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What do we know about research on parasport coaches? A scoping review

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Abstract

The purpose of this scoping review was to provide a broad overview of the literature pertaining to parasport coaches, including information regarding the size and scope of research, the populations and perspectives obtained, as well as the type of methods used to conduct the research. Data were collected and analyzed using a six-stage framework for conducting scoping reviews. Our results revealed that the majority of articles were based on interviews, and an overwhelming majority of the participants were males coaching at the high-performance level in North America. Three of the most frequent topics were becoming a parasport coach, being a parasport coach, and general parasport coaching knowledge. Articles ranged in date from 1991 to 2018, with 70% of empirical articles published from 2014 onwards, indicating an emerging interest in this field of research. This review has the potential to advance the science and practice of parasport coaching at all levels.

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What do we know about research on parasport coaches? A scoping review

Disability is a complex and multidimensional concept that is often difficult to define (Altman, 2014). According to the World Health Organization (2017), over one billion individuals have reported some kind of disability, which includes various activity and body function limitations, known as impairments. Participating in sport and physical activity for people with disabilities has the potential to enhance physical capacity (e.g., strength, cardiovascular endurance), as well as psychological and social factors, such as self-esteem, independence, and a sense of belonging (Allan, Smith, Côté, Martin Ginis, & Latimer-Cheung, 2018; Giacobbi, Stancil, Hardin, Bryant, 2008; Goodwin & Compton, 2004; Stephens, Neil, & Smith, 2012). In a sport setting, the attainment of these benefits are often facilitated through the behaviours and practices of highly effective coaches (Allan et al., 2018; Banack, Sabiston, & Bloom, 2011). A number of terms have historically been used to better understand what makes a great, expert, or successful coach with little consistency on how the constructs have been discussed. As such, Côté and Gilbert (2009) proposed an integrated definition of coaching effectiveness drawing upon general expertise and educational literature to define this phenomenon as, "the consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts." (p. 316). To further discuss the roles and responsibilities of the coach, this definition can be broken down into three sections: coaching knowledge, athlete outcomes, and coaching context.

Coaching knowledge refers to professional, interpersonal, and intrapersonal knowledge. First, coaches are responsible for acquiring professional knowledge, involving technical and tactical sport-specific skills and strategies, such as planning, problem solving, communication,

and decision-making. Commonly, professional coaching knowledge is often at the forefront of coach education clinics, seminars, and workshops (Côté & Gilbert, 2009; Lefebvre, Evans, Turnnidge, Gainforth, & Côté, 2016). Considering that coaches do not operate in isolation, the second component is interpersonal knowledge, describing the interactional relationship between the coach and athlete. Due to the unique qualities of individual athletes, especially athletes with disabilities, having a sound understanding on how to effectively communicate and interact with athletes is an underrated component of athletic success (Cregan, Bloom, & Reid, 2007). Similar to understanding the interpersonal relationships within the sport coaching environment, it is also important to develop and apply intrapersonal knowledge, which describes the ability to introspect and reflect on their own practices as a coach (Côté & Gilbert, 2009). For example, great coaches have been described as continuous learners who are constantly evaluating their strategies and behaviours to better meet the personal and athletic needs of the athletes or team (Lara-Bercial & Mallet, 2016).

Research incorporating the definition of coaching effectiveness has been documented in the parasport literature to better understand coaching knowledge on a professional, interpersonal, and intrapersonal level (Alexander, Bloom, & Taylor, 2020; Allan, Evans, Latimer-Cheung, & Côté, in press). On a professional level, Allan and colleagues (in press) conducted life history interviews with 21 athletes with a disability to explore their perceptions of coaching experiences throughout their career. Among the findings, athletes discussed the importance for coaches to be knowledgeable of the technical and tactical sport-specific skills but also of the disability and the way in which it interacts in parasport. As such, athletes described parasport coaches needing to go above and beyond the knowledge required for able-bodied coaches to provide athletes with relevant disability and sport-specific information. Interpersonally, research has highlighted the

importance of effective communication and creativity when working with athletes with a disability to better understand the strategies and behaviours most conducive to success for particular athletes' disability, training style, and adaptations (Alexander et al., 2020; Cregan et al., 2007; McMaster, Culver, & Werthner, 2012). Finally, on an intrapersonal standpoint, Duarte and Culver (2014) interviewed and conducted a narrative inquiry on a Canadian parasport coach, who highlighted the importance of continuous learning and development through self-reflection and ongoing discussions with like-minded people.

The second element of the definition relates to the coaches' influence on athlete outcomes, referring to feelings of competence, confidence, connection, and character/caring. Researchers have explored the coaches' influence on outcomes for athletes with a disability (Alexander et al., 2020; Banack et al., 2011; Cheon, Reeve, Lee, & Lee, 2015) and those without a disability (Becker, 2009; Boardley, Kavussanu, & Ring, 2008; Kavussanu, Boardley, Jutkiewicz, Vincent, & Ring, 2008). From the parasport perspective, quantitative and qualitative research has been conducted to identify and understand the psychosocial outcomes an athlete can gain from their coach in elite sport. For example, Banack and colleagues (2011) surveyed 113 Paralympic athletes and found that the autonomy-supportive coaching behaviours were positively associated with athlete motivation, satisfaction, and enjoyment in sport. Thus, effective coaches have the potential to positively influence athletes with a disability on a professional and psychological level.

