athletes they have coached progressed to the next competitive level within their sport. This categorization is not meant to be definitive and acknowledges that expertise is a continuum and used this definition to group the "most expert" of the Canadian S&C coaches surveyed. Based upon this definition, of the 215 subjects, 40 (18.6%) were classified as experts leaving 175 (81.4%) in the non-expert category.

When comparing the expert and non-expert Canadian S&C coaches, the statistics are biased by the 10 years of experience inclusion criteria for experts. Ten years of experience allows more time to grow your career, accumulate knowledge, experience, and education. Looking at the demographical information, the experts were older at an average of 40.8 years compared to 32.6 years, were more predominantly male at 87.0% vs 75.4%, but similar with regard to identifying as a visible minority at 10.0% vs 9.7%. Almost all experts had CSCS certification at 94.6% compared to the non-experts at 81.9%. The majority of experts (70.0%) had a master's degree or higher compared to the non-experts at only 34.1% and all experts had a degree in a related field when including science and coaching, whereas the non-experts only had 86.8% under the same criteria. Many (47.5%) experts reported having the job title of performance lead/manager/director compared to few of the non-experts at 13.6%. Since having 10 years of experience was part of the expert criteria, it is no surprise that the experts had a higher proportion with 10+ years of experience compared to 18.3% of the non-experts with at least 10 years of experience in the field. However, there were some notable differences in

specific experiences between the groups. Experts reported having more experience than non-experts as interns/co-operative work experience students at PSO/NSO, professional, and private setting. When compared to the non-expert group, experts showed more experience as assistant S&C coaches for PSO/NSO and as head S&C coaches at university, PSO/NSO, professional, and private setting. When examining other duties of Canadian S&C coaches, more experts (76.9%) reported having duties outside of S&C coaching than non-experts (64.3%). This included a higher likelihood for experts to teach other classes at 28.2% vs 18.6%, counsel on drug/substance abuse 71.8% vs 55.7%, and involvement with recruiting at 51.3% vs 38.6%.

More experts would like to remain as PSO/NSO (35.3%) and professional S&C (29.4%) coaches than non-experts (12.8%/9.4%). A possible explanation for this is that these expert coaches have already arrived at the destination of their career goals after 10+ years of experience and may have better/more stable current positions than the non-experts. When compared to the expert group, more non-experts want to remain (21.5%) or become (11.4%) private sector S&C coaches. A large portion of non-expert S&C coaches reported as wanting to become PSO/NSO (16.1%) and professional (25.5%) compared to experts at only 2.9% and 5.9% respectively. As mentioned previously, these numbers may be at least partially explained by the working definition of experts including experience at the PSO/NSO level and 10+ years of experience. Many more experts reported as wanting to become athletic administrators at 29.4% compared to non-experts at about half that rate (14.8%). Experts were also more likely to be uncertain (26.5%) about their career goals when compared to non-experts (8.1%). This may be due to the overall uncertainty and infancy of the S&C field in Canada and without a long history, it is difficult to predict the future growth opportunities whereas the non-experts could conceivably simply follow the paths of the more experience experts before them.

3.6 Conclusions

The findings of this study with regard to demographics tend to generally agree with those that have been established in the NCAA research such that Canadian S&C coaches are mostly middle-aged, male, non-visible minority, that have at least a bachelor's degree, and a CSCS certification. This is not surprising given that many mentors in Canadian S&C community tend to use the NCAA as an example career path for aspiring and growing Canadian S&C coaches. The main difference that emerged between the demographic profile of NCAA S&C coaches and Canadian S&C coaches was the prevalence of a master's degree. Both NCAA division I-A and NCAA division II had a master's degree as their most common response for highest level of education whereas Canadian university had bachelor's as most common. This shows an inconsistency with the commonly given advice to Canadian S&C coaches that a master's degree is necessary in order to start and progress their career. Although a master's degree is not necessary to begin and progress one's career, it may be advisable based on the fact that NCAA division I-A S&C coaches have it as most often occurring response and is much more developed and mature with respect to S&C coaching careers in addition to the finding that expert Canadian S&C coaches are much more likely to have a master's degree or above. As far as certification, the NSCA – CSCS proved to be consistent across all NCAA groups, Canadian S&C coaches, and expert Canadian S&C coaches. It would be advisable to attain the CSCS if you are an aspiring or developing Canadian S&C coach planning to be in the field long-term as almost all experts had the CSCS. Canadian S&C coaches reported having between 2-3 years of experience as intern, co-operative education student, graduate assistant, volunteer, and assistant S&C coaches. It is assumed that most, or at least some, of this experience was before gaining the title of head strength and conditioning coach therefore it is recommended that hopeful Canadian S&C

coaches accumulate practical coaching experience early and often in their young careers in order to progress toward more senior S&C coaching positions. Despite the NCAA and Canadian sporting system being vastly different, there were more similarities than differences when comparing this research to that published regarding NCAA division I-A, NCAA division II, and NCAA division III. The major difference would be the salary at the NCAA division I-A level when compared to Canadian S&C coaches but that was to be expected based on NCAA division I-A institutions having football and men's basketball as huge revenue generating sports. One of the major objectives of this research was to establish a working definition and identify unique characteristics of expert Canadian S&C coaches. The experts were almost certain to have their CSCS, highly likely to have a master's or PhD degree, and more likely to counsel athletes on topics outside S&C such as substance/drug abuse. Although limited by the defined criteria, this data will hopefully provide a career road map for the aspiring Canadian S&C professional.

