



UNDERSTANDING DEVELOPMENTAL PATHWAYS FOR COACHES IN DISABILITY SPORT

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A Scoping Review

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Abstract

A scoping review was conducted of the research over the last two and half decades on coach development opportunities (CDOs) for coaches in disability sport. Two research questions focussed the review: (a) What can be learned about the planning, delivery, or impact of disability sport-specific CDOs? And (b) What barriers and facilitators do coaches in disability sport encounter when accessing CDOs? The three-phase process of screening yielded 32 records out of the initial 1406 records found. These records explicitly related to learning activities or to pathways, preferences, perceptions, or experiences as they relate to learning and development of coaching within para/disability/adaptive sport, or as coaches with a disability; and these criteria across all sport settings, although 15 records were based in elite contexts. Twenty-six records were qualitative, five quantitative, and one mixed methods. Thirteen were conducted in Canada, 9 in the UK, and 6 in the USA. Eight records (6 UK, 2 USA, and 0 from Canada) corresponded to RQ1 about specific approaches to, and coaches' opinions of CDOs. All records offered some insights into RQ2. In sum: (a) Research specific to assessing or evaluating specific disability sport CDOs is non-existent in Canada, (b) research about pathways for coaches with a disability is almost non-existent, (c) a wide range of CDOs of different lengths, content, and pedagogical approaches is optimal to meet the needs of two important groups of learners. First, for those already coaching disability, provide sport sport-specific, targeted CDOs; and second, for potential coaches, broader but comprehensive CDOs.

Executive Summary

A literature review was conducted of the research published on coach development opportunities (CDOs) for coaches in disability sport. A scoping review methodology was used to examine this literature over the last two and half decades. Two research questions (that were refined after the initial search) focussed the review: (a) What can be learned about the planning, delivery, or impact of disability sport-specific CDOs? And (b) What barriers and facilitators do coaches in disability sport encounter when accessing CDOs?

To answer these questions, we included the literature explicitly related to learning activities or to pathways, preferences, perceptions, or experiences as they relate to learning and development of coaching within para/disability/adaptive sport, or as coaches with a disability; and these criteria across all sport settings (recreational to Paralympic), in any language. Records were excluded if they related to coaching in exercise, strength and conditioning, fitness, rehab, private classes/lessons, or physical-education settings. Searches were conducted in eight databases, and yielded an initial 1406 records. Through a three-phase process of screening, 32 records were selected for inclusion in this review. These records were extracted for several categories of data, and then analysed using both qualitative and quantitative data analyses.

The quantitative data analysis revealed that the body of literature has grown exponentially since 2005 with 50% of the 32 records being published between 2016 and 2020. Twenty-six records used a qualitative approach, five quantitative, and one mixed methods. In relation to this, over 53% of the records had between 1 and 15 participants; and 45% used interviews to collect data. Of the total 32 records, 13 were conducted in Canada, 9 in the UK, and 6 in the USA. A large

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total of 15 records were based in elite, high-performance, and Paralympic contexts. While 14 records failed to mention a theoretical approach, 25% of the records used approaches based on human learning theories – and these were often conducted by researchers at the University of Ottawa and McGill University. Three records, two from Australia and one from the UK, were founded in a social relational model of disability. Nineteen records stated neither an explicit paradigm, philosophy, nor epistemological positioning.

While only a quarter of the records that we selected for review corresponded to the first research question (RQ1), all records offered some insights into the nature of coaches' learning experiences, to address the second research question (RQ2). For RQ1, the eight records were based outside of Canada; six records were from the UK and two from the USA. The UK records discussed specific approaches to coach development such as critical disability perspectives and the Teaching Games for Understanding (TGfU) model. Both USA records looked at the coaches' opinions on the CDOs they had participated in. The authors of these records noted the importance of having a multidisciplinary team in the planning and facilitation of effective CDOs. For RQ2, five major categories were created: (a) coaches' pathways into disability sport, (b) coaches' access to education, (c) coaches' sources of learning, (d) coaches' preferences and values regarding their learning, and (e) challenges and barriers to coaches' learning. These results demonstrated that coaches' pathways into disability sport are varied and often serendipitous in that they find themselves coaching disability sport by chance. To date, the research on coaches living with a disability, no matter the context in which they coach, is extremely limited. Furthermore, the findings suggested that exposing future coaches to disability sport in existing higher education programs has the potential to increase the number of individuals exposed to basic concepts related to coaching in disability sport. Research has shown that such exposure can help coaches gain confidence to coach in disability sport (Duarte & Culver, 2014). At the same time, coaches already working in disability sport found they lacked access to specific educational opportunities for coaching the disability sport of their choice. Most often, these coaches spoke about how they learned through conversations and interactions with their athletes, peer coaches, family members, expert coaches, and mentors. These coaches with some experience in disability sport desired content related to specific impairments and adjusting coaching and equipment for different impairments. The records show that all coaches preferred engaging in practical learning opportunities, which enabled enhanced reflective practice. The coaches also noted challenges to their development stemming from their previous (mis)conceptions of disability sport, and the lack of time and resources to engage in quality practical learning opportunities.

Apart from the above considerations stemming from the literature, important gaps affecting the CDOs for coaches in disability sport are: (a) Research specific to assessing or evaluating specific disability sport CDOs is non-existent in Canada, (b) research about pathways for coaches with a disability is almost non-existent (globally), (c) a wide range of CDOs of different lengths, content, and pedagogical approaches is likely optimal to meet the needs of coaches in disability sport. Therefore, it is imperative to consider two important groups of learners. First, for those already coaching disability sport, there is a need to engage them in sport-specific, targeted CDOs; and second, for potential coaches, there is a need to engage them in broader but comprehensive CDOs covering topics such as the social relational model of disability, impairments, and classification.

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Understanding Developmental Pathways for Coaches in Disability Sport: A Scoping Review

Introduction

Coach education and coaches' developmental pathways have been the focus of a considerable body of literature over the last two and half decades. While “formal coach education programs have been shown to make varying but often limited contributions” to coach learning (Mallett et al.¹, pg. 329), these contributions are not to be discredited. Novice coaches in particular appreciate formal coach education experiences (e.g., Lemyre et al.²). As well, coaches of advanced athletes have stated that formal learning situations have positively influenced their practices (e.g., Leduc et al.³; Cushion et al.⁴). The CAC trains about 60,000 coaches per year, and formal coach education is required by most Canadian sport organisations.

Another stream of research has produced numerous articles about the learning pathways of sport coaches. These studies have allowed us to better understand the variety of situations that offer significant contributions to coach development, whether these be general life experiences including formal schooling, family life, and/or on the job learning.

A limited stream of research has focused on coaches of athletes living with an impairment. The existing research in this domain suggests that there are considerable improvements to be made in the provision of disability sport specific coach education for this population. Some researchers have also examined the less formal learning situations of disability sport coaches (e.g., Cregan et al.⁵). Given the lack of specific disability sport formal education offerings, coaches in disability sport report that these informal learning experiences have been critical to their development. Some recent studies have reported on interventions to promote more informal learning (e.g., communities of practice; see Duarte et al.⁶).

An important missing factor to better serve disability sport is a review of the existing literature on coach development opportunities for coaches. This review, along with an environmental scan conducted by Konoval and Allen,⁷ and forthcoming interviews with key individuals in the context, will provide essential information for redeveloping the CAC's Coaching Athletes with a Disability training pathway, as well as assist sport organizations in the development of sport-specific training.

This report, prepared for the Canadian Paralympic Committee (CPC) and the Coaching Association of Canada (CAC), is a summary of our literature review of the research published over the last two and half decades on CDOs for coaches in disability sport.

Broad Research Questions

1. What can we learn from the literature on coach development opportunities (CDOs) that coaches have access to in disability sport?
2. What can we learn from the literature on barriers and facilitators that disability sport coaches encounter when accessing CDOs?

Methods

To answer the research questions, we conducted a literature review using a scoping review methodology, which involves exploring the extent, range, and nature of a phenomenon within a body of literature. This methodology is appropriate given the broad nature of this project's research question, and the heterogeneity of sport coaching literature in terms of the discipline and the methods used.⁸ The review team members followed Arksey and O'Malley's five-step process for conducting scoping reviews:⁹ (a) conceptualize research questions; (b) identifying relevant records; (c) records selection; (d) charting the data; and (e) collating, summarizing, and reporting the results.

