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Aitchison, Beth; Rushton, Alison B; Martin, Paul; Barr, Marc; Soundy, Andrew; Heneghan, Nicola R

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The experiences and perceived health benefits of individuals with a disability participating in sport: a systematic review and narrative synthesis

Authors

Beth Aitchison MRes[1], bethaitchison4@gmail.com

Alison B Rushton EdD[2], arushto3@uwo.ca

Paul Martin MSc[3], paul.martin@eis2win.co.uk

Marc Barr MSc[1], marc.barr@eis2win.co.uk

Andrew Soundy PhD[1] a.a.soundy@bham.ac.uk

Nicola R Heneghan PhD[1] n.heneghan@bham.ac.uk

Address

[1]School of Sport, Exercise and Rehabilitation Sciences, College of Life and Environmental Sciences, University of Birmingham, Birmingham, UK.

[2]School of Physical Therapy, Western University, London, Ontario, Canada.

[3]English Institute of Sport, the Manchester Institute of Health and Performance, Manchester, UK.

Corresponding author:

Dr Nicola R Heneghan;

n.heneghan@bham.ac.uk

+44 (0) 121 415 8367

School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Edgbaston, Birmingham, UK. B15 2TT

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Abstract

Background: Sports participation has many physical and mental health benefits for individuals with a disability including improved functionality and reduced anxiety, yet a large proportion of individuals with a disability are inactive.

Objective: To investigate the experiences and perceived health benefits of sport participation across four disability populations: children and adolescents, adults, elite athletes and veterans with a disability.

Methods: A mixed-methods systematic review was conducted. Eligible studies had participants who were children, adults, elite athletes or veterans with a physical, visual or intellectual disability. Data were extracted using the Joanna Briggs Institute (JBI) tool and quality assessment involved the Quality Assessment Tool for Studies with Diverse Designs (QATSDD). Content, thematic and narrative synthesis techniques were used. Confidence in cumulative evidence was determined using GRADE-CERQual and Classes of Evidence.

Results: Several positive aspects of sport participation were highlighted across all four populations, including socialisation opportunities, pure enjoyment, a sense of freedom and providing an arena to challenge stereotypes. The paucity of research within the 'veterans with a disability' group limited analysis of experiences and benefits of sport in this population.

Conclusions: This systematic review was the first to explore this phenomena, finding that overall sport is a beneficial experience for individuals with a disability. The positive aspects should be promoted when encouraging sport participation for children, adolescents, adults and elite athletes. More research is needed to explore these phenomena in veterans and to compare perceived benefits between populations to enable tailored promotion of sport.

~~**Objective:** To investigate the experiences and perceived health benefits of sport participation across four disability populations: children and adolescents, adults, elite athletes and veterans with a disability.~~

~~**Methods:** A mixed-methods systematic review was conducted. Eligible studies had participants who were children, adults, elite athletes or veterans with a physical, visual or intellectual disability. All study designs were included and participants' experiences and perceived health benefits of sport participation were evaluated. Two authors independently undertook the searching of several sources, study selection and quality assessment. Data were~~

~~extracted based on the Joanna Briggs Institute (JBI) data extraction tool and quality assessment was carried out using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD). Thematic synthesis and narrative synthesis were employed to analyse qualitative and quantitative studies respectively. Content analysis enabled analysis of perceived health benefits. Confidence in cumulative evidence was determined using GRADE-CERQual and Classes of Evidence.~~

~~**Results:** Several positive aspects of sport participation were highlighted across all four populations, including socialisation opportunities, pure enjoyment, a sense of freedom and providing an arena to challenge stereotypes. The paucity of research within the 'veterans with a disability' group limited analysis of experiences and benefits of sport in this population.~~

~~**Conclusions:** This systematic review was the first to explore this phenomena, finding that overall sport is a beneficial experience for individuals with a disability. The positive aspects should be promoted when encouraging sport participation for children, adolescents, adults and elite athletes. More research is needed to explore these phenomena in veterans and to compare perceived benefits between populations to enable tailored promotion of sport.~~

Key words: disability, sport, para-sport, health

Introduction

Physical activity guidelines exist to promote health and wellbeing, described as ~~is~~ any body movement requiring energy expenditure, such as dancing and walking [1]. ~~Sport is any~~Where a physical activity involves~~ing~~ physical exertion (with or without a game or competition element~~), where~~ and skills and physical endurance are either involved or improved, this is termed as sport [1]. Sports participation provides individuals with a disability the opportunity to experience the many associated health benefits of physical activity, including increased fitness, functionality and socialisation opportunities [2-5].