3.7 References

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3.8 Tables

Table 1

Demographics of Canadian S&C coaches

Age ($n=214$)

Mean (SD) 34.1 (8.6)

Range (yrs) 22-63

Sex ($n=215$)

Female 48 (22.3%)

Male 167 (77.7%)

Visible Minority ($n=215$)

No 195 (90.7%)

Yes 20 (9.3%)

Table 2

Salary by primary work environment

	High School (n=14, 6.5%)	College (n=9, 4.2%)	University (n=41, 19.1%)	PSO/NSO (n=41, 19.1%)	Professional (n=32, 14.9%)	Private Sector (n=75, 34.9%)	Unsure (n=3, 1.4%)	Total
<\$20,000	1		4	1	1	6	1	14 (6.5%)
\$20,001-30,000	2		2	5		4		13 (6.1%)
\$30,001-40,000	1	2	4	5	1	11		24 (11.2%)
\$40,001-50,000			5	2	5	17		29 (13.5%)
\$50,001-60,000	3	1	9	9	2	5		29 (13.5%)
\$60,001-70,000	3	1	2	5	2	6	1	20 (9.3%)
\$70,001-80,000	1	2	5	4	3	7		22 (10.2%)
\$80,001-90,000	1		2	1	6	5		15 (7.0%)
\$90,001-100,000		1	1	3	4	3		12 (5.6%)
>\$100,001	2	1	5	4	7	7		26 (12.1%)
Not disclose		1	2	2	1	4	1	11 (5.1%)

Table 3

Certifications by primary work environment (n=192)

	High School (n=13)	College (n=8)	University (n=35)	PSO/NSO (n=38)	Professional (n=25)	Private Sector (n=72)	Unsure (n=1)	Total
CSEP-CPT	2	2	2	3	1	6		16 (8.3%)
CSEP-CEP	1		6	7	8	5		27 (14.1%)
CFP - PTS	1		1			6		8 (4.2%)
CPTN - CPT	1			1	1	5		8 (4.2%)
ACSM - HFI								0
ACSM - ES						1		1 (0.5%)
ACSM - RCEP								0
CATA		2	2		2	3		9 (4.7%)
NSCA - CSCS	12	8	29	36	22	55		162 (84.4%)
NSCA - CPT		1	2		1	8		12 (6.3%)
NCCP WL - T	2		5	12	3	5		27 (14.1%)
NCCP WL - C	1	1	1	6	5	6		20 (10.4%)
CPU - T			1					1 (0.5%)
CPU - C					1	3		4 (2.1%)
USAW			3		2	2		7 (3.7%)
Other**	5	2	19	13	17	24	1	81 (42.2%)

*could identify all that applied

**Functional Movement Systems 7 (3.6%), National Coaching Certification Program 7 (3.6%), Kinesiologist 7 (3.6%)

Certifications: CSEP-CPT = Canadian Society of Exercise Physiology – Certified Personal Trainer, CSEP-CEP = Canadian Society of Exercise Physiology – Certified Exercise Physiologist, CFP-PTS = Can-fit Pro-Personal Trainer Specialist, CPTN-CPT = Certified Professional Trainers Network – Certified Personal Trainer, ACSM-EP = American College of Sports Medicine – Exercise Physiologist, CATA-CAT = Canadian Athletic Therapy Association – Certified Athletic Therapist, NSCA-CSCS = National Strength and Conditioning Association – Certified Strength and Conditioning Specialist, NSCA-CPT = National Strength and Conditioning Association – Certified Personal Trainer, NCCP WL -T = National Coaching Certification Program Weightlifting – trained status, NCCP WL -C = National Coaching Certification Program Weightlifting – certified status, CPU – T = Canadian Powerlifting Union – trained status, CPU – C = Canadian Powerlifting Union – certified status, USAW – United States of America Weightlifting

Table 4

Highest education by primary environment (n=204)

	High School (n=14)	College (n=9)	University (n=39)	PSO/NSO (n=39)	Professional (n=28)	Private Sector (n=72)	Unsure (n=3)	Total
High School Diploma						2		2 (1.0%)
College Diploma/Certificate						6		6 (2.9%)
Bachelor's Degree	8	5	23	12	14	47	3	112 (54.9%)
Master's Degree	6	3	16	22	13	17		77 (37.8%)
Doctoral Degree		1		5	1			7 (3.4%)

Table 5

Highest education by major (n=189)

Kinesiology	85 (45.0%)
Exercise/health science	30 (15.9%)
Physical education	18 (9.5%)
Sports science/performance	10 (5.3%)
Athletic therapy/training	8 (4.2%)
Strength and conditioning	7 (3.7%)
Science	7 (3.7%)
Social science	6 (3.2%)
Fitness and health promotion	5 (2.7%)
Coaching	4 (2.1%)
Leadership	3 (1.6%)
Education	2 (1.1%)
Business	2 (1.1%)
Arts	2 (1.1%)