1. Conceptualize research questions.

In this step, the review team members worked with the CAC stakeholders to conceptualize the research questions, and determine the review protocol (see [Appendix A](#)). The members agreed to explore literature across different forms of formal and non-formal CDOs (e.g., including training workshops, courses, modules, interventions, programs, documents, web resources, mentoring programs, etc.), and limit the scope of languages to English, French, Portuguese, and Spanish.

2. Identifying relevant records.

The members consulted an informational specialist (Fournier) from the University of Ottawa library to refine the review protocol and devise a search strategy. The consultant then ran preliminary searches and Culver and Shaikh screened 100 references to determine whether the search strategy criteria were sufficient and offered modifications to the search criteria. The specialist then modified the search strategy and carried out all the searches across eight databases: SPORTDiscus (EBSCOhost), Sports Medicine & Education Index (Proquest), PsychINFO (OvidSP), Medline (OvidSP), Embase (OvidSP), ERIC (OvidSP), Education Source (EBSCOhost), and Web of Science (Clarivate Analytics). These searches were conducted on May 21st, 2020. Records were identified using a combination of each of the databases' unique subject headings and keywords. Main concepts searched included "coaching training" and "disability sport". No language limits were set. See [Appendix B](#) for the SportDiscus search strategy. The records generated from these searches were compiled in EndNote X9¹⁰ – a reference management software – and then transferred to Covidence¹¹ – an online review management software; duplicate records were removed using automated procedures of these software. By the end of this stage, 1406 records were ready for screening.

3. Records selection.

Using Covidence, three team members (Shaikh, Duarte, Konoval) screened the titles and abstracts of the records. To be selected for inclusion, the records needed to meet all of the following criteria:

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- I. Literature related to CDOs: Learning activities (broadly defined) that can influence coaches' behaviours through education, social interaction, or personal reflection.
OR
Literature related to pathways, preferences, perceptions, or experiences as they relate to learning and development of coaching within para/disability/adaptive sport, OR as coaches with a disability.
- II. Explicitly discuss the promotion and/or dissemination of CDO(s) to coaches
- III. Contexts: Disability sport, Paralympic sport, adaptive/adapted sport, or parasport
- IV. People: Coaches in disability sport contexts, or coaches with a disability
- V. Sport in any of these settings: In club, recreational, competitive/elite, high-performance, school, community, regional, provincial, and national settings
- VI. Any language

At the same time, to be excluded from this review, the records needed to meet any of the following criteria:

- I. Conference abstracts or proceedings
- II. Not related to sport
- III. Not related to coach development
- IV. No explicit mention of the promotion and/or dissemination of CDOs
- V. Not in a disability context, or with coaches with a disability
- VI. Literature of coaching in exercise, strength and conditioning, fitness, rehab, private classes/lessons, or physical-education settings.

At least two members separately assessed each of these titles and abstracts. Conflicts were resolved by a third member of the team. Once this stage was completed, 171 records advanced to the next screening phase. Here, the full-text copies of the records were retrieved and were re-assessed using the same inclusion and exclusion criteria outlined previously. Like the previous phase, at least two members separately assessed each full text. For each record, members needed to cite a reason for exclusion (see Table I below). Conflicts were resolved by a third member of the team. From here, 42 records advanced to the next stage.

Table I: Reasons for Excluded Records

Reason for exclusion	# of records
Cannot be retrieved	56
Not related to coach development or disability sport	47
Conference proceedings and abstracts	9
Duplicate record	9
Lack of description	8
Total Records Excluded	129

4. Charting the data

Data across the 42 records were extracted within Covidence based on several categories: (a) author and year, (b) title, (c) aims, (d) theory (e) sport, (f) level of competition, (g) coaching context (or type of athlete coaches), (h) CDO domain, (i) CDO delivery mode, (j) CDO duration, (k) program structure, (l) study design, (m) participants, (n) data collection methods, (o) data analysis methods, (p) description of key results, (q) other general findings. Once complete, these data were transferred to an Excel spreadsheet, and further organized, modified, and cleaned. All data were reviewed again, and an additional 10 records were removed, either as duplicate records or due to lack of fit with the research questions; resulting in 32 selected records for this review. See [Appendix C](#) for full list of selected records.

5. Collating, summarizing, and reporting the results

This stage involved presenting the data in relation to the research questions. Upon review of the data, the team members realized that the research questions were too broad in nature and insufficiently refined to represent the data that were gathered. In efforts to best represent the disability sport CDO literature, the research questions were modified and finalized.

- **Refined RQ1.** What can be learned about the planning, delivery, or impact of disability sport-specific CDOs?
 - E.g., Findings from explorations, assessments, or evaluations of specific disability sport-specific CDOs on coaches' knowledge and skills.
- **Refined RQ2.** What barriers and facilitators do coaches in disability sport encounter when accessing CDOs?
 - E.g., Coaches' learning experiences; life-long journeys of disability sport coaches and how they participated in CDOs during their careers.

From here, records were categorized as falling under either of these RQs, or both. Then, two processes of analyses were undertaken: quantitative and qualitative.

Quantitative data results: Across research questions, preliminary tables and charts were generated for a visual representation of categorical data. These charts and tables are presented and described in the Quantitative Data Results section with reference to external literature.

Qualitative data summaries: Initially, our team took on a deductive process to categorize the results corresponding to reach research question by context (i.e., elite/Paralympic, university/collegiate, recreational, special needs). Then, summaries of the key findings were created (See [Appendix D](#)). After further review and discussion, our team realized an inductive approach needed to be taken to further determine categories that were best representative of the results that we extracted, with reference to the research questions. Therefore, the summaries were transferred to NVivo, a qualitative data organization software, and the content of these summaries were coded under different representative labels. Once all passages were coded, the labels were reviewed, modified, and synthesized into new descriptive categories. These categories are presented in detail in the Qualitative Data Results section.

Quantitative Data Results

Study Information

Years and Countries of Study

Table 2 and Figure 1 show that there were limited records on CDOs in disability sport from 1990-2010, with a spike in research from 2010-20. Here, the last five years covered half the total production of the last 30 years. Table 3 and Figure 2 show that most records came from Canada and the USA, with more recent developments in the UK, Brazil, and Australia.

Figure 1: Years of Publications of Records

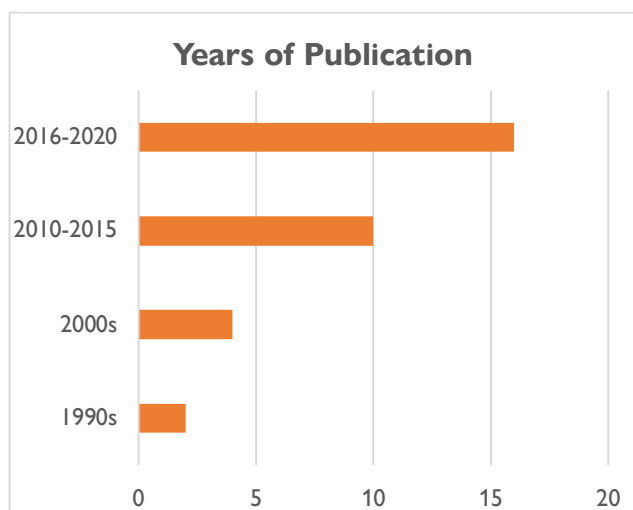


Table 3: Countries of Published Records

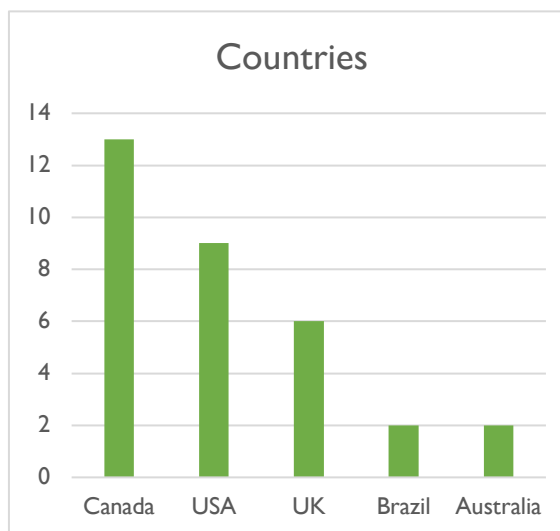
Country	#	%
Canada	13	40.63%
USA	9	28.13%
UK	6	18.75%
Australia	2	6.25%
Brazil	2	6.25%
Total Records	32	100.00%

When observing the years of publication by country, the only four records found before 2005 were conducted in the USA. Prior to 2010 there was only one record conducted in Canada; the other 12 records came from the last decade. The first record from the UK was in 2014; since then, five more records from the UK were found.