Despite these benefits, almost half (40%) of adults with a disability are inactive (<30 mins/week of physical activity) in the UK, with similar figures reported in the USA (44.3%) [6-8]. Individuals with a disability also have higher rates of chronic disease than those without a disability (>40% vs. <14%), further highlighting the importance of being physically active [6]. Considering specific populations, ~~In children and young people,~~ low physical activity ~~levels~~ and high sedentary levels have been reported in children and young people with a disability, ~~with these individuals also being~~ and literature indicating lower levels of activity than ~~less active than~~ their non-disabled peers [8-14]. At the elite level, a steady growth in Paralympic Games participation and investment has been observed [15-17] although ~~.~~ ~~Nevertheless, a~~limited to small body of elite para-sports and ~~exists, with~~ with limited research exploring para-athlete experiences of sport. For veterans with a disability, ~~P~~participation in sport camps and competitions has been shown to improve ~~the~~ quality of life ~~of veterans with a disability~~, aid~~ing~~ rehabilitation and increas~~eing~~ self-confidence [18,19].

The need to explore the lived experiences of sport specifically has been suggested previously, hence this being ~~our focus~~the focus of this review [19]. Exploration of the experiences and perceptions of sport may help to better understand the beliefs and feelings surrounding sport

and the role it plays in the lives of individuals with a disability. Investigating and comparing the experiences and perceived health benefits will provide insights into how these phenomena differ across the four population groups mentioned above: children/adolescents, adults, elite athletes and veterans with a disability. This may help to inform ~~approaches~~ tailored approaches to each population to promote sport, increasing activity rates and the associated health benefits experienced by individuals with a disability.

~~The need to consider the key differences that exist between 'sport' and 'physical activity' has been suggested, hence our focus on experiences of sport [19]. At the elite level, a steady growth in Paralympic Games participation and investment has been observed [15-17]. Nevertheless, a small body of elite para-sport exists, with limited research exploring para-athlete experiences of sport.~~

~~Exploration of the experiences and perception of sport may help to better understand the beliefs and feelings surrounding sport and the role it plays in the lives of individuals with a disability. Investigating and comparing the experiences and perceived health benefits will provide insight into how these phenomena differ across the four population groups. This may help to inform approaches tailored to each population to promote sport, increasing activity rates and the associated health benefits experienced by individuals with a disability.~~

~~Therefore, the~~The aim therefore of this study was to explore and understand the sport experiences and perceived health benefits of sport across four different populations: children and adolescents, adults, elite athletes and veterans with a disability.

Materials and methods

A systematic review was conducted according to a pre-defined and published protocol,[20] registered with the International Prospective Register of Systematic Reviews (PROSPERO

registration number: CRD42020169224). This systematic review is reported in accordance with the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) 2009 checklist and supplemented by the Enhancing Transparency in Reporting the synthesis of Qualitative research (ENTREQ) (Supplementary file1) [21,22].

Theoretical framework and study design

Subtle realism underpinned this review which considers that several valid, non-contradictory explanations exist for the same phenomena as different individuals experience phenomena in different ways [23-25]. The mixed-methods research design ensured all available, relevant studies were retrieved, enabling a comprehensive synthesis of evidence [26].

Eligibility criteria

Eligibility criteria were informed using the Sample, Phenomenon of Interest, Design, Evaluation and Research (SPIDER) concept [27]. To be eligible, studies had to meet the following eligibility criteria:

Sample: *Inclusion criteria:* Individuals with a physical, visual or intellectual disability who participated in sport competitively or recreationally. In terms of each population, children and adolescents were participants 17 years old and younger; adults were participants over 18 years of age; elite athletes were participants of international standard or were a member of a national team; and veterans were (former) members of the armed forces. Each participant must have been participating in sports or sport camps which were >6 months in duration.

Exclusion criteria: Studies with individuals that were disabled because of old age or a medical condition in isolation (e.g. diabetes) were excluded. Special Olympics participants were analysed as adults or children and adolescents as there are no qualifying times for international competition and selection is random, so were not classed as elite athletes.[29-31] There was no age limit on participants. Studies with participants who took part in sport programmes <6 months in duration were excluded because this was not determined to be continued participation in sport. Studies that explored participants' competition experiences were excluded as this only addresses one moment in time, not continued sport participation. Studies that included forms of physical activity (e.g. walking, yoga) were excluded where it was not possible to distinguish participants involved in sport and those involved in physical activity.