Table 6

Job title (n=187)

Intern S&C coach	7 (3.7%)
Co-op student S&C coach	1 (0.5%)
Graduate assistant S&C coach	7 (3.7%)
Volunteer S&C coach	1 (0.5%)
Assistant S&C coach	32 (17.1%)
Head S&C coach	120 (64.2%)
Performance lead/manager/director	39 (20.9%)
Teacher/professor	6 (3.2%)
Sport science practitioner	3 (1.6%)
Sport coach	1 (0.5%)

*could identify all that applied

Table 7

Staffing responsibilities

<i>Paid full-time assistant S&C coaches (n=43)</i>	
Mean (SD)	2.9 (3.4)
Range	1-6
<i>Paid part-time assistant S&C coaches (n=45)</i>	
Mean (SD)	3.1 (2.8)
Range	1-15
<i>Graduate assistant S&C coaches (n=11)</i>	
Mean (SD)	3.1 (3.2)
Range	1-10
<i>Intern S&C coaches (n=47)</i>	
Mean (SD)	7.0 (12.2)
Range	1-45
<i>Volunteer S&C coaches (n=47)</i>	
Mean (SD)	7.0 (10.2)
Range	1-40

Table 8

S&C coaching experience in years (n=184)

	Primary Environment	Mean (SD)	Range (yrs)
Intern/Co-op S&C coach	High school (n=13)	1.7 (1.0)	1-4
	College (n=24)	1.3 (0.8)	0.25-4
	University (n=76)	2.0 (1.3)	0.25-8
	PSO/NSO (n=30)	2.9 (5.4)	0.16-25
	Professional (n=20)	2.1 (3.6)	0.25-17
	Private Sector (n=50)	2.9 (5.6)	0.25-35
	Intern/Co-op Total	2.2 (3.7)	0.16-35
Graduate assistant S&C coach	High school (n=1)	3.0 (0)	3
	College (n=0)		
	University (n=28)	1.8 (0.8)	0.5-4
	PSO/NSO (n=1)	1.0 (0)	1
	Professional (n=0)		
	Private Sector (n=3)	6.7 (4.2)	2-10
Graduate Assistant Total	2.2 (1.9)	0.5-10	
Volunteer S&C coach	High school (n=17)	4.0 (5.6)	0.5-25
	College (n=6)	1.5 (0.6)	1-2
	University (n=30)	1.8 (1.2)	0.5-6
	PSO/NSO (n=17)	2.8 (4.0)	0.5-4
	Professional (n=12)	1.3 (0.5)	1-2
	Private Sector (n=17)	1.5 (1.0)	0.75-5
	Volunteer Total	2.2 (3.0)	0.5-25
Assistant S&C coach	High school (n=2)	2.0 (1.4)	1-3
	College (n=4)	2.3 (1.0)	1-3
	University (n=38)	2.5 (1.2)	1-6
	PSO/NSO (n=32)	3.6 (3.3)	0.3-15
	Professional (n=14)	2.7 (1.9)	1-7
	Private Sector (n=41)	2.9 (1.9)	1-8
	Assistant Total	2.9 (2.2)	0.3-15
Head S&C coach	High school (n=25)	5.5 (5.4)	1-20
	College (n=17)	3.9 (3.0)	1-12
	University (n=47)	4.7 (4.0)	1-16
	PSO/NSO (n=51)	7.1 (7.2)	0.5-30
	Professional (n=32)	6.0 (5.8)	1-25

	Private Sector (<i>n</i> =68)	8.1 (8.8)	0.5-35
	Head Total	6.4 (6.7)	0.5-35
Total years experience	1-3 years	37 (17.2%)	
	4-6 years	52 (24.2%)	
	7-9 years	40 (18.6%)	
	10-12 years	25 (11.6%)	
	13-15 years	21 (9.8%)	
	16+ years	40 (18.6%)	

*could identify all that applied

Table 9

Duties in addition to S&C coaching

	No	Yes
General (<i>n</i> =179)	59 (33.0%)	120 (67.0%)
Sport coach		22 (12.3%)
Teach physical education classes		22 (12.3%)
Teach other classes		37 (20.7%)
Facility management		53 (29.6%)
Athlete testing (<i>n</i> =177)	13 (7.3%)	164 (91.6%)
Nutrition counselling (<i>n</i> =178)	30 (16.9%)	148 (82.7%)
Substance/drug abuse counselling (<i>n</i> =179)	73 (40.8%)	106 (59.2%)
Weight room maintenance (<i>n</i> =179)	62 (34.6%)	117 (65.4%)
Supervision (<i>n</i> =179)	124 (69.3%)	55 (30.7%)
Recruitment (<i>n</i> =179)	106 (59.2%)	73 (40.8%)

Table 10

Career goals of Canadian S&C coaches (n=153)