Table 2: Years of Publications of Records

Year	#	%
1990s	2	6.25%
1990	1	3.13%
1991	1	3.13%
2000s	4	12.50%
2004	1	3.13%
2005	1	3.13%
2007	2	6.25%
2011-2015	10	31.25%
2011	1	3.13%
2012	3	9.38%
2013	1	3.13%
2014	4	12.50%
2015	1	3.13%
2016-2020	16	50.00%
2016	4	12.50%
2017	3	9.38%
2018	3	9.38%
2019	4	12.50%
2020	2	6.25%
Total Records	32	100.00%

Figure 2: Countries of Published Records



Context Information

Level of competition

The records most often focused on elite, Paralympic, or high-performance contexts. These contexts were grouped together under the category “Elite”, as often coaches who worked in professional sport club environments, in performance coaching roles, worked with Paralympic athletes as well. This categorization aligns well with the predominant literature in able-bodied sport coaching,¹² that uses varying terms for labelling contexts and athletes as elite, high-performance, and in this review, Paralympic level.

Figure 3: Level of Competition of Participating Coaches in the Selected Records

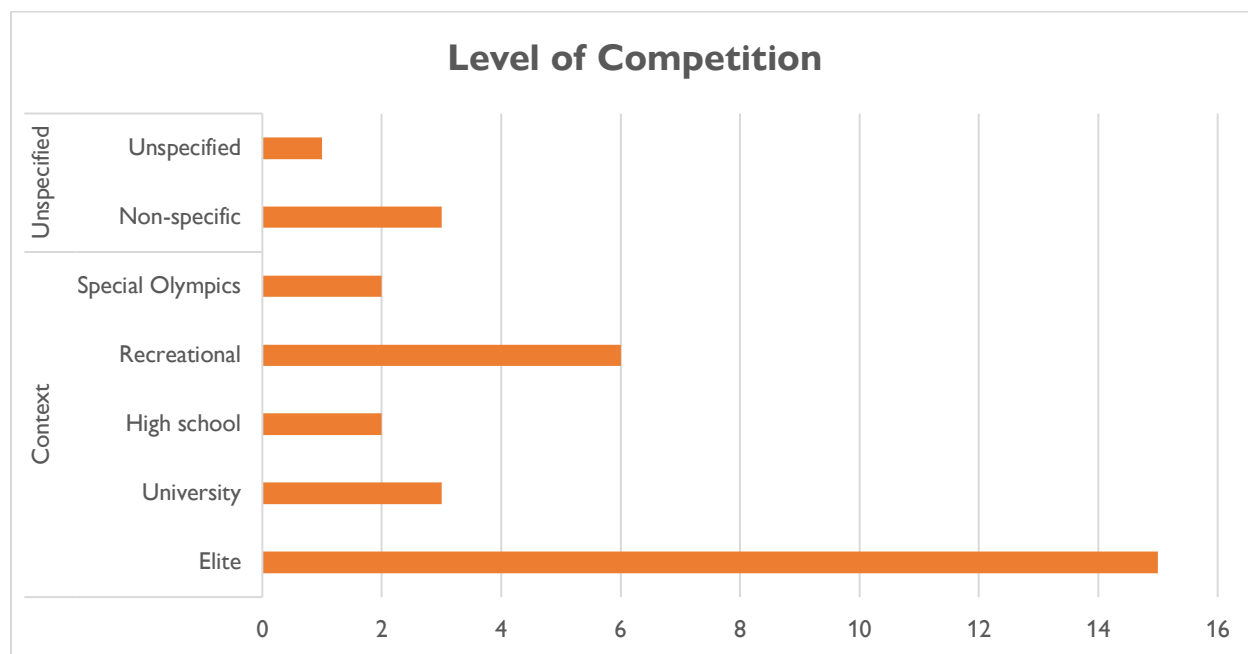


Table 4: Level of Competition of Participating Coaches in the Selected Records

Level of competition	#	%
Context	28	87.50%
Elite	15	46.88%
University	3	9.38%
High school	2	6.25%
Recreational	6	18.75%
Special Olympics	2	6.25%
Unspecified	4	12.50%
Unspecified	1	3.13%
Non-specific	3	9.38%
Total Records	32	100.00%

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Coaching context - who is being coached?

Table 5: Coaching Context – Who is Being Coached.

Coaching context	#	%
Performance coach	15	46.88%
Performance coach for adults	8	25.00%
Performance coach for older adolescents	7	21.88%
Participation coach	8	25.00%
Participation coach for adults	4	12.50%
Participation coach for adolescents	3	9.38%
Participation coach for children	1	3.13%
Special needs	3	9.38%
Unspecified	6	18.75%
Unspecified	2	6.25%
Non-specific (Multi-level)	4	12.50%
Total Records	32	100.00%

Côté and Gilbert¹³ offered a classification scheme for coaching contexts which contrasts participation (e.g., sport that emphasizes maximizing participation of all athletes) vs. performance (e.g., sport that emphasizes maximizing skill development of selected talented athletes), as well as contrasting age categories (i.e., children,

adolescents, and adults). Lefebvre et al.¹⁴ expanded these categories to differentiate between young adolescents (12-15) and older adolescents (16+), in which different coaching strategies and specialized skills may be used. As well, we added the category of special needs as often this cohort is separately coached from other contexts due to their unique developmental needs. Most records were classified under this participation/performance scheme, apart from six records which either offered no contextual information, were not context-specific, or were geared toward multiple coaching contexts. Almost half the contexts specified were in performance contexts, while one quarter of the records were in participation coach contexts.

Methods

Theoretical approaches, frameworks, and models

A substantial number of records incorporated human learning theories (i.e., Jarvis, Wenger, Moon) in framing their methods and analyses. Of note is the fact that nine of these records are authored or co-authored by researchers from the University of Ottawa, and five records are authored by McGill researchers. Because of this, Canada has influenced the research agenda

Table 6: Theoretical Approaches, Frameworks, and Models in the Selected Records

Theoretical Approach	#	%
Human learning theories	8	25.00%
Social relational model of disability	3	9.38%
Côté et al. (1995) Coaching Model	2	6.25%
Life history approach	2	6.25%
Critical sociological framework	1	3.13%
Framework of knowledge acquisition	1	3.13%
Teaching Games for Understanding (TGfU) model	1	3.13%
Unspecified	14	43.75%
Total Records	32	100.00%

on coaching disability sport. The notable theories or conceptual frameworks used to guide data collection and interpretation are listed in Table 7.

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The findings of this review regarding the limited number of records citing specific theoretical approaches and methodologies, parallel the broader literature in sport psychology. Three literature reviews looked at qualitative research in the sport psychology field from 1990-2017.

15-17

Paradigms and Epistemologies

Over half (19) records did not state an explicit paradigm, philosophy, or epistemological positioning. This aligns with the field of sport psychology. In Culver and colleagues' review, 13.7% of the studies explicitly indicated their paradigms. The present review found a substantial increase of the number of studies that indicated their paradigms since 2012.

Table 8: Paradigms and Epistemologies

Paradigms and Epistemologies	#	%
Constructivism	6	18.75%
(Social) Constructionism	4	12.50%
Interpretivism	2	6.25%
Participatory	1	3.13%
Unspecified	19	59.38%
Total Records	32	100.00%

Research Design

In terms of research designs chosen, the records were most often qualitative in nature (26 records, 81.25%), and many of these explicitly defined their qualitative methods by formal names (i.e., basic interpretive qualitative methodology, case study) or traditions (i.e., phenomenology).