Phenomenon of interest: The experiences of individuals with a disability participating in sport, where experiences include aspects such as the meaning of sport, the support for participation, being part of a team sport and the barriers and facilitators. The second phenomenon of interest was the perceived health benefits of sport, both physical and mental, which included an individual's self-reported benefits and comments suggesting the benefits of sport, e.g. increased fitness, weight management.

Design: All types of study designs were included, except reviews. Only studies in English were included. Studies not in English were excluded.

Evaluation: Any reported experiences or health benefits of participating in disability sport were explored.

Research type: Mixed-methods research.

Information sources and search strategy

Six online databases were searched from database inception until 29th February 2020. They included: Medline, EMBASE, PyschINFO, Web of Science, CINAHL Plus and SportDiscus. Grey literature sources, including OpenGrey, British Library EThOS and Explore the British Library, were searched up to February 2020 using specific key words. The following journals were hand-searched to complement the search strategy: *Qualitative Research in Sport, Exercise and Health, Psychology of Sport and Exercise, Disability and Rehabilitation, British Journal of Sports Medicine, European Journal of Sports Science* and *International Journal of Sports Science*. The references of included studies were screened to further supplement the search. The lead author (BA) and second reviewer (MB) carried out the searches independently using a search strategy which in the main was consistent across all databases, with specific search terms adjusted to reflect database-appropriate syntax [31]. The search strategy was pre-planned and comprehensive, aiming to seek all available studies (Medline search strategy in supplementary file 2).

Study selection

BA and MB independently screened potential studies using the eligibility criteria. If it was clear from the title and abstract that the content was not relevant to the objectives, the study was excluded. Full-text copies of potentially relevant studies were obtained and screened for inclusion. Articles were excluded if a full-text copy was not available. A complete dual review approach was used as two researchers screened all studies at the title and abstract stage and the full text stage, reaching a consensus on included studies after each stage [32]. This increased the identification of relevant studies, making the process more comprehensive [32,33]. Endnote was used for data management and reference storage [34].

Data collection process

Data were extracted from included studies by BA and checked for accuracy by MB, based on the standardised qualitative data extraction tool from the Joanna Briggs Institute [35]. The tool was piloted on five studies prior to data extraction and was modified to include a section for study design, reflecting the variation in study designs included in the review.

Quality Assessment

The Quality Assessment Tool for Studies with Diverse Designs (QATSDD) was used to determine a quality score for all included studies [36]. BA graded the studies and scores were checked by MB. This tool is suitable for mixed-method designs as it allows an in-depth understanding of included studies and has positive feedback regarding comprehension of the tool and ease of application [36,37]. The QATSDD has good inter-rater reliability (71.5%) and test-retest reliability (51.7-100%), further supporting its use in this review [36]. Additional information was sought from some authors, such as interview topic guide and clarification of population demographics, enabling fair quality assessment. A follow up email was sent after 10 days, with the author given a further 10 days to reply. If there was no reply, the information provided was insufficient or was not available in English due to the study being written in another language, the study was score 0 for that criterion.

Data synthesis

There was considerable heterogeneity in study designs in this review due to the inclusion of all study types, therefore specific analysis methods were employed for each design. Mixed-method studies were analysed according to the relevance of the data to the review objectives. Studies

and participants were grouped into population categories, with some present in more than one category due to mixed participant characteristics. If over 70% of a sample or the mean age of a sample matched a certain category, the whole study was assigned to that category if identification of individual participants could not be determined. Stakeholder meetings (BA, NH, AR, AS, PM) allowed discussion of concepts, contributing to theme and sub-theme generation.

Qualitative studies were analysed using thematic synthesis [38]. All text under the headings 'results' or 'findings' was coded line-by-line according to its content and meaning. Translation of concepts and ideas enabled comparison between studies whilst still preserving the meaning of single studies [39]. A bank of codes was created which were refined and grouped into descriptive themes, following which analytical themes were created [38,39].

For the quantitative studies, the stages of narrative synthesis were modified slightly when analysing them due to the small number of studies in each population category, affecting the exploration of relationships [40]. Preliminary synthesis enabled an initial description of studies which was tabulated due to the inability to generate themes. An integration matrix juxtaposed the quantitative findings against the themes and sub-themes generated from the qualitative studies, enabling comparisons [41].

Content analysis enabled the coding of qualitative health benefits and a quantitative count of the code frequency, analysing perceived health benefits of sport [42-44]. Two main categories were created: physical health benefits and mental health benefits. For each population, reported benefits were tabulated, coded and given a frequency score [43, 45].