Remain	
High school S&C coach	9 (5.9%)
College/university S&C coach	20 (13.1%)
PSO/NSO S&C coach	31 (20.3%)
Professional S&C coach	24 (15.7%)
Private Sector S&C coach	35 (22.9%)
Become	
High school S&C coach	1 (0.7%)
College/university S&C coach	18 (11.8%)
PSO/NSO S&C coach	25 (16.3%)
Professional S&C coach	40 (26.1%)
Private Sector S&C coach	19 (12.4%)
Teacher	30 (19.6%)
Administrator	32 (20.9%)
Sport Coach	6 (3.9%)
Uncertain	21 (13.7%)

*could identify all that applied

Table 11

Salaries of performance lead/manager/director (n=39)

<\$20,000	1 (2.6%)
\$20,000-30,000	1 (2.6%)
\$30,000-40,000	
\$40,000-50,000	3 (7.7%)
\$50,000-60,000	3 (7.7%)
\$60,000-70,000	4 (10.3%)
\$70,000-80,000	4 (10.3%)
\$80,000-90,000	
\$90,000-100,000	5 (12.8%)
>\$100,000	17 (43.6%)
Not disclose	1 (2.6%)

Table 12

Comparative profile of NCAA and Canadian university S&C coaches

Item	NCAA I-A ^a (n=80)	NCAA II ^b (n=23)	NCAA III ^b (n=34)	Canadian university (n=41)
Age	37.5 (mean), 37 (mode)	35	34	34.1 (mean)
Sex	Male	Male	Male	Male
Visible Minority	No	No	No	No
Salary**	\$66,700-80,100	\$35,100-46,700	\$35,100-46,700	\$50,001-59,999
Certification	CSCS	CSCS	CSCS	CSCS
Degree	Master's	Master's	Bachelor's	Bachelor's
Assistant S&C coach experience	Yes	Yes	Yes	Yes
Graduate Assistant S&C experience	Yes	Yes	No	No
Number of part-time assistants	0	0	0	0
Number of graduate assistants	1	0	0	0
Number of volunteer assistants	1	0	0	0
Title	Head S&C coach	Head S&C coach/additional title	Head S&C coach/additional title	Head S&C coach
Full-time status	Yes	Yes	Yes	Yes
Contract (mo)	12	12	12	12
Employment status	Staff	Staff	Staff	Staff
Number of weight rooms	2	1	0	1

Career goals	Status quo	College (DI/DII) S&C coach	Athletic coach	Status quo
Primary job responsibility	Test athletes	Test athletes	Test athletes	Test athletes

*NCAA I-A = National Collegiate Athletic Association Division 1 A, NCAA II = National Collegiate Athletic Association Division 2, NCAA III = National Collegiate Athletic Association Division 3

**USD adjusted into 2020 CAD (November 6, 2020) and rounded to nearest \$100

*** Unless noted otherwise, values represent the mode

^a From "Study of the Key Determining Factors for the NCAA Division I Head Strength and Conditioning Coach," by D. Martinez, 2004, *Journal of Strength and Conditioning Research*, 18(1), p. 14. Copyright 2004 by the National Strength and Conditioning Association.

^b From "A Profile of Strength and Conditioning Coaches at National Collegiate Athletic Association Division II and III Member Institutions," by L. Haggerty, 2005, *Electronic Theses and Dissertations*. Paper 1094. <http://dc.etsu.edu/etd/1094>

Table 13

Demographics of expert and non-expert Canadian S&C coaches (n=215)

	Expert (n=40, 18.6%)	Non-expert (n=175, 81.4%)
Age (n=214)		
Mean (SD)	40.8 (7.3)	32.6 (8.1)
Range (yrs)	28-63	22-58
Sex (n=215)		
Female	5 (12.5%)	43 (24.6%)
Male	35 (87.5%)	132 (75.4%)
Visible Minority (n=215)		
No	36 (90.0%)	158 (90.3%)
Yes	4 (10.0%)	17 (9.7%)

Table 14

Salary of expert and non-expert Canadian S&C coaches (n=215)

	Expert (n=40)	Non-expert (n=175)
<\$20, 000	1 (2.5%)	13 (7.4%)
\$20, 000-30, 000	1 (2.5%)	12 (6.9%)
\$30, 000-40, 000		24 (13.7%)
\$40, 000-50, 000	3 (7.5%)	26 (14.9%)
\$50, 000-60, 000	3 (7.5%)	26 (14.9%)
\$60, 000-70, 000	6 (15.0%)	14 (8.0%)
\$70, 000-80, 000	7 (17.50%)	15 (8.6%)
\$80, 000-90, 000	3 (7.5%)	12 (6.9%)
\$90, 000-100, 000	3 (7.5%)	9 (5.1%)
>\$100, 000	12 (30.0%)	14 (8.0%)
Not disclose	1 (2.5%)	10 (5.7%)

Table 15

Certifications for expert and non-expert Canadian S&C coaches (n=192)

	Expert (n=37)	Non-expert (n=155)
NSCA - CSCS	35 (94.6%)	127 (81.9%)
NCCP WL - T	10 (27.0%)	17 (11.0%)
NCCP WL - C	9 (24.3%)	11 (7.1%)
CSEP-CEP	10 (27.0%)	17 (11.0%)
CSEP-CPT	1 (2.7%)	15 (9.7%)