Finally, it is important for coaches to consider the context, particularly when working with athletes with individualized needs (Cregan et al., 2007). For example, an effective coach of an athlete with a disability must have a good understanding of sport-specific knowledge, as well as focusing on what *can* be done compared to what *cannot* be done in training (Burkett, 2013;

Cregan et al., 2007). Despite the expansion and initial findings in this domain, research on parasport coaches is still in its infancy, particularly surrounding this definition of coaching effectiveness (Côté & Gilbert, 2009). A scoping review focusing on parasport coaches would aid in the advancement of the science and practice of coaching athletes with disabilities of all ages and skill levels. Our results will provide a better and more coherent understanding of the research conducted on parasport coaches and identify areas of future research. These findings will subsequently work to advance coaching for our next generation of athletes with a disability on a theoretical and practical level. Therefore, the purpose of the present study is to provide a broad overview of the existing research conducted on parasport coaches. More specifically, our study was guided by the following research questions: (a) what is the size and scope of research conducted on parasport coaches, (b) what populations and perspectives have been obtained from previous studies, and (c) what methods have been used to conduct and disseminate research thus far.

Method

According to Grant and Booth (2009), there are 14 types of reviews that have been used to summarize bodies of literature, each with a unique purpose and strength. For instance, some reviews work to assess the effect or significance of quantitative results while others identify themes or constructs from qualitative research. One method that is increasingly being used is called a *scoping review*, which aims to take a preliminary assessment of the size, range, and nature of existing literature and is commonly used to summarize and disseminate findings of articles with varying methodological and study designs (Arksey & O'Malley, 2005; Armstrong, Hall, Doyle, & Waters, 2011; Grant & Booth, 2009). This approach is preliminary in nature in that it is often a first step towards identifying possible gaps and uncertainties in the research

domain and determines whether a full systematic review is feasible, relevant, or required (Arksey & O'Malley, 2005; Grant & Booth, 2009). As such, scoping reviews are particularly important when an area of research has yet to be systematically reviewed (Arksey & O'Malley, 2005). An added benefit is that scoping reviews can include book chapters, theses, and empirical publications.

Arksey and O'Malley (2005) described a five-stage process of conducting scoping reviews, which were later refined by Levac, Colquhoun, and O'Brian (2010) to add an optional sixth stage to the process. The six stages followed in this study were: (1) identify the research question, (2) identify relevant studies, (3) identify study selection criteria, (4) chart the data, (5) consult with stakeholders, and (6) collate, summarize, and report the results (Arksey & O'Malley, 2005; Levac et al., 2010). While stage one has been described in the introduction, stages two, three, four, and five will be described in this section, and stage six will be described in detail as the results. Even though these stages are described separately and in chronological order, the process of stage one to six was an iterative process to ensure an appropriate and comprehensive list of articles were included within the review.

Identifying relevant studies and selection criteria (Stages 2 and 3)

Stages two and three were done as an iterative process, indicating that the authors of this paper spent a considerable amount of time reflecting on and considering the inclusion of articles throughout the analysis of this study. All authors collaborated when discussing how to identify relevant studies, and consequently deciding on the selection criteria. First, the inclusion criteria were broad to increase the probability of mapping the existing literature of interest and obtaining a comprehensive list of articles. All publications that explicitly aimed to study coaches in parasport and disability sport were included (i.e., coaches in Paralympic sport, coaches for

athletes with physical disabilities, and coaches for athletes with sensory impairments, such as visual and audio). Coaches of athletes with the following impairment classifications were included: impaired muscle power, impaired passive range of movement, limb deficiency, leg length difference, short stature, hypertonia, ataxia, athetosis, and visual impairment (International Paralympic Committee, n.d.). Coaches for athletes with intellectual impairments were excluded from this scoping review because categorization of intellectual impairment is more complex and challenging than functional and visual impairments (Pickering Francis, 2005; van Dijk, Daďová, Martínková, 2017). In addition, more severe intellectual impairments are classified into the Special Olympics, where the context and purpose are quite different due to a heavy emphasis on participation and enjoyment. The type of publications included at the first stage of the literature review were published articles, published doctoral dissertations, book chapters, reviews, and meta-analyses, while unpublished doctoral dissertations and master's theses were excluded. Finally, only articles that were written in English were included.

To obtain articles from a variety of sources, six broad-based databases were used to identify relevant studies representing differentiated perspectives on sport (e.g., coaching, medicine, organizational, pedagogical, psychology, and sociology perspectives). The databases included were: PsycINFO (74 hits), Web of Science (151 hits), PubMed (226 hits), ERIC (47 hits), and SPORTDiscus (239 hits), using the search combination of relevant keywords: Coach* OR "paralympic coach*" AND "paralympic sport*" OR paralympic* OR "disabled sport*" OR "disability sport*" OR "adapted sport" OR "physical disabil*" OR "visual impairment" OR "audio impairment" OR "sensory impairment". The nature of Google Scholar required modifications in the combination of keywords. Consequently, in Google Scholar we excluded all * searching for coach OR "paralympic coach" AND each of the other keywords: "paralympic

sport" (reviewed the first 300 of about 754 hits), paralympic (reviewed the first 300 of about 5550 hits), "disabled sport" (reviewed the first 300 of about 364 hits), “disability sport” (reviewed the first 300 of about 1570 hits), "adapted sport" (reviewed the first 300 of about 385 hits), "physical disabil" (121 hits), "visual impairment" (reviewed the first 300 of about 4090 hits), "audio impairment" (3 hits), “sensory impairment” (reviewed the first 300 of about 940 hits). The literature search was conducted up to December 31st, 2018.