Confidence in cumulative evidence

The 'Grading of Recommendations Assessment, Development and Evaluation' – 'Confidence in the Evidence from Reviews of Qualitative research' (GRADE-CERQual) was used by BA to determine how much confidence to place in the findings from qualitative studies and qualitative component of mixed-method studies [46]. This tool provides a transparent, systematic framework that increases the usability of the findings [46]. Classes of Evidence (CoE) were used to rate the quality of evidence and risk of bias for quantitative studies and the quantitative component of mixed-method studies [47].

Results

Study selection

Thirty nine studies (n=39) met the eligibility criteria to be included. The PRISMA flow diagram detailing the number of included and excluded studies is detailed in Figure 1. There was 100% agreement achieved between BA and MB at the full-text stage.

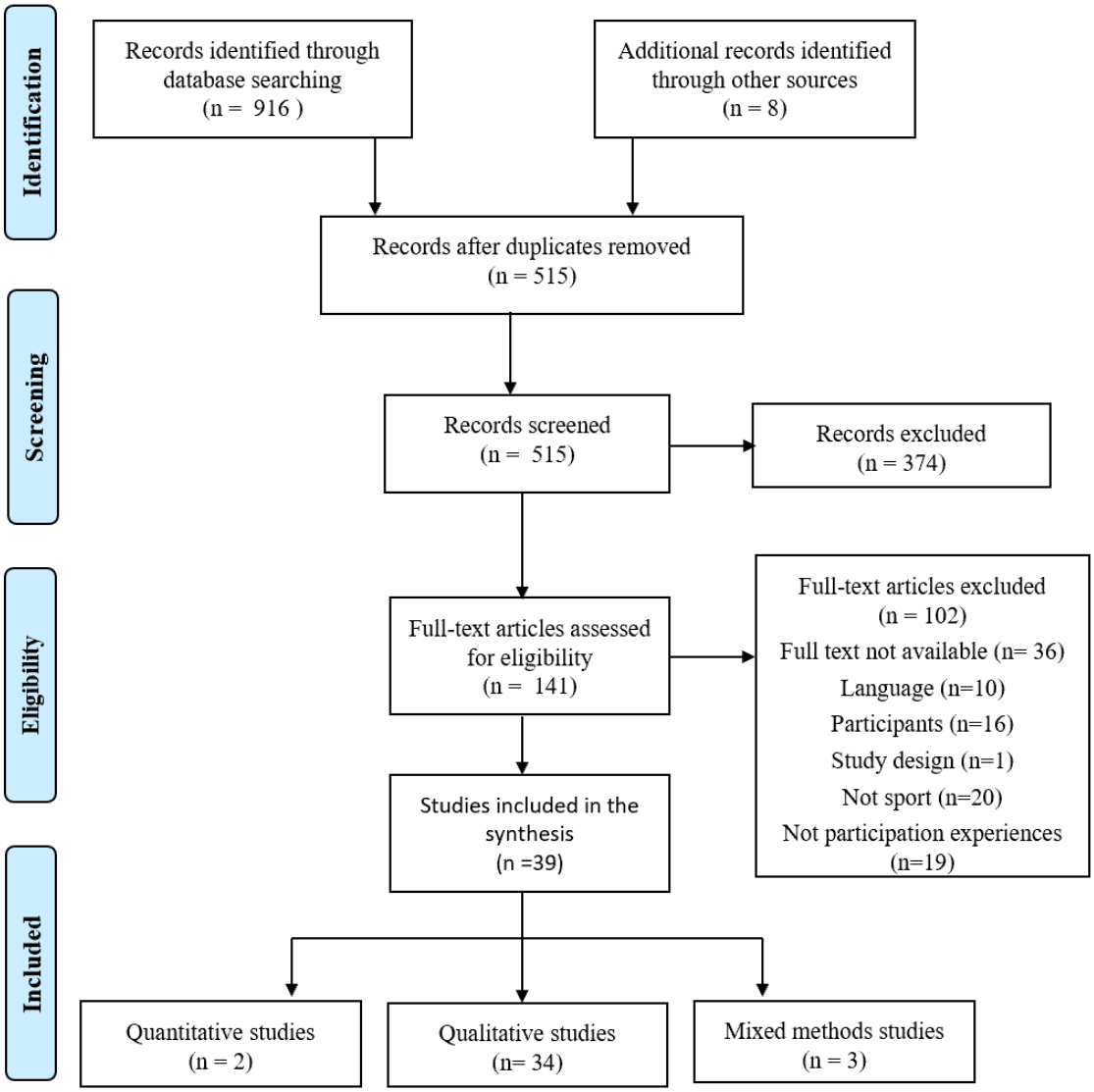

Figure 1: PRISMA flow diagram.