*could identify all that applied

Certifications: NSCA-CSCS = National Strength and Conditioning Association – Certified Strength and Conditioning Specialist, NCCP WL-T = National Coaching Certification Program Weightlifting – trained status, NCCP WL-C = National Coaching Certification Program Weightlifting – certified status, CSEP-CEP = Canadian Society of Exercise Physiology – Certified Exercise Physiologist, CSEP-CPT = Canadian Society of Exercise Physiology – Certified Personal Trainer

Table 16

Highest education of expert and non-expert Canadian S&C coaches (n=204)

	Expert (n=40)	Non-expert (n=164)
High School Diploma	0	2 (1.2%)
College Diploma/Certificate	1 (2.5%)	5 (3.0%)
Bachelor's Degree	11 (27.5%)	101 (61.6%)
Master's Degree	24 (60.0%)	53 (32.3%)
Doctorate Degree	4 (10.0%)	3 (1.8%)

Table 17

Highest education by major for expert and non-expert Canadian S&C coaches (n=189)

	Expert (n=38)	Non-expert (n=151)
Kinesiology	12 (31.6%)	73 (48.3)
Exercise/health science	9 (23.7%)	21 (13.9%)
Physical education	4 (10.5%)	14 (9.3%)
Sports science/performance	5 (13.2%)	5 (3.3%)
Athletic therapy/training	2 (5.3%)	6 (4.0%)
Strength and conditioning	1 (2.6%)	6 (4.0%)
Science	4 (10.5%)	3 (2.0%)
Social science		6 (4.0%)
Fitness and health promotion		5 (3.3%)
Coaching	1 (2.6%)	3 (2.0%)
Leadership		3 (2.0%)
Education		2 (1.3%)
Business		2 (1.3%)

Table 18

Job title for expert and non-expert Canadian S&C coaches (n=187)

	Expert (n=40)	Non-expert (n=147)
Intern S&C coach	0	7 (4.8%)
Co-op student S&C coach	0	1 (0.7%)
Graduate assistant S&C coach	0	7 (4.8%)
Volunteer S&C coach	0	1 (0.7%)
Assistant S&C coach	3 (7.5%)	29 (19.7%)
Head S&C coach	26 (65.0%)	94 (63.9%)
Performance lead/manager/director	19 (47.5%)	20 (13.6%)
Teacher/professor	1 (2.5%)	5 (3.4%)
Sport science practitioner	1 (2.5%)	2 (1.4%)
Sport coach	1 (2.5%)	0

*could identify all that applied

Table 19

Full-time/part-time expert and non-expert Canadian S&C coaches (n=178)

	Expert (n=39)	Non-expert (n=139)
Full-time	33 (84.6%)	89 (64.0%)
Part-time	6 (15.4%)	50 (36.0%)

Table 20

Years of S&C coaching experience for experts and non-experts (n=215)

	Expert (n=40)	Non-expert (n=175)
1-3 years	0	37 (21.1%)
4-6 years	0	52 (29.7%)
7-9 years	0	40 (22.9%)
10-12 years	11 (27.5%)	14 (8.0%)
13-15 years	11 (27.5%)	10 (5.7%)
16+ years	18 (45.0%)	22 (12.6%)

Table 21

S&C coaching experience for expert and non-expert Canadian S&C coaches in years (n=184)

		Expert			Non-expert		
		n	Mean (SD)	Range	n	Mean (SD)	Range
Intern/Co-op S&C coach	High school	1	1.0	1	12	1.8 (1.1)	1-4
	College	4	2.0	2	21	1.2 (0.8)	0.3-4
	University	16	1.4 (2.0)	0.25-8	60	1.9 (1.1)	0.3-4
	PSO/NSO	7	5.8 (9.7)	1-25	23	1.6 (1.0)	0.2-5
	Professional	7	4.6 (5.6)	0.25-17	13	1.4 (0.9)	0.5-3
	Private Sector	12	5.3 (9.9)	0.25-35	38	2.1 (2.7)	0.3-14
Graduate assistant S&C coach	High school	0			1	3.0	3
	College	0			0		
	University	6	2.5 (0.7)	1-3	22	1.7 (0.8)	0.5-4
	PSO/NSO	0			1	1.0	1
	Professional	0			0		
	Private Sector	2	2.0 (4.6)	2-10	1	8.0	8
Volunteer S&C coach	High school	5	3.3 (8.8)	2-25	12	2.4 (1.4)	0.5-5
	College	2	2.0	2	4	1.3 (0.5)	1-2
	University	8	2.8 (1.6)	1-6	22	1.4 (0.7)	0.5-3
	PSO/NSO	5	1.8 (6.4)	1.8-17.5	12	1.9 (1.4)	0.5-4
	Professional	5	1.3 (0.4)	1-2	7	1.4 (0.5)	1-2
	Private Sector	2	1.5 (0.5)	1-2	15	1.5 (1.1)	0.75-5
Assistant S&C coach	High school	0			2	2.0 (1.4)	1-3
	College	1	3.0	3	3	2.0 (1.0)	1-3
	University	11	2.6 (1.5)	1-6	27	2.3 (1.1)	1-5
	PSO/NSO	16	5.8 (4.1)	1-15	16	2.3 (1.4)	0.75-6
	Professional	5	3.0 (1.9)	1-6	9	2.8 (1.9)	1-7
	Private Sector	7	2.5 (1.8)	1-6	34	2.9 (1.9)	1-8
Head S&C coach	High school	6	2.5 (3.9)	2-11	19	5.3 (5.9)	1-20
	College	5	4.0 (2.9)	2-10	12	3.8 (3.1)	1-12