The results of each literature search conducted in Google Scholar indicated that after publication number 300, the accuracy and relevance of the studies were evaluated as unsuitable for the scope of this review. Consequently, the title, abstract, and keywords of the first 300 publications found at each search were screened and evaluated as to whether they fit the inclusion and exclusion criteria of the study. This method has been previously used in scoping reviews in sport (Clark, Camiré, Wade, & Cairney, 2015; Olusoga, Bentzen, & Kenttä, 2019). The PRISMA flow chart (Figure 1) shows the number of records found and screened in each step of the literature search described. A collaboration between a research assistant and the first author conducted the first screening of the literature research (see Figure 1, *n* = 2961). The first author then thoroughly screened all full-text records assessed for eligibility (see Figure 1, *n* = 159) in depth, and engaged in a reflexive process by consulting with the second and third authors when it was deemed necessary (Arksey & O'Malley, 2005). This collaborative process went on through all the stages as described in the PRISMA flow chart.

Chartering the data and Consulting with stakeholders (Stages 4 and 5)

The first inclusion criteria set were broad in order to include all publications that explicitly aimed to study coaches in parasport and disability sport. Of importance, only empirical studies that collected data from the coaches, or specifically reflected about the coach, were

included. Studies that focused on other actors' perceptions of coaches (e.g., athletes, administrators) were excluded. Further, articles that focused on coaches, but were not published in peer reviewed journals were kept in a reference list labeled "Reflist Outliers" (n = 32) to inform the readers about the full range of publications in this area. Specifically, these were publications that were not initially original articles (e.g., book chapters, books), reviews that summarized publications in the field, or doctoral dissertations (primarily because many were published as articles later on). Consequently, a list of 43 included articles remained, which we labeled as "Reflist Included". Next, both reference lists ("Included" and "Outliers") were sent to two stakeholders (senior researchers) in the field of Adapted Physical Activity who were asked to identify any missing publications. Based on their responses, one article was added to Reflist "Included" (n = 44) and three were added to Reflist "Outliers" (n = 35). Reflist "Outliers" is available as supplemental online material.

The next step was to charter the key information from Reflist "Included" into one comprehensive document. Charting has been referred to the act of synthesizing and interpreting key findings from research by sorting and categorizing study results based on main themes or ideas (Arksey & O'Malley, 2005). As such, the studies were chartered into Table 1 as a collaboration of the first, second, and fourth author, with the third author critically reviewing the information presented in the document. The categories found within the results table was a result of multiple discussions held among the researchers throughout the literature search to provide a comprehensive list of key ideas. Data charting forms often include a mix of both general and specific information pertaining to the nature of the study (Arksey & O'Malley, 2005), therefore, data was chartered by the following criteria: (a) demographics (i.e., number of coaches, gender, whether the coach had a disability, level/context of coaching, country, type of sport), (b) study

design, and (c) topic of study. In doing so, the chartered form provides a standardized, yet comprehensive overview of the articles included in the study.

Results

A summary of the study characteristics for the 44 peer-reviewed articles that met the inclusion criteria and were analyzed in this scoping review are displayed in Table 1. Thirty-nine of these studies were empirical (88.6%), while five studies were categorized as reflections from the field (11.3%). Articles were published between 1991 to 2018, with 70% of the empirical articles published from 2014 onwards, indicating an emerging interest in understanding the experiences of coaches in parasport in the last few years.

Characteristics of Coach Studies

Demographic information related to the 39 peer-reviewed empirical articles were analyzed and can be found in detail in Table 2. This information provided us with a general understanding of the studies in regards to number of participants, gender, and disability of the coaches, and the context (i.e., the country, type of sport and competitive level, athlete disability). The number of participants (*N*) were relatively small, as the result showed that 20 (51.3%) of the empirical studies had 10 or fewer participants, 10 (25.6%) studies had an *N* of 11-20, while only seven (17.9%) studies included more than 21 participants. Further, the coaches were predominantly male (74.4%), coaching at the high performance level in North America (40.0%; Canada, 24.4%; USA, 15.6%) and Europe (37.8%). Over one third of the articles included a blend of coaches coaching athletes with varying disabilities (43.6%) in a number of sports, including but not limited to, wheelchair/integrated basketball (12.8%), track and field (5.1%), swimming (3.1%), and wheelchair rugby (2.6%).

Study Design

A detailed summary of the study design characteristics can be found in Table 3. The peer-reviewed articles were predominantly empirically based publications (39 of 44, i.e., 88.6%) from various journals. More specifically, the majority of empirical articles were qualitative in nature (66.7%) using a cross-sectional design (46.2%). Approximately half of the qualitative articles employed interviewing as their primary method of data collection (48.7%), with nine out of 39 articles implementing multiple methods beyond interviews, including observations and documents. A significantly smaller proportion of articles used a quantitative study design (28.2%). Among these articles, nine studies were cross-sectional (23.1%), two were longitudinal (5.1%), and the main method of data collection was through survey or questionnaire (23.1%). Of the nine studies that used a questionnaire or survey as their only method of data collection, three articles designed, created, and disseminated their own questionnaire items, whereas the other studies employed pre-existing or adapted versions of pre-existing questionnaires (e.g., Brewer & Cornelius, 2001; Samuel & Tenenbaum, 2011). Only two studies implemented a mixed methods design using a combination of questionnaires, interviews, and/or documents to collect data. Finally, only two intervention-studies have been conducted with the aim of studying the coach within parasport.