Study characteristics

Of the 39 included studies, 34 were qualitative, 2 were quantitative and 3 were mixed-methods. Of the 3 mixed-methods studies, the qualitative and quantitative components of 2 were relevant to the study objectives, and the qualitative component of the third study was relevant. A summary of data extracted from each study can be found in Table 1.

Quality assessment and confidence in cumulative evidence

A summary of the quality score and converted percentage score for each study using the QATSDD is provided in Table 2, enabling the quality of a study to be considered alongside its results. The GRADE-CERQual assessment determined there to be high confidence in 10 of the findings, moderate confidence in 4 and low confidence in 2 (Supplementary file 3). The CoE determined the risk of bias of quantitative studies, of which 3 were high risk and 1 was moderately high risk (Supplementary file 3).

Table 1: Data extracted from included studies

Study	Population	Study design	Participants	Phenomenon of interest	Data collection	Data analysis
Arnold et al., 2017 [48]	EA	Qualitative	10M/8F Aged 17-39	The organisational stressors that athletes with a disability encounter.	Interviews.	Systematic procedures and grounded theory followed.
Aujla, 2019 [49]	C/A	Qualitative	4F (and 4 parents) Aged 15-16	The experiences and outcomes of an inclusive dance talent development programme and how such outcomes were facilitated.	Interviews and focus groups	Content analysis
Aytur et al., 2018 [50]	C/A	Qualitative	14M/1F Aged 9-16	The meaning given to the competitive sports experience by youth athletes with disabilities, and the outcomes, barriers and enablers associated with their participation.	Photovoice method and focus group	Template method
Bantjes et al., 2019 [51]	A	Qualitative	17M/5F Aged 18-67	The participation experiences of a group of athletes in competitive disability sport in South Africa and the ways they talk about issues of identity and self- representation in the context of elite disability sport.	Interviews	Thematic analysis
Barfield and Malone, 2013 [5]	C/A and A	Mixed-methods	19M/6F Mean age 28.	The perceived benefits and barriers to exercise among power wheelchair soccer players.	Survey and scale	Ranked responses and non-parametric tests
Bates et al., 2019 [52]	C/A and A	Qualitative	2M/1F Aged 12-22 (3 coordinators)	The team's experiences of wheelchair basketball and team membership.	Interviews and observational and participatory fieldwork	Identification and synthesis of key themes from the data collected
Bowers et al., 2016 [30]	A	Qualitative	15 (11 family members, 6 non-athletes, 7 family members of non-athletes, 8 staff members) From SOPHIE study: 58.2%M / 42.8%F Average age: 33 years.	The experiences and perspectives of people with intellectual disability, their families and the staff who work with them, about Special Olympics Ireland	Focus groups and interviews	Thematic analysis
Brittain, 2002 [53]	EA	Qualitative	9M/3F Aged 17-42	The factors that have an effect upon the lives of elite athletes from the time they first took up the sport of athletics to the present day.	Interviews	Critical approach

Carin-Levy and Jones, 2007 [54]	A	Qualitative	3M Aged 33-53	The psychological and social benefits of scuba diving as a recreational sport for people with physical impairments.	Interviews	Model suggested by Dey 1993