University	16	6.3 (4.1)	1-16	31	4.6 (3.9)	1-15
PSO/NSO	36	8.6 (7.3)	1-30	14	2.8 (1.3)	0.5-5.5
Professional	15	10.5 (5.6)	1-17	17	6.4 (6.0)	1-25
Private Sector	15	17.7 (11.8)	2-35	53	6.3 (6.7)	0.5-35

Table 22

Duties in addition to S&C coaching for experts and non-experts

	Expert			Non-expert		
	<i>n</i>	No	Yes	<i>n</i>	No	Yes
General	39	9 (23.1%)	30 (76.9%)	140	50 (35.7%)	90 (64.3%)
Sport coach			5 (12.8%)			17 (12.1%)
Teach physical education classes			5 (12.8%)			17 (12.1%)
Teach other classes			11 (28.2%)			26 (18.6%)
Facility management			14 (35.9%)			39 (27.9%)
Athlete testing	39	2 (5.1%)	37 (94.9%)	138	11 (8.0%)	127 (92.0%)
Nutrition counselling	39	7 (17.9%)	32 (82.1%)	139	23 (16.5%)	116 (83.5%)
Substance/drug abuse counselling	39	11 (28.2%)	28 (71.8%)	140	62 (44.3%)	78 (55.7%)
Weightroom maintenance	39	11 (28.2%)	28 (71.8%)	140	51 (36.4%)	89 (63.6%)
Supervision	39	25 (64.1%)	14 (35.9%)	140	99 (70.7%)	41 (29.3%)
Recruitment	39	20 (51.3%)	19 (48.7%)	140	86 (61.4%)	54 (38.6%)

Table 23

Career goals of expert and non-expert Canadian S&C coaches (n=153)

		Expert (n=34)	Non-Expert (n=149)
Remain	High school S&C coach	2 (5.9%)	7 (4.7%)
	College/university S&C coach	4 (11.8%)	16 (10.7%)
	PSO/NSO S&C coach	12 (35.3%)	19 (12.8%)
	Professional S&C coach	10 (29.4%)	14 (9.4%)
	Private Sector S&C coach	3 (8.8%)	32 (21.5%)
Become	High school S&C coach		1 (0.7%)
	College/university S&C coach	1 (2.9%)	17 (11.4%)
	PSO/NSO S&C coach	1 (2.9%)	24 (16.1%)
	Professional S&C coach	2 (5.9%)	38 (25.5%)
	Private Sector S&C coach	2 (5.9%)	17 (11.4%)
	Teacher	5 (14.7%)	25 (16.8%)
	Administrator	10 (29.4%)	22 (14.8%)
	Sport Coach	2 (5.9%)	4 (2.7%)
Uncertain	9 (26.5%)	12 (8.1%)	

*could identify all that applied

4.0 Appendix

4.1 Survey Instrument

Participants may skip any questions that you do not wish to answer.

Demographic Characteristics:

1. Indicate your primary work environment.

- High School
- College (Offering diplomas, certificates, and/or degree programs)
- University (Offering undergraduate and/or graduate degrees)
- Provincial Sport Organization/National Sport Organization (PSO/NSO)
- Professional (athletes that are paid to play their sport, occupational/tactical populations)
- Private Sector (services are open to the public for a fee)
- Unsure

2. What year were you born: _____

3. I am: Female Male Prefer to not categorize

4. Do you consider yourself a visible minority?

NO

YES

If YES, please specify _____

5. What is your annual salary?

- <\$20,000
- \$20,001-\$30,000
- \$30,001-\$40,000
- \$40,001-\$50,000
- \$50,001-\$60,000
- \$60,001-\$70,000
- \$70,001-\$80,000
- \$80,001-\$90,000
- \$90,001-\$100,000
- >\$100,000
- Prefer not to disclose

6. How many years total have you been a strength and conditioning coach?

- 1-3
- 4-6
- 7-9
- 10-12
- 13-15
- 16+

7. Please check any of the sport level progressions that have been achieved by athletes that you have coached. Check all that apply.

- High school to college/university
- Regional to national
- National to international
- College/university to professional
- National/international to professional

Educational Background:

8. Please indicate the highest diploma/certificate/degree you have earned:

- High school diploma
- Technical or Community College
- Bachelor's Degree major _____ minor _____
- Master's Degree major _____ minor _____
- Doctoral Degree major _____ minor _____

9. Which of the following certifications do you currently hold, check all that apply:

Canadian Society for Exercise Physiology (CSEP)

- CSEP-CPT
- CSEP-CEP

Canfit Pro

- Personal Training Specialist

Certified Personal Trainers Network

- Certified Personal Trainer

American College of Sports Medicine (ACSM)

- Health Fitness Instructor
- Exercise Specialist

Registered Clinical Exercise Physiologist

Canadian Athletic Therapists Association (CATA)