Topics Within Parasport Coaching Literature

Of particular interest to this study, common themes within the parasport coaching literature were identified and are presented in the last column in Table 1. In total, nine different topics were studied, and the three most frequent topics were general coaching knowledge, becoming a parasport coach, and being a parasport coach. More specifically, eleven articles within the theme general coaching knowledge (28.2%) revolved around topics including but not limited to coaching roles and responsibilities, self-reflection, pre-competition preparation, and

performance analysis. Research coded within the theme becoming a parasport coach (10 articles, 25.6%) focused on experiences related to the learning and career development of becoming a parasport coach. For example, coaches described the educational opportunities in terms of formal, nonformal, or informal training, which emphasized a reliance on informal opportunities (e.g., through mentoring or coach observation) and reported a need for more formal coach education (see Cregan et al., 2007; Fairhurst, Bloom, & Harvey, 2017; McMaster et al., 2012). Additionally, 10 studies (25.6%) focused on the experiences of being a parasport coach, four studies (10.3%) discussed parasport-specific coaching knowledge, and three studies (7.7%) discussed reflections about parasport in general (i.e., parasport and Paralympic advocacy, importance of coaches in this domain). The topics of characteristics for coaches within parasport (7.7%) were examined in three studies and coaches own well-being was discussed in two studies. Finally, how to use equipment in parasport and classification were addressed with one study for each theme (2.6%).

Discussion

The purpose of this review was to provide a broad overview of the existing literature pertaining to parasport coaches. In addition, information regarding the size and scope of the research, the populations and perspectives, as well as the methods used to conduct and disseminate the studies will be discussed.

Research Design/Characteristics

The results revealed an overwhelming majority of participants were coaching at the high-performance level (i.e., national or international) in North America. Almost half the articles originated in North America, followed by 17 from Europe, four from Asia, and four from Australia. As such, the findings of these articles were taken primarily from a Western viewpoint

from countries with well-established parasport governing bodies (e.g., Canada). It is reasonable to conclude that countries with government funding have been more likely to produce research on parasport than those countries with limited resources. We also noted that the majority of research was conducted within the boundaries of one country with little cross-country collaboration. Collaborating with other countries would allow for an increased participant pool to accommodate larger sample sizes (e.g., collecting data at international championships; Vute, 2005), alternative perspectives from diverse cultural backgrounds, and enhanced access to funding and resources to conduct research. Despite the fact that research in parasport is scarce, there appears to be a growing interest in understanding the experiences of coaching athletes with a disability. Consequently, it is pertinent to make connections and develop world collaborations to conduct and publish high-quality research leading to the advancement of this field. We suggest that governing sport bodies and sport science researchers across the world collaborate, invest, and support further integration of research, education, and evidenced-based coaching practices.

Our results also indicated that a large proportion of study participants were male and able-bodied, which may be indicative of parasport coaching, as well as sport in general (Women's Sports Foundation, 2017; Bentzen, Lemyre, & Kenttä, 2016). Despite the traditional majority of male coaches, our sample included 12.8% female coaches. This marginally higher percentage of female coaches in parasport, compared to Olympic sport, may be due to the nature of parasport itself and the lower level of status and resources associated with it. For example, Wareham, Burkett, Innes, and Lovell (2017) interviewed 12 high performance parasport coaches (nine males and three females) on their experiences and found that they often felt a sense of stigmatization surrounding sport for athletes with a disability. More specifically, they discussed

feelings of injustice and inequity regarding status (i.e., lack of recognition, attention, prestige) and resources (i.e., lack of funding, accessibility to equipment) and felt a general lack of respect towards themselves as coaches and their athletes. Altogether, these critical findings and potential consequences need to be considered. First, male high performance, able-bodied sport has been attributed with the highest level of status compared to parasport, whereas a Paralympic medal has been described as "a seventh of an Olympic medal" (Wareham et al., 2017, p. 14). The world of sport often mirrors society, where women have been underrepresented in high status leadership professions (Kenttä, Bentzen, Dieffenbach, & Olusoga (in press); WIIP, 2018). Second, former athletes often become coaches (Lara-Bercial, & Mallett, 2016). This transition from athlete to coach does not seem to occur to the same extent in parasport according to the findings of this study and previous literature (see Douglas, Falcão, & Bloom, 2018). The low percentage of coaches with disability along with the findings of fewer female coaches reflect the lack of diversity in this coach population. Within parasport, we argue that the recruitment of a more diverse coach population with differentiated experiences and competencies will enhance the possibility to meet the varying needs among athletes with a range of disabilities.

The majority of articles used a qualitative, cross-sectional design based on interviews. While it is not the intention of this paper to discuss the strengths and limitations of research methodologies, it is important to note the general nature and purpose of each design. For instance, qualitative research is particularly useful for obtaining in-depth information on a phenomenon of interest (Sparkes & Smith, 2009), whereas quantitative research will typically assess the nature of relationships across larger sample sizes (Creswell & Creswell, 2017). As such, primarily conducting research through qualitative methods has provided readers with an in-depth understanding of what it means to be a parasport coach, the personal experiences of

entering the field, and the stigmatization of parasport in society from the perspectives of coaches, athletes, and administrators. However, these studies are limited to a specific sample of participants as over half of the articles included small samples (i.e., less than 10 participants) with little diversity. Consequently, the limited generalizability of these findings needs to be noted. We also noticed that the articles were mainly conducted using a cross-sectional as opposed to longitudinal research design. We have operationalized cross sectional studies as those that collect data at one time point as compared to longitudinal designs that collect data at two or more time points (Altman, 1990). Although convenient, using a survey or interview at one time-point limits our understanding and the richness of the data gathered (Smith & Sparkes, 2016). That being said, a limited number of articles collected data longitudinally and used multiple qualitative methods (e.g., Bundon et al., 2015; Douglas et al., 2016; Duarte & Culver, 2014). Overall, the findings show that it is important to improve the quality and range of methods in this research field, not only by enhancing the quality of the qualitative studies, but by conducting more quantitative studies and using mixed methodologies with longitudinal designs, to more comprehensively understand parasport coaching.