Carter et al., 2014 [55]	C/A	Qualitative	37 children Aged 3-13 (12 family members, 14 stakeholders)	Experiences and perceptions of 'The Cheetahs' and what benefits occur as a result of bringing children with disabilities and children without disability together	Observation, photographs, interviews and focus groups.	Thematic analysis
Cote-Leclerc et al., 2017 [56]	A	Mixed-methods	25M/9W Aged 18-62	The influence of adapted sport on quality of life in adult wheelchair users.	Questionnaires and interviews	Statistical analysis and thematic content analysis
Dashper, 2010 [57]	EA	Qualitative	3M/2F Aged: 19-42	The embodied, gendered experiences of disabled horse riders.	Interviews	Social model of disability
Foster, Fitzgerald and Stride, 2019 [58]	EA	Qualitative	2M/2F Aged 24-45	The experiences of 4 deaf athletes who have competed in the Deaflympics and their socialisation into sport.	Interviews	Constant comparison method
Garci and Mandich, 2005 [59]	EA	Qualitative	10M/6F Age unknown	The meaning given to participating in elite-level wheelchair basketball by athletes with lower extremity physical disabilities.	Interviews and observations	Data coded for themes. Comparative analyses
Goodwin et al., 2009 [60]	A	Qualitative	10M/1F Aged 22-48	The sense of community among WR players, how the sense of community is experienced and what gives meaning to that experience	Focus groups and photographs	Thematic analysis
Grandisson, Tetreault and Freeman, 2011 [61]	C/A	Qualitative	6M/5F Aged 12-19 (20 parents, 9 non-sport children, 39 staff)	The factors associated with the integration of adolescents with intellectual disability in sports alongside their non-disabled peers	Interviews, questionnaires and discussion group	Content analysis
Green, 2013 [62]	V	Qualitative	9M/2F Age range 20-50	How participation in adaptive sport may contribute to personnel adapting their identity and re-establishing their meaning of life post-traumatic injury	Interviews	Interpretative phenomenological analysis
Haslett, Fitzpatrick and Breslin, 2017 [63]	A and EA	Qualitative	10M Aged 22-53	The interplay of individual and societal facilitators and barriers to participation in wheelchair rugby.	Interviews	Thematic analysis
Huang, 2005 [64]	EA	Qualitative	11M/10F Aged 22-60	The experiences of elite male and female athletes in Taiwan and Britain	Interviews and documentary research	Immersion/crystallisation

Hudson et al., 2018 [65]	A	Qualitative	7M/1F Aged 24-51	Experiences of individuals with learning disabilities in secure settings engaged in community football training programmes and identify the benefits of such provision	Interviews	Template analysis undertaken
Jaarsma et al., 2014 [66]	EA	Quantitative	30M/46F Mean age 30.5	The barriers and facilitators of sports in Dutch Paralympic athletes with a physical disability.	Questionnaire	Statistical analysis
Jeffress and Brown, 2017 [67]	C/A, A and EA	Qualitative	23M/11F Aged 10-52	The experiences of power soccer players with disabilities and to examine the perceived opportunities and benefits of their involvement with power soccer.	Interviews	Thematic analysis
Kirkby, 1995 [68]	A	Quantitative	16M/20F Mean age 21.3 (21 non-disabled)	The motives and reinforcements for participation in wheelchair netball and the role of a sport psychologist.	Questionnaire	Statistical analysis
Kristen, Patriksson and Fridlund, 2002 [69]	C/A	Qualitative	13M/7F Aged 9-15	The conceptions of children and adolescents with physical disabilities about their participation in a sports programme	Interviews	Phenomenographic data analysis
Litchke et al., 2012 [70]	C/A and A	Qualitative	5M Aged 17-35	How a group of athletes perceived participation in WR as impacting their lives.	Interviews, observations and field notes	Phenomenological reduction
Macbeth, 2009 [71]	A	Qualitative	6M Aged 26-40	The challenges and constraints faced by partially sighted individuals when accessing football opportunities.	Interviews	Thematic analysis
Powis, 2017 [72]	EA	Qualitative	15M Aged 18-54	The lived experiences of the England VI cricket team and their experiences of playing VI cricket	Interviews, observation and soundscape elicitation	Thematic analysis
Richardson et al., 2017 [73]	A and EA	Qualitative	14M/2F Aged 18-40	The impact of sport on psychosocial health in developing countries.	Interviews	Thematic analysis
Sayed Ahmed et al., 2018[74]	C/A	Qualitative	19 (11 parents, 9 children). Children = 5M/6F. Aged 6-14.	The perceived factors impacting participation in sports according to children with limb absence and their parents.	Interviews	Thematic analysis
Seth and Dhillon, 2019 [75]	A	Qualitative	8F Aged 18-21 (8 non-disabled)	The experiences of 2 groups of female athletes - those with and without disability - who participate in sport	Interviews	Thematic analysis