Table 9: Methodologies

Methodologies	#	%
Qualitative Approaches (Categorized)	17	53.13%
Qualitative case study	5	15.63%
Collective case study	2	6.25%
Phenomenology	3	9.38%
Basic interpretive qualitative methodology	2	6.25%
Qualitative description	2	6.25%
Narrative study	1	3.13%
Collaborative inquiry	1	3.13%
Action research	1	3.13%
Qualitative Approaches (Uncategorized)	9	28.13%
Qualitative (Unspecified)	5	15.63%
Qualitative (Specified by epistemology)	4	12.50%
Quantitative Approaches	5	15.63%
Survey	2	6.25%
Descriptive study	1	3.13%
Case report	1	3.13%
Non-randomised experimental study	1	3.13%
Mixed methods	1	3.13%
Total Records	32	100.00%

A substantial number of records involved studies with a small number of participants (e.g., 1-15 coaches), given their qualitative, in-depth nature.

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Table 10: Study Sample Size

Sample Size	#	%
1-15	17	53.13%
16-50	11	34.38%
51+	4	12.50%
Total Records	32	100.00%

Most records involved collecting data through qualitative interview methods (e.g., semi-structured, stimulated recall), and a substantial portion (8 records) used observational methods. Our findings reflect the broader literature in sport psychology that have recognized the popularity of semi-structured interviews as the primary data collection method. In their reviews of sport psychology literature, Culver et al.¹⁷ and to McGannon et al.¹⁵ found that 78% and 85% of records, respectively, used interviews to gather data.

Figure 4: Data Collection Methods

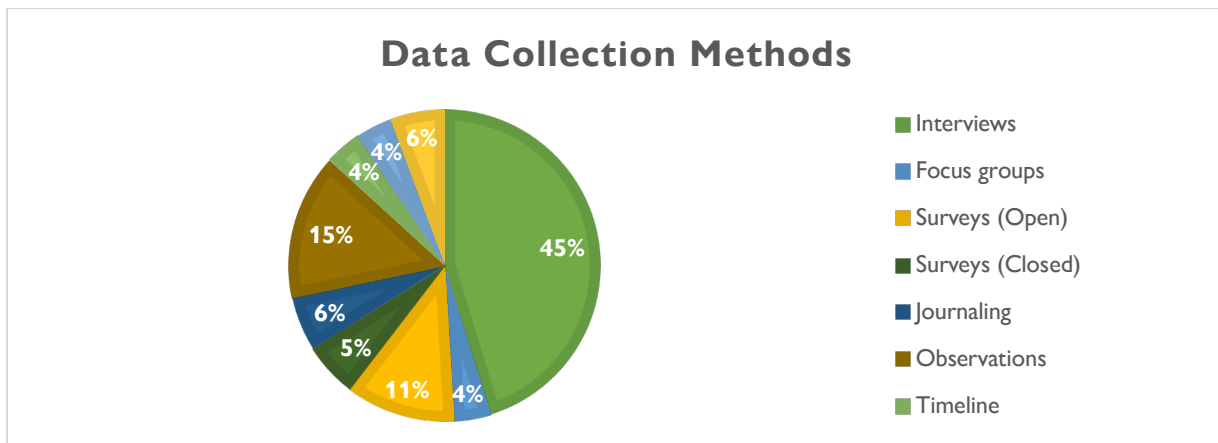


Table 11: Data Collection Methods

Data collection methods	#	%
Interview	24	75.00%
Observations	8	25.00%
Survey (Open)	6	18.75%
Survey (Closed)	3	9.38%
Journaling	3	9.38%
Conversations or Reflections	3	9.38%
Focus Groups	2	6.25%
Documents	2	6.25%
Timeline	2	6.25%

Qualitative Data Summaries

RQ1: What can be learned about the planning, delivery, or impact of disability sport-specific CDOs?

Eight of the records (25%) from our review aligned with this research question. The selected records represent assessments or evaluations of CDOs that explored any aspect of CDO planning, delivery, or impact of disability-sport-specific CDOs. Five of these records reported on the same two CDOs, while the rest examined a range of CDOs that varied by structure.

The eight records found encompassed the review of a manual,¹⁸ different coaching courses, ranging from one-off 90 min practical learning sessions,¹⁹ a 3hrs theoretical session held over one or two days,^{20,21} a mixed theoretical and practical 8 hrs program over a period of eight weeks,²² and a 28-30hrs community placement spread over an academic year²³⁻²⁵. Such heterogeneity of these records made it difficult to draw similarities across records.

These eight records were based outside of Canada, two from the USA and six records from the UK. Both USA records looked at the coaches' opinions toward specific CDOs in disability sport; Hitt¹⁸ found that coaches valued the usefulness of the manual for all children, not just those with special needs. Daquila²² that even a one-day CDO appeared to have a positive effect on coaches' opinions towards conducting physical activities with severely and profoundly retarded individuals. The UK records discussed specific approaches to advance learning within these CDOs – for instance, critical disability perspectives, and the TGFU model. A key recommendation across many of these records was the importance of having a multidisciplinary team in the planning and facilitation of effective CDOs.^{26,27} This can include collaborating with skill acquisition specialists, experts with knowledge of different impairment types and technologies, and practitioners with local knowledge of athletes' unique situations and contexts.

One CDO within a higher education institution in the UK resulted in three records.²³⁻²⁵ Here, student-coaches participated in a 1-year placement where they worked with special education needs and people with disabilities. The results reported by Crisp included: (a) the CDO allowed student-coaches to reflect on their feet and push their learning and development, (b) the CDO afforded the student-coaches consistent engagement with the practice of coaching, and (c) that coaching participants with a variety of disabilities prompted them to reflect, react, and consider different approaches to their practice.

RQ2: What barriers and facilitators do coaches in disability sport encounter when accessing CDOs?

All 32 selected records were drawn from to gather the information for this research question. Five major categories were created based on the gathered information. These were: (a) coaches' pathways into disability sport, (b) coaches' access to education, (c) coaches' sources of learning, (d) coaches' preferences and values in their learning, and (e) challenges and barriers to coaches' learning.

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Coaches' pathways into disability sport. Two main themes appeared (coaches with disabilities and able-bodied coaches). First, research that reported former disability sport athletes who become coaches is scarce.^{6,28-30} Second, the most prevalent theme relates to able-bodied coaches who started coaching disability sport in serendipitous ways.^{27,31-33} It seems that the most prevalent learning pathway for coaches in disability sport is the opportunity to work with people with impairments (which is highly valuable for able-bodied coaches who may not have access to lived experiences of impairment). Formal education related to adapted sport through courses delivered in higher education institutes can provide professional development for disability sport coaches,²⁷ and the literature suggested the opportunity for physical education students to be introduced to instructional courses and internships can contribute to career opportunities in disability sports.^{23-25,33,34}

Coaches' access to education. A substantial number of records pointed out that coaches' access to formal educational opportunities regarding their coaching practices were drawn from able-bodied sport education contexts (often offered at the national level).^{31,35} While a disability sport component was offered within this education, the records often reported that this content was too general,³⁶ and that there was a lack of content or education available that was specific to disability or specific disability sports.^{37,38} To facilitate access to disability sport specific education, records pointed to the benefits of incorporating disability sport courses in higher educational curriculums (e.g., Brazil and UK)^{25,34}; such courses can enable theoretical and practical learning opportunities since most often these courses are spread over a semester or academic year and include internships. Disability sport specific education was also offered by sport-providing organizations, such as Wheelchair Rugby and Tennis Canada,³⁶ and access to these opportunities for coaches was facilitated through financial support from the sport organization.