Coach Learning

A large number of the articles in this review focused on parasport coaching knowledge in the professional, interpersonal, or intrapersonal context as described by Côté and Gilbert (2009). Multiple articles discussed professional coaching knowledge in parasport as it relates to coach education (i.e., certifications, seminars, clinics, workshops). There are currently a handful of formalized parasport coach education opportunities across the globe, including an online program entitled *Coaching Para-Sport: An Introductory Programme* from the International Paralympic Committee (2015) aiming to help qualified coaches in able-bodied sport transition

into the parasport context. Similarly, the Coaching Association of Canada launched an e-learning module entitled *Coaching Athletes with a Disability* with the goal of providing knowledge for coaches who are new to coaching athletes with a disability (Canadian Paralympic Committee, 2017). Finally, Sports Coach UK and the English Federation of Disability Sport offers coach education to provide resources for coaches of athletes with a disability to enhance their coaching practices in parasport (British Paralympic Association, 2018). Overall, this review demonstrated that coaches supported formal coach education specific to parasport, yet many felt that educational opportunities have been either difficult to access, limited in availability, or expensive to attend. Importantly, coaches expressed the desire for a more in-depth understanding of parasport, including information on various disabilities, adaptations, and the unique qualities of the parasport in order integrate this type of knowledge into their own practices (e.g., Cregan et al., 2007; Duarte & Culver, 2014; McMaster et al., 2012). Altogether, there is a need not only for more frequent and accessible coach education programs in parasport, but also an increased focus on disability-specific components within these general coaching programs and educations (i.e., *how* to coach athletes with specific disabilities in their respective sports). For example, we need to develop parasport coach programs that focus on similarities in general coaching strategies but also address the differences with regard to context-specific strategies and techniques. For example, a blind athlete may depend on a guide in training and competition and subsequently develop a strong and interdependent relationship. Therefore, an interesting question to pose is whether the guide should be part of the coaching team or treated as an athlete. This is a context-specific, interpersonal challenge specific to the parasport coaching domain that future research is encouraged to address.

A smaller number of articles studied parasport coaching in regards to the interpersonal relationship between the coach and athlete (Côté & Gilbert, 2009). For example, Cheon et al., (2015) quantitatively assessed 64 Korean Paralympic athletes to determine whether autonomy-supportive coaching styles were more conducive to performance and personal outcomes. The results suggested that athletes with coaches who portrayed autonomy-supportive coaching behaviours had a maintained level of motivation, engagement, and performance compared to a decreased level found in the control group (Cheon et al., 2015). Another study by Tawse et al. (2012) interviewed four wheelchair rugby coaches on their experiences working with athletes with an acquired disability and revealed that coaches facilitated independence for their athletes by creating an environment where athletes felt comfortable exploring new possibilities for movement and autonomy, such as transferring from their chair (Tawse et al., 2012). People with a disability often have concerns or fears about mobility issues and their ability to care for themselves in the future (Goodwin, Krohn, & Kuhnle, 2004). Therefore, Tawse and colleagues explained how coaches took on the role of promoting personal care education to their athletes, such as how to empty a leg bag or how to go to the washroom without assistance. The coaches believed these strategies were necessary to promote a sense of independence for their athletes. This may be in contrast to the role of caregivers outside of sport and may create specific challenges for coaches when striving to provide autonomy supportive behaviour to their athletes. These studies expanded our understanding of the coach-athlete relationship within the parasport context both within and outside of sport and highlighted the role of the coach in enhancing quality of life for their athletes on a personal and professional level. Future research is needed to more comprehensively advance the understanding of the interdependent relationship between the

coach and athlete with a disability. Specifically, there is a need for research that critically explores the professional, healthy, and ethically-sound boundaries in this relationship.

Finally, some articles also explored intrapersonal coaching knowledge when discussing the role of self-reflection and introspection in parasport coaching practices (Côté & Gilbert, 2009). In particular, Taylor, Werthner, Culver, and Callary (2015) studied the role of reflection in the development and learning process of four parasport coaches. Their results revealed that coaches often used what they knew from firsthand experiences or from other coaches or athletes and reflected on what they learned. This reflection allowed them to brainstorm and create new ideas or strategies to change or adapt what they already knew, and apply it to specific sporting situations (Taylor et al., 2015). As a result, parasport coaches are encouraged to reflect on their own practices to help develop and refine their strategies, behaviours, and interactions in sport, especially with the lack of formal coach education opportunities. Another study by Duarte and Culver (2014) discussed reflection in a broader sense, such that the coach used her own reflective practices to develop innovative and effective coaching practices in parasport.

In conclusion, these studies demonstrated the different types of coaching knowledge (Côté & Gilbert, 2009) utilized in a parasport context and highlighted certain unique components of parasport coaching. We argue that coaching in the context of parasport requires more complex and advanced knowledge in each of the three domains outlined by Côté and Gilbert (2009). Further research is needed to better understand the definition of coaching effectiveness in this context.

Limitations

In general, scoping reviews are limited based on how the inclusion and exclusion criteria are set (Grant & Booth, 2009). Thus, one limitation of our study is the lack of representation

from parasport athletes on their coaching experiences. We understand that a sole focus on the perspective of parasport coaches has the potential to further silence disabled voices (i.e., athletes) in parasport research. In fact, there are some empirical articles published on the perspectives of parasport athletes and their coaching preferences (see Alexander et al.,, 2020; Banack et al., 2011; Culver & Werthner, 2018). Therefore, future researchers are encouraged to gather research from parasport athletes to provide a more holistic understanding of parasport coaching.