Silva, 2013 [76]	A and EA	Qualitative	20M/12F Age range 15-65 (5 staff)	The impact of sitting volleyball participation on the personal capabilities of athletes with impairments and the influence of personal, cultural and environmental contexts of participation on capabilities.	Interviews	Interpretative phenomenological analysis.
Stephens, Neil and Smith, 2012 [77]	A	Qualitative	6M/1F Aged 26-49	The perceived benefits of becoming involved in sport and identifies the barriers to participation for individuals with spinal cord injury.	Interviews	Inductive generalisation and frequency analysis
Stillson, 2007 [78]	A and EA	Qualitative	9M/2F Aged 20-54	Perceptions of wheelchair athletes concerning involvement and continuing participation in wheelchair sports.	Interviews and observations	Analysed for themes and concepts
Swartz, Bantjes and Bissett, 2018 [79]	A	Qualitative	1M/3F Aged 18-29	How do university students with VI at a SA university experience their inclusion in ballroom dance with sighted students.	Interviews	Thematic analysis
Swartz et al., 2018 [80]	A	Qualitative	16M/6F Aged over 18	How athletes with disabilities talk about their experiences of participating in competitive sport in South Africa.	Interviews	Thematic content analysis.
Weiss et al., 2017 [81]	C/A and A	Qualitative	1M/4F Aged 13-33	The experiences of participating in Special Olympics from the perspectives of athletes with ID.	Photo-elicitation and interviews	Thematic analysis
Wickman, 2015 [82]	C/A and A	Qualitative	5M/5F Aged 16-29	How young people with disabilities make sense of sport.	Interviews	Thematic content analysis
Wilhite and Shank, 2009 [83]	A	Qualitative	7M/5F Aged 29-58	How participating in sport helps persons with a disability achieve and maintain health and health-related components of wellbeing.	Interviews	Cross-case content analysis
Wilson and Khoo, 2013 [84]	EA	Mixed-methods	95M/28F Aged 15-59	The benefits and barriers influencing participation for athletes with disabilities from a developing country.	Questionnaire and focus groups	Statistical analysis and coding of transcripts

Key for Table 1: C/A – children and adolescents. A – adults EA – elite athletes. V – veterans. M – male, F – female.

Table 2: Quality assessment of included studies

Author/Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**Score**	**%**
Arnold et al. 2017	3	2	2	1	3	2	2	2	x	x	0	3	0	0	2	2	24/42	57
Aujla 2019	0	3	3	0	1	2	0	1	x	x	0	3	1	0	0	0	14/42	33
Aytur et al.2018	3	3	3	0	2	3	3	3	x	x	2	3	3	3	0	2	33/42	79
Bantjes, Swartz and Botha, 2018	2	3	3	0	3	1	0	2	x	x	3	3	3	2	0	2	27/42	64
Barfield and Malone 2013	0	2	2	0	2	2	1	1	1	3	1	2	0	0	0	1	18/48	38
Bates et al., 2019	2	1	2	0	1	2	0	1	x	x	3	3	0	3	0	1	19/42	45
Bowers et al. 2016	0	3	3	0	3	2	0	2	x	x	2	3	0	0	2	2	22/42	52
Brittain 2002	3	3	3	1	3	3	3	3	x	x	2	3	3	0	0	2	32/42	76
Carin-Levey and Jones 2007	3	3	3	1	1	2	2	1	x	x	3	3	0	0	0	2	24/42	57
Carter et al. 2014	3	3	3	0	3	2	1	0	x	x	3	3	1	0	0	0	22/42	52
Cote-Leclerc et al. 2017	0	3	2	0	3	3	2	1	2	3	0	3	0	3	1	3	29/48	60
Dashper 2010	3	2	2	0	1	1	0	0	x	x	0	2	0	0	0	1	12/42	29
Foster, Fitzgerald and Stride, 2019	0	3	3	1	2	1	0	2	x	x	0	3	0	0	0	0	15/42	36
Garci and Mandich, 2005	0	2	2	0	3	2	0	2	x	x	0	3	0	0	0	0	14/42	33
Goodwin et al., 2009	1	3	2	0	1	2	0	1	x	x	0	3	0	3	0	2	18/42	43
Grandisson, Tetreault and Freeman, 2011	2	3	2	0	3	2	1	3	x	x	0	2	1	3	2	3	27/42	64
Green, 2013	3	3	3	3	2	3	3	3	x	x	3	3	3	2	0	2	36/42	86
Haslett, Fitzpatrick and Breslin, 2017	3	3	2	0	1	2	0	1	x	x	3	3	1	2	2	2	25/42	60
Huang, 2005	3	2	3	3	3	3	3	2	x	x	2	3	3	0	0	0	30/42	71
Hudson et al. 2017	0	1	3	0	2	2	0	3	x	x	3	3	1	1	0	2	21/42	50
Jaarsma et al. 2014	3	3	3	0	3	2	2	1	1	3	x	3	0	x	0	2	26/42	62
Jeffress and Brown 2017	3	3	3	0	3	3	2	1	x	x	0	3	0	0	0	0	21/42	50
Kirbky 1995	0	1	1	0	2	2	0	3	0	2	x	2	0	x	0	1	14/42	33
Kristen, Patriksson and Fridlund, 2002	3	3	2	0	3	3	2	2	x	x	0	3	2	1	0	3	27/42	64
Litchke et al., 2012	3	3	3	0	2	2	1	1	x	x	3	3	2	1	2	1	27/42	64
Macbeth 2009	2	1	2	1	1	1	0	1	x	x	0	3	0	0	0	0	12/42	29
Powis, 2017	3	3	3	0	3	3	3	1	x	x	2	3	3	0	0	1	28/42	67
Richardson et al., 2017	3	3	3	0	3	2	3	2	x	x	0	3	3	0	0	2	27/42	64
Sayed Ahmed et al. 2018	2	3	3	2	2	2	0	2	x	x	3	3	0	1	0	2	25/42	60