Coaches' sources of learning. Most often, coaches spoke about how they learned through social opportunities, including conversations and interactions with their athletes,^{7,8} peer coaches,^{27,28,36,39} family members,⁴⁰ and expert coaches.^{32,41,42} Often cited as the most impactful social opportunity was from receiving mentoring, which helped coaches learn highly specialized technical skills for coaching disability sport.^{27,29,39,43-45} Some social spaces that coaches learned in included formal CDOs (not specific to disability sport),³² coaching clinics,^{27,29,39} player camps,^{6,40} communities of practice,^{36,42,44} and through their coaching.⁴⁵ Reflection was a key component in some of these social opportunities.^{27,32,37,41,42} In terms of passive opportunities, the records reported that coaches learned through observing others.^{27,30,37,40} At an intrapersonal level, coaches learned through leveraging resources like books and the internet.^{36,40,44}

Coaches' preferences and values in their learning. In terms of content, the records reported that coaches preferred or valued having different descriptions of the nature of different impairments, strategies to work with different impairments, and understanding the technologies and equipment for different impairments and disability sports.^{18,35,36} In terms of enabling coach learning, practical, hands-on opportunities were most valued, and most optimal when these opportunities involved working within the disability sport context, with disability populations.^{25,36} These practical opportunities enabled enhanced reflection, immersion in the

disability sport coaching experience, and enjoyment in learning.^{23,24} Having access to knowledgeable/expert facilitators was also valued by coaches.⁶

Challenges and barriers to coaches' learning. At the intrapersonal level, coaches' previous experiences with coaching challenged their learning of new concepts and knowledge, as previous experiences took precedent in their understanding of disability sport.²¹ Challenges to their learning in terms of lack of time and resources to practice quality practical learning opportunities.^{24,44} In terms of structural barriers, geography constraint coaches' participation on CDOs and even in competitions where they could learn from other teams.³⁵

Discussion

The purpose of this review was to understand the experiences, perceptions, and pathways of disability sport coaches with regards to their involvement in coach development opportunities. The revised research questions were two-fold: (a) What can be learned about the planning, delivery, or impact of disability sport-specific CDOs? And (b) What barriers and facilitators do coaches in disability sport encounter when accessing CDOs? While only a quarter of the records that we selected for review corresponded to the first research question, all records offered some insights into the nature of coaches' learning experiences, to address the second research question.

It is important to highlight that although these records were categorized based on the level of competition, most of these records offered results that were context-specific and/or sport-specific, with small, purposeful sample sizes of participants. Across most records, the authors did not intend for their results to represent the experiences or perceptions of disability sport coaches as a whole (e.g., only drawing naturalistic generalizations as expected in qualitative research). Thus, we caution readers from interpreting the results of this review as representative of the state of the learning experiences of disability sport coaches generally.

Not all CDOs are the same and not all coach learners have the same needs. When we first started looking for records in the database the definition of a "coach development opportunity" was very broad to include as many records as possible. As described in RQ1, the range of CDOs varied greatly in contact hours, content, and the opportunity to apply knowledge.

The lack of disability specific CDOs, as well as disability sport specific CDOs were both mentioned barriers faced by many coaches in Canada for RQ2.^{27,31,36} This comment is not surprising since the sampling of participants in the aforementioned studies are coaches who were, at the time of the research, working within disability sport contexts, in comparison to some UK participants,^{19,25} who were students in undergraduate sports and physical education programs with no pre-requisite to be coaching with athletes with disabilities. Coaches already involved in coaching disability sport are likely to be more aware of the gaps in their knowledge than those with no experience or exposure to this context. Thus, participants outside of the disability sport context simply "did not know what they did not know". As such, coaches new

to disability sport were very appreciative of any type of CDO (e.g., resources, meetings, courses) to gain introductory information to the disability sport context, whereas more experienced coaches had more targeted learning needs and expressed that not every learning situation was relevant for them (Duarte et al.⁴⁶).

Integrating disability sport CDOs in undergraduate and graduate programs may be a valuable means to reach potential coaches and build their knowledge and skill-sets with regards to disability sport, prior to entering professions in these contexts.^{25,34} As such, integrating courses on adapted sports within relevant higher education programs (e.g., physical education, human kinetics, sport sciences, physiotherapy, occupational therapy, etc.) may be an unexploited opportunity. The coaching literature in coach education posits that coaches come from all ways of life,⁴⁷ and this is also true for disability sport coaches.^{6,48} Thus, organisations like the CPC and the CAC can enable conversations with higher education programs and provide special guests (e.g., disability sport coaches and athletes, and program coordinators) to lectures in which students are presented to the disability sport coaching career.

Conclusions and Recommendations

Important research gaps affecting the CDOs for coaches of disability sport are:

- (a) Research to assess or evaluate specific disability sport CDOs is inexistent in Canada, and
- (b) Research about pathways for coaches with a disability is almost non-existent (globally).

We therefore recommend that future research in these areas should be supported.

In terms of the provision of CDOs for disability sport, given the above discussion, it may be worthwhile taking a strengths-based approach to education and development for coaches in disability sport. That is, we have seen in the literature many CDOs provide value, and this value will depend on the lifelong learning journey of the learner coach (Duarte et al, in press). Thus, we should not be looking for ‘the best’ CDO for disability sport. Instead, we should aim to provide a landscape of development opportunities which vary in quality and quantity. According to Mallett et al.¹, speaking about coach development in general:

“It is not a matter of which form of education/learning is superior, but acknowledging the unique contributions all forms may make to coach development and accreditation. All education/learning situations should be valued for their contribution to coach development, which is a lifelong process” (p. 332).

Therefore, to provide this landscape of development opportunities we recommend the CPC and CAC support and enabling sport organizations to consider:

- **A comprehensive assessment of the CAWAD module**
 - How should this module fit into the coach development pathway?
 - As a benchmark, the Brazilian Paralympic Committee implemented an update, free of charge online CDO totaling 46 hours.⁴⁹
- **Practical learning opportunities**

Review of Coach Development Opportunities in Disability Sport

- Within institutes of HE or in the community, CDOs that occur over time and allow the application of knowledge to be experienced and discussed.
- **Social learning opportunities**
 - Duarte et al.⁵⁰ described how the implementation of a social learning space was collaboratively implemented by the NSO, the researchers, and the coaches.
 - Enable supports for sport organizations to design and facilitate communities of practice in disability sport (e.g., Duarte et al.⁶).
- **Reflective learning opportunities**
 - The role of coach program administrators in valuing the individual and collective nature of learning and the importance of enabling opportunities for reflection as a part of disability sport practice.^{41,42}
- **CDOs that reach more potential coaches**
 - Increase awareness among able-bodied coaches of the pathways to disability sport. This could encompass short courses like the NCCP for undergraduate students in various fields who might potentially become community coaches.
 - The Brazilian Paralympic Committee offers in-person courses targeted at school physical educators with content including various adaptive sports, and technical sport specific modules.

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Appendix A: Review Protocol

Review Title: Understanding developmental pathways for coaches with a disability as well as coaches in para contexts.

Original Research Questions:

1. What coach development opportunities (CDOs) are accessible for coaches with a disability?
What barriers and facilitators do coaches with a disability encounter when accessing CDOs?
2. What CDOs are accessible for coaches in para contexts?
What barriers and facilitators do coaches in para contexts encounter when accessing CDOs?

Roles and Responsibilities:

1. Content expert – Dr. Diane Culver
 - Screening, interpretation, writing
2. Project lead – Maji Shaikh
 - Screening, data extraction, descriptive analysis, interpretation, quality assessment, writing
3. Librarian – Karine Fournier
 - Runs searches, reference management, contributions to methodology
4. Subject experts – Dr. Tim Konoval, Dr. Tiago Duarte
 - Screening, contributions to interpretation and writing
5. Other help sought – as needed – from graduate students and experts in network of colleagues in screening and data extraction.

Background

- Important characteristics
 - What are the important population characteristics (e.g., sport contexts, socio-demographics)?
 - Coaches in para- contexts OR coaches with a disability (therefore, this definition includes coaches with a disability who coach – or are seeking to coach – in able-bodied contexts)
- Relevance
 - Does the review topic have important implications for sport practice, policy and research?
 - The topic of this review is relevant to understanding the experience of coaching with a disability, and this population's experience in accessing relevant resources for coaching development.
 - The findings from this review will potentially lead to use in informing coach development opportunities for this population.