- CAT(C)

National Strength and Conditioning Association (NSCA)

- CSCS
- CPT

NCCP Weightlifting

- Trained
- Certified

Canadian Powerlifting Union

- Trained
- Certified

NCCP Coaching Certification

- Other (please list all) _____

USA Weightlifting Club Coach

- Level I
- Level II

- _____ Senior Coach
- _____ Regional Coach
- _____ International Coach
- _____ Senior International Coach

Other (please list)

Professional Experience:

10. Please select the one that most accurately describes your current position:

- _____ intern strength and conditioning coach (unpaid, provided education, and mentorship)
- _____ co-operative education student strength and conditioning coach (paid undergraduate student, provided education, and mentorship)
- _____ graduate assistant strength and conditioning coach (requirement of graduate program)
- _____ volunteer assistant strength and conditioning coach
- _____ assistant strength and conditioning coach
- _____ head strength and conditioning coach

*Please complete the following questions about your experiences as an **intern or co-operative education** strength and conditioning coach. Check all that apply.*

11. Have you ever worked as an **intern or co-operative education** strength and conditioning coach in the following setting(s)? Check all that apply.

- ___ High School # of years _____
- ___ College # of years _____
- ___ University # of years _____
- ___ Provincial Sport Organization/National Sport Organization # of years _____
- ___ Professional # of years _____
- ___ Private Sector # of years _____

*Please complete the following questions about your experiences as a **graduate assistant** strength and conditioning coach. Check all that apply.*

12. Have you ever worked as a **graduate assistant** strength and conditioning coach in the following setting(s)? Check all that apply.

- ___ High School # of years _____
- ___ College # of years _____
- ___ University # of years _____
- ___ Provincial Sport Organization/National Sport Organization # of years _____
- ___ Professional # of years _____
- ___ Private Sector # of years _____

Please complete the following questions about your experiences as a **volunteer assistant** strength and conditioning coach. Check all that apply.

13. Have you ever worked as a **volunteer assistant** strength and conditioning coach in the following setting(s)? Check all that apply.

- High School # of years _____
- College # of years _____
- University # of years _____
- Provincial Sport Organization/National Sport Organization # of years _____
- Professional # of years _____
- Private Sector # of years _____

Please complete the following questions about your experiences as an **assistant** strength and conditioning coach. Check all that apply.

14. Have you ever worked as an **assistant** strength and conditioning coach in the following setting(s)? Check all that apply.

- High School # of years _____
- College # of years _____
- University # of years _____
- Provincial Sport Organization/National Sport Organization # of years _____
- Professional # of years _____
- Private Sector # of years _____

Please complete the following questions about your experiences as a **head** strength and conditioning coach. Check all that apply.

15. Have you ever worked as a **head** strength and conditioning coach in the following setting(s)? Check all that apply.

- High School # of years _____
- College # of years _____
- University # of years _____
- Provincial Sport Organization/National Sport Organization # of years _____
- Professional # of years _____
- Private Sector # of years _____

Staffing:(Only to be completed by head strength and conditioning coaches)

16. Please indicate the number of full-time and/or part-time staff, intern/graduate assistants, and/or volunteer strength and conditioning **assistants** in your strength and conditioning program?

17. Paid full-time assistants

0 1 2 3 4 5 MORE _____

18. Paid part-time assistants
 0 1 2 3 4 5 MORE
19. Number of graduate assistants?
 0 1 2 3 4 5 MORE
20. Number of interns?
 0 1 2 3 4 5 MORE
21. Number of volunteer assistants?
 0 1 2 3 4 5 MORE

Job Description:

22. What is your current job title? _____

23. Are you a full-time or part-time strength and conditioning coach?

Full-time

Part-time

24. What is the length of your annual contract (in months)?

6

9

12

Unsure

25. What is your employment status?

Faculty

Staff

Independent Contractor

Other _____

Unsure

26. Indicate whether you perform duties in addition to your strength training and conditioning assignments (indicate all that apply)?

NO YES

*If YES, continue below. If NO, go to question 36.

Athletic coach (please indicate sport(s)) _____

_____ Teach physical education classes

_____ Teach other classes

_____ Facility management

_____ Other _____

27. Are you responsible for testing the physical performance of athletes?

NO

YES

28. Do you counsel athletes on proper nutrition?

____NO
____YES

29. Do you counsel athletes regarding substance and/or drug abuse?

____NO
____YES

30. Are you responsible for weight room(s) equipment maintenance?

____NO
____YES

31. Are you responsible for facility supervision when **NOT coaching** athletes?

____NO
____YES

32. Do you help with recruitment of athletes?

____NO
____YES

Facility:

33. How many resistance-training facilities at your institution are reserved exclusively for athletic performance?

____0
____1
____2
____3
____other how many_____

34. How many resistance-training facilities at your institution are shared with the general population **with** priority times for athletic performance?

____0
____1
____2
____3
____other how many_____

35. How many resistance-training facilities at your institution that are shared with the general student population **without** priority times for athletic performance?