Another limitation to our study is the exclusion of coaches of athletes with intellectual disabilities. This exclusion has the potential to reproduce inequities within the disability sport community, especially with regard to the category of intellectual impairment. Initially, all athletes with an intellectual impairment were removed after the Sydney Paralympic Games in 2000. In London 2012, athletes with intellectual impairments from three different sports (i.e., athletics, swimming, and table tennis) were allowed back into the Paralympic Games, making up 2.8% of the total athlete population (World Para Athletics, 2012). Despite the small number of athletes, we encourage future parasport researchers to include coaching athletes with intellectual disabilities (see Hassan, Dowling, McConkey, & Menke, 2012; Macdonald, Beck, Erickson, & Côté, 2016) as a way to be inclusive of varying disability types.

Conclusion

This is the first scoping review in its field, providing an overview of research conducted specifically on parasport coaches. Because this research is still in its infancy, it is not surprising that many recommendations were provided to progress the field forward. We argue that cross-country research initiatives and collaborations can better gather resources, advance research rigour, and move samples beyond a typical male and Western dominant viewpoint. Additionally, the review found that coach learning through formal education was most extensively discussed in

light of being difficult to access, limited in availability, expensive to attend, and lacking parasport specific content. To address this last point, moving the field forward would require a conceptual model for coaching effectiveness that is specific to parasport coaching. This is a critical first step to develop and provide parasport coach education based on empirical research. Ultimately, research has the potential to support the current growth and development that is occurring in practice by providing sound scientific guidance to stakeholders and participants in the parasport context.

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Table 1. *Summary of study characteristics for included studies*

Reference	N	Gender	Coach Disability	Level	Country Coach	Type Disability Athlete	Sport	Method/ Design	Type Study	Topic study
1. Bastos, T., Corredeira, R., Probst, M., & Fonseca, A. M. (2014)	10	M = 8 F = 2	MIX A = UN D = UN	Elite	Portugal	MIX: Physical Sensory	MIX	QUAL: CS, Interview	Empir	C Characteristics General coach knowledge: C view on psychological preparation
2. Bastos, T., Corredeira, R., Probst, M., & Fonesca, A. M. (2018)	10	M = 8 F = 2	UN	Elite	UN	MIX Physical Sensory	MIX	QUAL CS, Interview	Empir	General coach knowledge: Use of psychological skills training
3. Braga, L., Taliaferro, A., & Blagrave, J. (2018)	NONE			Recre	USA	MIX: Physical Learning	UN		Reflect	Para sport specific knowledge: Barriers inclusion and consideration education
4. Bundon, A., & Hurd Clarke, L. (2015)	1	UN	UN	Recre	Canada USA Australia	MIX: Physical Sensory	UN	QUAL: LONG, Interview Text	Empir	About ParaS: Discuss ParaS and advocacy Paralympic movement

5. Bundon, A., Mason, B. S., & Goosey-Tolfrey, V. L. (2017)	4	UN	MIX A = 2 D = 2	Elite	Austria Australia Canada Dutch UK	Physical	MIX: WC racing Track and Field	QUAL: CS, Interview	Empir	Equipment
6. Bush, A. J., & Silk, M. L. (2012)	1	UN	UN	Elite	UK	MIX: Physical Sensory	MIX	QUAL: CS, Interview	Empir	About ParaS Being a ParaC
7. Cheon, S. H., Reeve, J., Lee, J., & Lee, Y. (2015)	33	M = 25 F = 8	MIX A = 24 D = 9	Elite	Korea	MIX: Physical Sensory	MIX	QUAN: LONG, Int	Empir	General coach knowledge
8. Clark, I, Machova, I., & Lewis, P. (2012)	3			Elite	Canada Czech Republic USA	Physical	MIX: Track & Field Rowing		Reflect	Being a ParaC
9. Cregan, K., Bloom, G. A., & Reid, G. (2007)	6	M = 6	MIX A = 5 D = 1	Elite	Canada	Physical	Swimming	QUAL: CS, Interview	Empir	Becoming a ParaC Being a ParaC
10. DePauw, K.P., & Gavron, S.J. (1991)	154	M = 77 F = 77	MIX A = 139 D = 16	Elite Recre	USA	MIX	MIX: Nordic Skiing Boccia Bowling Etc.	QUAN: CS, Quest	Empir	Coach Characteristics
11. Docheff, D. M. (2011)	NONE			Elite	USA	MIX Physical Intellectual	UN		Reflect	General coach knowledge: Dealing with differences

12. Dorogi, L., Bognar, J., & Ptrovics, L. (2008)	Qual: 20 Quant: 489	Qual: Quant: M = 216 F = 213	UN	Recre	Hungary	UN	MIX	MIXED CS Interview Quest	Empir	ParaC knowledge: Knowledge and attitudes of disability coach education
13. Douglas, S., Falcão, W. R., & Bloom, G. A. (2018)	5	M = 4 F = 1	D = 5	Elite	USA	Physical	MIX	QUAL: CS, Interview	Empir	Becoming a ParaC ParaC knowledge
14. Douglas, S., & Hardin, B. (2014)	1	M = 1	UN	Elite	USA	UN	WCB	QUAL: CS, Interview Observation	Empir	Becoming a ParaC ParaC knowledge
15. Douglas, S., Vidic, Z., Smith, M., & Stran, M. (2016)	2	M = 1	MIX A = 1 D = 1	Elite	USA	UN	WCB	QUAL: LONG, Interview Observation Document	Empir	General coach knowledge: Development coach knowledge
16. Downs, P. (2015)	NONE			Elite Recre	Australia	UN	UN		Reflect	Becoming a ParaC
17. Duarte, T., & Culver, D. M. (2014)	1	F = 1	UN	Elite Recre	Canada	MIX: Physical SensoryIntel lectual	Sailing	QUAL: LONG, Interview Documents	Empir	Becoming a ParaC: Knowledge Experience