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- Rationale
 - Does the evidence (including existing systematic reviews) fail to answer the review question, and why?
 - Little reviews have been conducted concerning coaches with a disability or coaching in parasport contexts.
- Justification
 - Is the need for the review justified in the light of the potential implications to practice and current limitations of the evidence base?
 - This topic falls in line with the Government of Canada's current investment in promotion of accessible, equitable, and safe sport for people of all abilities.
- Specification
 - What are the PICO components of the review question / objective?
 - Population: Coaches in para or disability sport context; coaches with a disability
 - Intervention: Coach development/education opportunities
 - Comparison: No coach development/education opportunities
 - Outcome: Greater preparation for coaching in context

Methods

I. Search strategy - Which electronic databases will you search?

SPORTDiscus (EBSCOhost), Sports Medicine & Education Index (formally: Physical Education Index) (Proquest), PsychINFO (OvidSP), Medline (OvidSP), Embase (OvidSP), ERIC (OvidSP), Education Source (EBSCOhost), Web of Science

What are your key search terms?

Broad key terms: sport, coaching, para(-), adapted, adaptive, disability, education, learning, development, skill, intervention, program, course, training.

Proposed search strategy (**TBC with librarian**): The first search query will combine three groups of terms to ensure that retrieved sources involved the sport context (Group 1: sport), referred to coaching (Group 2: coach*), specifically concerning coaches with a disability **OR** coaches working in para or disability contexts (Group 3: para*, disab*). The second search query will be combined with the above groups to understand coaches' developmental pathways (Group 4: educat*, learn*, develop*, skill*). The fourth search query will be combined with all above groups to retrieve sources referring to educational opportunities or programs (Group 5: intervention*, program*, course*, train*).

II. Selection criteria

- What are the inclusion / exclusion criteria?
 - Inclusion criteria:
 - Broadly, all literature related to coach development in either para or disability contexts **OR** with coaches with a disability will be included.
 - Contexts: Paralympic or parasport contexts

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- Sport in club, recreational, competitive/elite, high-performance, school, provincial, and national settings.
- Exclusion criteria:
 - Literature not related to sport
 - Literature not related to coaching or coach development
 - Literature not related to para or disability contexts **OR** coaches with a disability
 - Literature of coaching in exercise, strength and conditioning, fitness, rehab, private classes/lessons, or physical-education settings.
 - Any records in languages that cannot be screened by reviewers
- Will you impose any additional limits, e.g. language, publication type, study design?
 - **Language:** For now, all languages will be included in the search. We have the potential to include international colleagues/collaborators from our networks to help us with the non-English/non-French language records, should these be identified. In past reviews, we have included records written in Portuguese, Spanish, and Mandarin.
 - **Publication type:** Exclude conference abstracts, editorials or commentaries. Additional limits to be determined after first search.
 - **Study design:** Limits to be determined after first search.
- How will study selection be performed?
 - Once the librarian performs the search strategies, the records will be compiled in Covidence, an online review management application. Duplicates will be removed. **In the first screening stage**, two reviewers will go through the records list and screen the titles and abstracts based on the inclusion and exclusion criteria. Conflicts will be resolved by the reviewers meeting with one another at the end of the first screening stage, and discussing their decisions.
 - **In the second screening stage**, full-texts will be retrieved for all selected records. The two reviewers will go through these full-texts and again screen them using the same inclusion and exclusion criteria outlined previously. For any included records that concern a non-English or non-French language, the full-text for these will also be retrieved, and colleagues from the reviewers' networks will be sought for assistance. Any records in languages that cannot be screened will be excluded. At the end of this screening stage, the selected records will be moved to the data extraction stage, described in section IV below.
- III. Quality assessment
 - What criteria will be used to assess methodological quality?
 - The PRISMA Extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018) will be used to assess methodological quality in following guidelines for scoping reviews.
 - How will quality assessment be performed?
 - Both an internal reviewer and external reviewer (graduate student, not involved with the study) familiar with the PRISMA-ScR will be responsible for reviewing quality once the report is drafted.
- IV. Data extraction

Review of Coach Development Opportunities in Disability Sport

- What are the key data to be extracted?
 - The key data to be extracted from each source will include:
 - Author/Year
 - Title
 - Purpose
 - Country
 - Sport
 - Level of competition (e.g., recreational, competitive, varsity, national, Olympic)
 - Coach characteristics
 - Athlete characteristics
 - Research design and methodologies
 - Results or general findings
 - *Other key characteristics will be determined as analysis is undergone.*
 - How will data extraction be performed, and how will extracted data be presented?
 - Data from each source will be extracted by reviewers into a shared Excel sheet, with the above key data as column categories, and the rows referring to each source. This *table of extracted data* will be included in the final report.
- V. Data synthesis
- How will data be combined (statistical or narrative), and why?
 - A mixed-method approach will be undertaken in which two analyses will be performed: Content analysis and qualitative description.
 - **Content analysis:** To provide an outline of the makeup of the selected records, the *table of extracted data* will be deconstructed into multiple mini-categories. For instance, for the category of coach characteristics, these will be further categorized into mini-categories such as roles, age range, genders, years of experience. Data in these mini-categories will then be quantified (e.g., for sport type, soccer = 1, basketball = 2, and so on). These deconstructed data will be transferred for analysis in SPSS 25 (IBM Corp., 2017). Descriptive and frequency statistics will be calculated for all mini-categories. The results of this content analysis will be displayed in a table and described in the final report.
 - **Qualitative description:** The content of the original *table of extracted data* will be transferred to NVivo (QSR International, 2020), a qualitative computer data analysis program. A deductive-inductive approach (Miles & Huberman, 1994) will be conducted with these data. Here, three themes were created deductively: (a) Experiences of coaches with disabilities; (b) Barriers and facilitators in the development of coaches with disabilities, (c) Learning opportunities and preferences for preparing to work in para contexts. Any passages of the extracted results will then be inductively coded under an identifying a label (e.g., challenges encountered with coach training), and then categorized deductively under one of the three major themes. An iterative process will be undertaken in which labels were re-named, moved, or removed at the analysts' discretion, until all the results are labeled and categorized appropriately. The results of these themes were then summarized and displayed in text in the Results section.

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Process

- I. What resources are required to conduct the review, and are they available?
 - Relevant expertise: Content expert (Dr. Diane Culver), Graduate student (Maji Shaikh), Librarian (Karine Fournier). Other collaborators to potentially invite will include more content experts and graduate students.
 - Computing facilities: Work from home
 - Research databases: Access to all databases provided by University of Ottawa
 - Bibliographic software: Zotero, Covidence
 - Statistical software: NVivo, SPSS
- II. How will the findings of the review be disseminated?
 - Target audience: Canadian Paralympic Committee, Coaching Association of Canada stakeholders
 - Publication type: Final report
 - Communication media: TBC

Timetable

- | | |
|------------------------|--------------------|
| ○ Draft protocol | May 6, 2020 |
| ○ Searching literature | June 10, 2020 |
| ○ Screening: Phase I | August 14, 2020 |
| ○ Screening: Phase II | September 30, 2020 |
| ○ Data extraction | November 30, 2020 |
| ○ Interim report | February 20, 2021 |
| ○ Final report | March 8, 2021 |

Appendix B: Search strategy

First search with SportDiscus Database

Search performed May 21th, 2020

SportDiscus (EBSCOHost)

#	Query	Results
S22	S9 AND S21	809
S21	S19 OR S20	51,663
S20	(DE "EDUCATION of athletic coaches") OR (DE "TRAINING of athletic coaches")	440
S19	S13 AND S18	51,663
S18	S14 OR S15 OR S16 OR S17	562,337
S17	coach* N3 develop*	2,773
S16	educat* or learn* or teach* or curricul* or training or course* or class or workshop*	554,914
S15	DE "LEARNING strategies" OR DE "LEARNING" OR DE "CONTINUING education" OR DE "PROFESSIONAL employee training"	11,964
S14	(DE "EDUCATION" OR DE "PSYCHOLOGY of learning" OR DE "TEACHING" OR DE "TRAINING" OR DE "ACTIVE learning" OR DE "ABILITY")	85,399
S13	S10 OR S11 OR S12	157,722
S12	coach*	157,523