____0
____1
____2
____3
____other how many_____

Career Goals:

36. What are your career goals (check all that apply)?

- Remain a strength and conditioning coach at the high school level
- Remain a strength and conditioning coach at the collegiate level
- Remain a strength and conditioning coach at the provincial/national level
- Remain a strength and conditioning coach at the professional level
- Remain a strength and conditioning coach in the private sector
- Become a strength and conditioning coach at the high school level
- Become a strength and conditioning coach at the collegiate level
- Become a strength and conditioning coach at the provincial/national level
- Become a strength and conditioning coach at the professional level
- Become a strength and conditioning coach in the private sector
- Become a teacher
- Become an athletic administrator
- Coach (sport) _____
- Other _____
- Uncertain

Thank you for taking the time to complete this survey.

4.2 Invitation to Pilot Study Participants

Dear Strength and Conditioning Coach,

My name is Jordan Foley and I am a master's candidate in the Masters of Physical Education program at Memorial University of Newfoundland. I am conducting research on the characteristics of Canadian strength and conditioning coaches. Strength and conditioning coaches in Canada will be invited to participate in this study.

Although you may not be a Canadian strength and conditioning coach, you have been identified as a professional that has knowledge of the field of strength and conditioning in Canada that can provide input.

I am requesting your participation in a pilot study in order to refine the survey instrument that will be used in examining the characteristics of strength and conditioning coaches in Canada.

If you choose to participate in this pilot study, please visit [LINK](#).

Please take the time to respond by October 5, 2020.

Your responses will be kept strictly confidential.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

If you have any questions or concerns about your participation, please email me at jkf646@mun.ca.

Thank you for your time and assistance with this project.

Sincerely,
Jordan Foley

4.3 Invitation to Research Participants

Dear Strength and Conditioning Coach,

My name is Jordan Foley and I am a master's candidate in the Masters of Physical Education program at Memorial University of Newfoundland. I am conducting research on the characteristics of Canadian strength and conditioning coaches. Strength and conditioning (S&C) coaches in Canada will be invited to participate in this study. You will be asked to answer questions about your demographic information. Participation in this study is not a requirement of the Canadian Strength and Conditioning Association (CSCA) and the CSCA will not know whether you choose to participate or not.

The results of this research will allow us to accurately identify the characteristics of strength and conditioning coaches in Canada and provide comparisons to National Collegiate Athletic Association (NCAA) strength and conditioning coaches. Please take a few minutes of your time to complete the attached survey instrument. If you are aware of other suitable participants, please forward this invitation to them as well.

Based on the pilot study, the survey should take approximately 15 minutes to complete. If you choose to participate in this study, please visit [LINK](#).

Please take the time to respond by November 6, 2020.

Your responses will be kept strictly confidential and only the aggregate results will be reported.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

If you have any questions or concerns about your participation, please email me at jkf646@mun.ca.

Thank you for your time and assistance with this project.

Sincerely,
Jordan Foley

4.4 Follow up Invitation to Research Participants

Dear Strength and Conditioning Coach,

My name is Jordan Foley and I am a master's candidate in the Masters of Physical Education program at Memorial University of Newfoundland. This is a follow up to participate in research on the characteristics of Canadian strength and conditioning coaches. Strength and conditioning coaches in Canada have been invited to participate in this study with participation from across the country. You will be asked to answer questions about your demographic information. Participation in this study is not a requirement of the Canadian Strength and Conditioning Association (CSCA) and the CSCA will not know whether you choose to participate or not.

The results of this research will allow us to accurately identify the characteristics of strength and conditioning coaches in Canada and provide comparisons to National Collegiate Athletic Association (NCAA) strength and conditioning coaches. Please take a few minutes of your time to complete the attached survey instrument. If you are aware of other suitable participants, please forward this invitation to them as well.

Based on the pilot study, the survey should take approximately 15 minutes to complete. If you choose to participate in this study, please visit [LINK](#).

Please take the time to respond by November 6, 2020.

Your responses will be kept strictly confidential and only the aggregate results will be reported.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

If you have any questions or concerns about your participation, please email me at jkf646@mun.ca.

Thank you for your time and assistance with this project.

Sincerely,
Jordan Foley

4.5 Canadian Strength and Conditioning Association Request

Dear Canadian Strength and Conditioning Association Directors,

My name is Jordan Foley and I am a master's candidate in the Masters of Physical Education program at Memorial University of Newfoundland. I am conducting research on the characteristics of Canadian strength and conditioning coaches. Strength and conditioning coaches in Canada will be invited to participate in this study. Participants will be asked to answer questions about their demographic information.

The results of this research will allow us to accurately identify the characteristics of strength and conditioning coaches in Canada and provide comparisons to National Collegiate Athletic Association (NCAA) strength and conditioning coaches.

The survey should take approximately 15 minutes to complete. All responses will be kept strictly confidential and only the aggregate results will be reported.

My request to the Canadian Strength and Conditioning Association is that the survey be shared with your membership and within your network via email, newsletter, and social media. It is requested that a follow up be sent 2 weeks after the initial invitation. It must be stated that it is not a requirement of the CSCA and that the CSCA will not know who chooses to complete the survey.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

If you have any questions or concerns about my request, please email me at jkf646@mun.ca.

Thank you for your time and assistance with this project.

Sincerely,
Jordan Foley