18. Fairhurst, K. E., Bloom, G. A., & Harvey, W. J. (2017)	6	M = 6	MIX A = 5 D = 1	Elite	Canada	UN	MIX	QUAL: CS, Interview	Empir	Becoming a ParaC: Knowledge Experience
19. Falcäo, W. R., Bloom, G. A., & Loughead, T. M. (2015)	7	M = 7	A = 7	Elite	Canada	MIX	MIX	QUAL: CS, Interview	Empir	General coach knowledge: Team Cohesion
20. Holmes, S., & Maisel, A. (1998)	NONE			Recre	UK	UN	UN		Reflect	About ParaS: Importance coaches
21. Itoh, M., Hums, M. A., Arai, A., & Ogasawara, E. (2018)	7	F = 7	D = 7	Elite	Japan	UN	MIX	QUAL: CS, Interview	Empir	Becoming a ParaC: Structural barriers for female leaders and coaches ParaS
22. Kardiyanto, D. W., Setijono, H., & Mintarto, E. (2017)	UN	UN	UN	Elite	Indonesia	MIX	MIX	MIXED: QUAN, Quest QUAL, Interview Documents	Empir	Becoming a ParaC: Learning developing coach
23. Kozub & Poretta (1998)	295	M = 249 F = 46	UN	Recre	USA	UN	MIX	QUAN CS Quest	Empir	Being a ParaC: Attitudes towards integration into

										school sports programs
24. Lundqvist, C., Ståhl, L., Kenttä, G., & Thulin, U. (2018)	16	M = 9 F = 7	UN	Elite	Sweden Norway	UN	UN	QUAN: LONG, Int	Empir	Coach WB: Mindfulness
25. Magnanini (2017)	70	M = 55 F = 15	UN	Recre	Italy	MIX	Integrated Basketball	QUAN CS Quest	Empir	Being a ParaC: Education, motivation, skills, and training to coach inclusive sport
26. Martins Patatas, Duarte, & Julio Gaviao de Almeida (2016)	17	UN	UN	Elite	Brazil	MIX	Taekwondo	QUAL CS Interview	Empir	ParaC knowledge: Knowledge on para-taekwondo, disability-specific issues, Taekwondo as Paralympic sport
27. McMaster, S., Culver, D., & Werthner, P. (2012)	5	M = 3 F = 2	MIX A = 3 D = 2	Recre Elite	Canada	MIX	MIX	QUAL: LONG, Interview Observation	Empir	Becoming a ParaC: Learning experience
28. Molik, B., Laskin, J. J., Golbeck, A. L., Kosmol, A., Rekowski, W., Morgulec-Adamowicz, N., ... & Gomez, M. A. (2017)	12	M = 9 F = 3	MIX A = 10 D = 2	Elite	Amsterdam	Physical	WCB	QUAN: CS, Quest	Empir	Classification
29. Nicholls, S. B., James, N., Bryant, E., & Wells, J. (2018)	18 (both	UN	UN	Elite	Great Britain	UN	MIX	QUAN: CS, Quest	Empir	General coach knowledge: Performance analysis

	O and P)									
30. Ringland, A. (2013)	UN	UN	UN	Elite	Ireland	UN	UN	QUAL: LONG, Interview Observation Documents	Empir	General coach knowledge: Reflective practice psychological factors
31. Ritchie, D., & Allen, J. (2015)	8	M = 7 F = 1	UN	Elite	UK	UN	Track and Field	QUAL: CS, Interview	Empir	General coach knowledge: Reflective practice coaches role during Paralympic
32. Ritchie, D., Allen, J. B., & Kirkland, A. (2018)	7	M = 7	UN	Elite	UK	UN	Track and Field	QUAL: CS, Interview	Empir	General coach knowledge: Pre-competition preparation
33. Ruiz-Barquin, de la Vega-Marcos, de la Rocha, & Ortin-Montero (2017)	111	M = 83 F = 28	UN	Recre	Spain	MIX Intellectual Sensory Motor	Adapted Paddle	QUAN CS Quest	Empir	Being a ParaC: Resilience of adapted paddle coaches

34. Robbins, J. E., Houston, E., & Dummer, G. M. (2010).	6 (WCB) 8 (Stand)	WCB = M = 6 Stand = Mix M = 4 F = 4	MIX WCB = A = 2 D = 4 Stand = UN	Elite	USA	UN	WCB	QUAL: CS, Interview	Empir	General coach knowledge: Coaches expectations and philosophies
35. Samuel, R. D., Tenenbaum, G., & Bar-Mecher, H. G. (2016)*	16	UN	UN	Elite	Israel	UN	MIX	QUAN: CS, Quest	Empir	General coach knowledge: Professional psychological support
36. Spencer-Cavaliere, Thai, & Kingsley (2017)	15	M = 4 F = 11	A = 10 D = 1	Recre	Canada	MIX	MIX	QUAL CS Interview	Empir	Being a ParaC: About parasport Perceptions and experiences coaching disability sport
37. Takamatsu & Yamaguchi (2018)*	19	UN	UN	Recre	Japan	UN	MIX	QUAN CS Quest	Empir	Coach WB
38. Tawse, H., Bloom, G. A., Sabiston, C. M., & Reid, G. (2012)	4	M = 4	MIX A = 1 D = 3	Elite	Canada	UN	WC Rugby	QUAL: CS, Interview	Empir	Being a ParaC: Expertise coach philosophy and coaching role
39. Taylor, S. L., Werthner, P., & Culver, D. (2014)	1	M = 1	A = 1	Elite	Canada	MIX	UN	QUAL: LONG, Interview	Empir	Becoming a ParaC Being a ParaC