Review of Coach Development Opportunities in Disability Sport

SI 1	DE "COACHING (Athletics)" OR DE "ARCHERY coaching" OR DE "BASEBALL coaching" OR DE "BASKETBALL coaching" OR DE "BICYCLE racing coaching" OR DE "BOWLING coaching" OR DE "BOXING coaching" OR DE "COACH-athlete relationships" OR DE "CRICKET coaching" OR DE "FIELD hockey coaching" OR DE "FIGURE skating coaching" OR DE "FOOTBALL coaching" OR DE "GOLF coaching" OR DE "GYMNASTICS coaching" OR DE "HOCKEY coaching" OR DE "HORSEMANSHIP coaching" OR DE "JUDO coaching" OR DE "KARATE coaching" OR DE "LACROSSE coaching" OR DE "LONG-term athlete development" OR DE "RACQUETBALL coaching" OR DE "ROWING coaching" OR DE "RUGBY football coaching" OR DE "RUNNING coaching" OR DE "SCHOOL sports coaching" OR DE "SHOOTING coaching" OR DE "SKIS & skiing coaching" OR DE "SOCCER coaching" OR DE "SOFTBALL coaching" OR DE "SPORTS for children -- Coaching" OR DE "SPORTS for people with disabilities -- Coaching" OR DE "SWIMMING coaching" OR DE "TABLE tennis coaching" OR DE "TENNIS coaching" OR DE "TRACK-athletics coaching" OR DE "VOLLEYBALL coaching" OR DE "WATER polo coaching" OR DE "WEIGHT lifting coaching" OR DE "WOMEN'S sports -- Coaching" OR DE "WRESTLING coaching"	46,091
SI 0	(DE "COACHES (Athletics)" OR DE "AFRICAN American coaches (Athletics)" OR DE "ASSISTANT coaches (Athletics)" OR DE "BASEBALL coaches" OR DE "BASKETBALL coaches" OR DE "BOXING trainers" OR DE "CATHOLIC coaches" OR DE "COLLEGE athletic coaches" OR DE "CRICKET coaches" OR DE "DIVING coaches" OR DE "FENCING coaches" OR DE "FOOTBALL coaches" OR DE "GAY coaches (Athletics)" OR DE "GOLF coaches" OR DE "GYMNASTICS coaches" OR DE "HOCKEY coaches" OR DE "HURLING coaches" OR DE "ICE dancing coaches" OR DE "LACROSSE coaches" OR DE "LGBTQ coaches (Athletics)" OR DE "ROWING coaches" OR DE "RUGBY football coaches" OR DE "SKATING coaches" OR DE "SKI coaches" OR DE "SOCCER coaches" OR DE "SPRINGBOARD diving coaches" OR DE "SWIMMING coaches" OR DE "TENNIS coaches" OR DE "TRACK & field coaches" OR DE "VOLLEYBALL coaches" OR DE "WATER polo coaches" OR DE "WOMEN coaches (Athletics)" OR DE "WRESTLING coaches")	30,777
S9	SI OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8	19,154
S8	goalball* or boccia* or motorsoccer* or "5-a-side Soccer*" or "7-a-side soccer*" or "sitting volleyball*" or "football 5-A-Side*" or "Able Sail*"	303
S7	wheelchair* N3 (basketball* or hockey* or rugby* or soccer* or tennis* or "track and field*" or curling* or fencing* or "road racing" or dance* or bowling*)	2,592

Review of Coach Development Opportunities in Disability Sport

S6	(basketball* or hockey* or cycl* or football* or "martial art*" or judo* or softball* or swim* or tennis* or "track and fied*" or Bocce or bowling* or cricket* or equestrian* or "figure skat*" or "Speed Skat*" or floorball* or soccer* or golf* or gymnast* or handball* or kayak* or canoe* or netball* or powerlift* or "roller skat*" or sailing* or snowboard* or snowshoeing* or skiing* or softball* or triathlon* or biathlon* or volleyball* or curling* or "Waterski Wakeboard*" or shooting* or rowing* or athletics or archery) N3 (blind? or deaf* or disabilit* or disable* or handicap* or adapted or adaptive*)	9,725
S5	((sport* or athlete* or coach*) N3 (disabilit* or disable* or wheelchair* or blind? or deaf* or handicap*)) OR (sport* N3 (adapted or adaptive*))	12,228
S4	parasport* or "para sport*" or paralympi* or "special olympi*" or paraswim* or "para swim*" or parahockey* or "para hockey*" or "para soccer*" or "para rugby*" or "para tennis*" or "para judo*" or "para basketball*" or "para cycl*" or "para ski*" or "para alpine*" or "para snowboard*" or "para table tennis*" or "para canoe*" or "para teakwondo*" or "para triathlon*" or "para athletic*" or "para powerlift*" or "para archer*" or "para row*" or "para badminton*" or "para equestrian*"	6,567
S3	((DE "GOALBALL") OR DE "BOCCIA (Game)" OR DE "MOTORSOCCER" OR DE "NATIONAL Veterans Wheelchair Games" OR DE "WHEELCHAIR basketball" OR DE "WHEELCHAIR bowling" OR DE "WHEELCHAIR dance sport" OR DE "WHEELCHAIR fencing" OR DE "WHEELCHAIR hockey" OR DE "WHEELCHAIR road racing" OR DE "WHEELCHAIR rugby" OR DE "WHEELCHAIR soccer" OR DE "WHEELCHAIR sports competitions" OR DE "WHEELCHAIR tennis" OR DE "WHEELCHAIR track & field")	1,431
S2	DE "ATHLETES with disabilities" OR DE "AUTISTIC athletes" OR DE "BASEBALL players with disabilities" OR DE "BASKETBALL players with disabilities" OR DE "BLIND athletes" OR DE "DEAF athletes" OR DE "SKIERS with disabilities" OR DE "WOMEN athletes with disabilities"	2,336
S1	DE "PARALYMPICS" OR DE "SPECIAL Olympics" OR DE "SPORTS for people with disabilities" OR DE "ARCHERY for people with disabilities" OR DE "BASKETBALL for people with disabilities" OR DE "CRICKET for people with disabilities" OR DE "CYCLING for people with disabilities" OR DE "DIVING for people with disabilities" OR DE "FOOTBALL for people with disabilities" OR DE "GOLF for people with disabilities" OR DE "GYMNASTICS for people with disabilities" OR DE "HANDBALL for people with disabilities" OR DE "HANG gliding for people with disabilities" OR DE "HOCKEY for people with disabilities" OR DE "MARTIAL arts for people with disabilities" OR DE "MOTORCYCLING for people with disabilities" OR DE "MOTORSOCCER" OR DE "ROCK climbing for people with disabilities" OR DE "RUGBALL" OR	8,523

Review of Coach Development Opportunities in Disability Sport

DE "RUNNING for people with disabilities" OR DE "SHOOTING for people with disabilities" OR DE "SKATING for people with disabilities" OR DE "SKIING for people with disabilities" OR DE "SKYDIVING for people with disabilities" OR DE "SNOWSHOEING for people with disabilities" OR DE "SOCCER for people with disabilities" OR DE "SOFTBALL for people with disabilities" OR DE "SPORTS for children with disabilities" OR DE "SPORTS for people with mental disabilities" OR DE "SPORTS for people with visual disabilities" OR DE "SURFING for people with disabilities" OR DE "SWIMMING for people with disabilities" OR DE "TENNIS for people with disabilities" OR DE "VOLLEYBALL for people with disabilities" OR DE "WEIGHT training for people with disabilities" OR DE "WHEELCHAIR sports" OR DE "WINDSURFING for people with disabilities" OR DE "WORLD Games for the Deaf"
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Results: 809 citations retrieved

No limits/filters added.

-Strategy developed by Karine Fournier in collaboration with Diane Culver and Maji Shaikh,
University of Ottawa, ON, Canada
May2020

Appendix C: Selected Records

- Crisp, P. (2019). Inclusion and SEN coaching: How accelerated learning and 'workplace' immersion can help develop core sport coaching skills. *Support for Learning*, 34(3), 326–339. <https://doi.org/10.1111/1467-9604.12260>
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Appendix D: Summaries of literature

Summaries of Research Question 1

Summary Competitive Youth and High School

Townsend, Cushion and Smith (2018) used a multi method to study the impacts of a one-off (1-2 days), impairment-specific CDO using a critical disability lens. The coach participants tended to be deceived by their previous 'unstructured' experiences working with athletes with autism, with prior knowledge leading to the perpetuation of problematic discourses (e.g., disablism) about coaching athletes with autism.

An evaluation of one-off CDO using the Teaching Games for Understanding (TGfU) pedagogy in a PE Higher Education setting (Jarret, 2014). The TGfU approach was applied in a 90-minute wheelchair rugby class. The CDO was effective in helping coaches learn through thinking, doing, listening, and speaking about adapted sport; something that the authors felt should increase their confidence for more inclusive practices.

Summary Non-Competitive Contexts

In 1990 Daquila studied coaches' opinions (n = 48, 6 males) toward conducting physical activities with special needs athletes before and after participating in a one-day CDO, and then coaching in the 8-week Special Olympics Developmental Sports Program. Confidence was enhanced after the CDO but fell off after the 8-week program delivery. Authors noted that the lack of on-going support likely contributed to this.

Hitt (2005) sought feedback from the coaches of a youth disability sport program who were exposed to a manual produced for coaching SN youth. While the descriptions of different disabilities and strategies for working with children of all abilities were deemed helpful, the coaches requested more training on specific strategies.

Crisp (2019a, b, and c) published 3 studies about the same CDO in a HEI with student-coaches who participated in a 1-year placement where they worked with special education needs and people with disabilities. The findings of these three studies were that the CDO: (a) allowed them to reflect more on their feet and therefore push their learning and development as coaches, (b) afforded the participants consistent engagement with the practice of coaching, encouraging reflection; and that coaching participants with a variety of disabilities made them reflect, react, and consider different approaches to their practice; and finally (c) that taking charge of disability sports sessions provided related to their own enjoyment of sport, and the physical nature of participating in sport related activities.

Summaries of Research Question 2

What barriers and facilitators do coaches in disability sport encounter when accessing CDOs?

Review of Coach Development Opportunities in Disability Sport

Summary High-Performance/Elite/Paralympic

Davey (2014) interviewed six sailing coaches from a Canadian NSO. The study found CDO curriculums primarily designed for able-bodied sport, leading coaches to feel unprepared to work in the disability context.

In a study by Wareham (2018) with twelve Australian coaches, found CDO curriculums lacked information related to disability for swimming, athletics, cycling, canoeing, triathlon, equestrian sport, and wheelchair basketball. The coaches focused on attaining knowledge of the physical and biomechanical adaptations. Coaches also attributed to social factors (e.g., stigma, exclusion) for the lack of disability-specific content in most training courses.

Tawse (2011) looked at four wheelchair rugby coaches in Canada (3 former wheelchair rugby athletes), the authors found that none of the coaches had formal education in the sport. The coaches heavily relied on their able-bodied sporting experiences, experiential and practical knowledge, and observing teams at tournaments.

In a survey study with 155 coaches from disability-sport NSOs, the authors found that the primary reason for coaching disabled athletes was previous experience as coach or family member was active in disabled sport; most coaches had taken majors in phys-ed, recreation, and/or special education, but no education specific to disability sport (Depauw & Gavron (2012).

Facundo et al., (2019) surveyed professional summer sport coaches' educational pathways. The authors' found 97,1% (n=34) of participants had phys-ed bachelor degrees, in which 65,7% (n=23) had disability specific courses while 42,9% of participants did internships within parasport organizations. 65,7% (n=23) enrolled in applied graduated studies and 22,9% (n=8) in research-focused graduated studies.

A study with coaches of wheelchair (n=22) and stand-up basketball (n= 21), Robbins (2004) found participants learning from athletes, other coaches, their athletic careers, player camps, on-the-job, books, media, school, and family. Wheelchair coaches spoke more than stand-up basketball coaches on learning from a variety of on-court experiences.

Oh et al. (2007) did a case study with one expert wheelchair rugby coach and found their sources of knowledge to be from mentoring, playing experience, and trial and error.

Gregan et al. (2007) examined the career evolution and knowledge of six coaches of Paralympic swimmers. They found all coaches began coaching mainstream swimming and followed similar pathways to become elite coaches. The authors reported athlete's inputs as a major source of learning.

Douglas (2018) looked at the pathways of five former Paralympic athletes who became coaches of individual and team sports. All coaches reported learning from a variety of sources, including personal experiences as athletes and coaches, peer coaches, CDOs, and mentors. All participants discussed the positive impact their athletic careers had on their evolution as coaches.

Review of Coach Development Opportunities in Disability Sport

Taylor et al., (2014) examined one parasport coach who had coached full time in parasport for more than 15 years, at all levels. They found the influence of coach's parents and early exposure to persons with disabilities, the importance of his formal education in physical education and the numerous situations and individuals he sought out.

Wareham et al., (2017) looked at 12 Australian Paralympic and elite coaches of swimming, athletics, cycling, canoeing, triathlon, equestrian sport, and wheelchair basketball. The coaches faced less issues than anticipated to learn disability specific knowledge and relied on their athletes' self-awareness and knowledge of their own physical capabilities.

Patatas, (2016) examined 17 para-taekwondo coaches in Brazil. The coaches reported limited knowledge of the para-taekwondo movement, had lack of professional training, and lack of training specific to working with disabled athletes.

In studies by Taylor (2015, 2016), with four parasport coaches working in Canada, their ongoing interactions with collaborators and reflection were crucial in developing their practice.

Fairhurst et al. (2017) looked at six Paralympic coaches and found mentoring relationships helped these coaches learn highly specialized technical skills for coaching disability sport knowledge that was perceived to be sustainable in use over time.

Summary University/Collegiate

Douglas (2016) examined the knowledge sources of two basketball coaches: one wheelchair and one standing. While mentioning similar sources the importance of these sources differed. For the wheelchair coach family, playing experience, formal education and mentoring were most important.

Summary Competitive Youth and High School

McMaster et al., (2012) interviewed 5 coaches working in Canada from different disability sports and found that all had access to CDOs in disability sport at a general level, and some had funding from their sport organization. Tennis and wheelchair rugby both had sport specific CDOs.

An adapted sailing coach's lifelong learning process of the coach included learning from others like her parents, peer coaches, teachers, and athletes with disabilities (Duarte, 2014). Because CDOs were so scarce, she collaborated often with others in developing CDOs (e.g., coach manual, guidelines, etc.) for coaches and volunteers. Another study examined knowledge sources of five coaches of different sports for the disabled, McMaster (2012) found the coaches found NCCP training was rudimentary and non-specific to disability sports, lacking application opportunities, and mostly attended by coaches of AB sport. They desired information about specific disabilities, technical issues of the wheelchair, and athlete differences in mobility. Learning form interactions was noted as of high value,

Lepage et al.'s (2020) study with five parasport coaches working in Canada reported the lack of CDOs in their specific sport, and the need to adapt able-bodied knowledge. The four main sources of learning included mentorship, community of practice, trial and error, and internet

Review of Coach Development Opportunities in Disability Sport

resources (e.g., online videos). The acquisition of their coaching knowledge in youth parasport was facilitated by their own experiences as former athletes, and their staff members' knowledge that complemented coaches' current knowledge.

Summary Non-Competitive Contexts

Duarte et al. (2020) mapped the wheelchair curling coach landscape in Canada based on interviews with 16 coaches about their learning pathways. Wheelchair curling specific CDOs were desired as the coaches attended mainly able-bodied CDOs. They particularly valued access to knowledgeable people such as national team program coaches. Flores and colleagues (2012) sought to understand the attitudes of 36 coach developers (34 with a graduate degree) related to preparing youth sport coaches to work with athletes with a hidden disability. The coach developers felt these athletes should be served, but that they underprepared and required additional resources to effectively teach coaches how to do this.

Summary Special Needs Contexts

Macdonald et al. (2016) interviewed 45 Special Olympics coaches about their knowledge sources. Learning by doing and consulting coaching peers were the most mentioned actual sources, while ideal sources included structured coaching courses, learning from mentors and from administrative support.