40. Taylor, S., Werthner, P., Culver, D., & Callary, B. (2015)	4	M = 3 F = 1	A = 4	Elite Recre	Canada	UN	MIX	QUAL: LONG, Interview	Empir	Being a ParaC: About the importance of reflective practise
41. Townsend, R. C., Huntley, T., Cushion, C. J., & Fitzgerald, H. (2018)	6	M = 4 F = 2	A = 6	Elite	UK	MIX Physical Sensory	MIX	QUAL: LONG, Interview Observation	Empir	About ParaS: About ableism and ideologies disability in sport
42. Vute, R. (2005)	32	M = 27 F = 5	UN	Elite	18 Diff	UN	Volleyball	QUAN: CS, Quest	Empir	C Characteristics (and self-perceptions coaches)
43. Wareham, Y., Burkett, B., Innes, P., & Lovell, G. P. (2017)	12	M = 9 F = 3	MIX A = 8 D = 4	Elite	Australia	UN	MIX	QUAL: CS, Interview	Empir	Being a ParaC: Coaches preconceptions about reward and challenges in ParaS
44. Wareham, Y., Burkett, B., Innes, P., & Lovell, G. P. (2018)	12	M = 9 F = 3	MIX A = 8 D = 4	Elite	Australia	MIX Physical Sensory	MIX	QUAL: CS, Interview	Empir	Becoming a ParaC: Lack of specific parasport knowledge in coach education

Note: KEY: N: Stand = Standing; GENDER: M = Male; F = Female; COACH DISABILITY: A = Able-bodied; D = Disability; LEVEL: Recre = Recreational; SPORT: WC racing = Wheelchair racing; WCB = Wheelchair Basketball; WC rugby = Wheelchair Rugby; METHOD/DESIGN: QUAL = Qualitative; QUAN = Quantitative; CS = Cross-sectional; LONG = Longitudinal; QUEST = Questionnaire; INT = Intervention; TYPE STUDY: Empir = Empirical; Reflect = Reflection; TOPIC STUDY: ParaC = Parasport coach; ParaS = Parasport; Coach WB = Coach Well-being. *Articles by Samuel et al., (2016) and Takamatsu & Yamaguchi (2018) included a sample of both coaches in Paralympic/Adapted and Olympic coaches. Therefore, only Paralympic/Adapted coaches were included in the analysis of this review.

Table 2. *Summary of characteristics of the empirical studies*

Demographic	N	% of sample
N of participants		
≤ 10	20	51.3
11 - 20	10	25.6
21 ≤	7	17.9
UN	2	5.1
Gender	852	62.2
Male	442	74.4
Female	76	12.8
UN	76	12.8
Coach Able Bodied / Disabled		
Able-bodied	236	16.5
Disabled	62	4.3
UN	1130	79.1
Level		
Recreational	7	17.9
Elite	28	71.8
Mixed	4	10.3
Country coach*		
North America in total	*18*	*40.0*
Canada	11	24.4
USA	7	15.6
Europe in total	*17*	*37.8*
UK	6	13.3
Austria	1	2.2
Dutch	2	4.4
Hungary	1	2.2
Ireland	1	2.2
Italy	1	2.2
Israel	1	2.2
Norway	1	2.2
Portugal	1	2.2
Spain	1	2.2
Sweden	1	2.2
Oceania in total	*4*	*8.9*
Australia	4	8.9
Asia in total	*4*	*8.9*
Indonesia	1	2.2
Japan	2	4.4
Korea	1	2.2
South America	*1*	*2.2.*
Brazil	1	2.2
International (≥ 18)	1	*2.2*

Type Disability Athlete		
UN	18	46.2
Mix	17	43.6
Physical	4	10.3
Sport		
Mix	22	56.4
UN	4	10.3
Adapted Paddle	1	2.6
Integrated/Wheelchair basketball	5	12.8
Taekwondo	1	2.6
Track and field	2	5.1
Sailing	1	2.6
Swimming	1	2.6
Volleyball	1	2.6
Wheelchair rugby	1	2.6

Note: Empirical studies, n = 39; *Countries were counted each time they were mentioned in articles. Some articles included several countries.

Table 3. *Summary of methods*

Methodology	N of studies	% of sample
Type study		
Empirical	39	88.6
Reflection	5	11.3
Design*		
Qualitative	26	66.7
Cross-sectional	18	46.2
Longitudinal	8	20.5
Quantitative	11	28.2
Cross-sectional	9	23.1
Longitudinal	2	5.1
Intervention, Longitudinal	2	5.1
Mixed method	2	5.1
Data*		
Interviews	19	48.7
Questionnaire	9	23.1
Intervention	2	5.1
Multiple-methods**	9	23.1

Note: * n = 39 empirical studies, ** e.g., combination of interviews, observation, text/documents, timelines

Table 4. *Summary of study topics*

Main topics studied	*N* of studies exploring the topic	%
General coach knowledge	11	28.2
Becoming a ParaC	10	25.6
Being a ParaC	10	25.6
ParaC knowledge	4	10.3
About ParaS	3	7.7
Coach characteristics	3	7.7
Coach well-being	2	5.1
Equipment	1	2.6
Classification	1	2.6

Note: Nine main topics were identified and are illustrated in the first column in the table. Topics were counted each time they appeared in articles. Some articles had more than one topic.

Figure 1. PRISMA flow diagram showing the flow of information through the review process