Seth and Dhillon, 2019	3	3	3	0	3	2	3	1	x	x	3	3	2	0	0	1	27/42	64
Silva, 2013	3	3	3	0	3	3	3	2	x	x	3	3	2	0	0	3	31/42	74
Stephens, Neil and Smith 2012	0	3	3	0	3	2	0	1	x	x	0	3	0	3	2	2	22/42	52
Stillson, 2007	0	3	3	0	3	3	2	2	x	x	2	3	0	0	0	2	23/42	55
Swartz, Bantjes and Bisset, 2018	3	2	3	0	1	1	0	0	x	x	3	3	0	3	0	0	19/42	45
Swartz et al. 2018	0	2	3	0	3	3	1	1	x	x	3	3	1	2	0	2	24/42	57
Weiss et al. 2017	0	3	3	0	1	2	3	3	x	x	0	3	2	3	0	3	26/42	62
Wickman, 2015	1	3	1	1	2	2	1	2	x	x	0	2	0	0	0	1	16/42	38
Wilhite and Shank, 2009	3	2	1	0	3	2	1	1	x	x	2	3	1	3	0	0	22/42	52
Wilson and Khoo 2013	0	3	3	0	3	2	0	1	0	0	0	1	0	0	1	0	14/48	29

Key for Table 2:

1 - Explicit theoretical framework
2 – Statement of aims/objectives in main body of report
3 – Clear description of research setting
4 – Evidence of sample size considered in terms of analysis
5 –Representative sample of target group of a reasonable size
6 –Description of procedure for data collection
7 – Rationale for choice of data collection tool(s)
8 –Detailed recruitment data
9 –Statistical assessment of reliability and validity of measurement tool(s) QUANT
10 –Fit between stated research question and method of data collection (QUANT)
11 –Fit between stated research question and format and content of data collection tool (QUAL)
12 –Fit between research question and method of analysis
13 – Good justification for analytical method selected
14 – Assessment of reliability of analytical process (QUAL)
15 – Evidence of user involvement in design
16 –Strength and limitations critically discussed

Findings

Figures 2a, 2b and 2c display the themes and sub-themes generated for the children and adolescent, adult and elite athlete population respectively. The perceived health benefits and frequency counts for each of the four populations are displayed in Table 3. Not every study explored health benefits and in those that did, not all participants reported health benefits. Therefore, the frequency counts are low and the analysis was limited. Supportive quotations for the themes and sub-themes are presented in Table 4.

Table 3: Perceived health benefits of participating in sport either directly reported or referred to by participants in the included studies for the four populations

Children and Adolescents				**Adults**			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ strength	2	↑ independence	2	↑ functionality	6	↑ self-confidence	6
↑ muscle mass	1	↑ self-efficacy	1	↑ strength	6	↑self-esteem	5
↑ fitness	3	↑ confidence	3	↑ fitness	9	↑self-efficacy	1
↑ functionality	3	↑ self-esteem	1	↓ infection/illness	2	Stress release	4
↓ infection/illness	1			↑ sleep quality	3	↑ mental health	5
Pain management	1			Disability management	4	↑ independence	5
Weight management	1						
↑ sleep quality	1			↑ muscle mass	1		
				Weight management	4		
Elite athletes				**Veterans**			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ fitness	2	↑ self-confidence	3	Weight management	1	↑ self-esteem	1
↑ strength	2	↑ independence	2	↑ functionality	1	↑ self-confidence	1
Weight management	1	↑ mental health	1	Pain management	1	↑ mental health	1
		↑ self-esteem	3			↑ independence	1
						Stress release	1

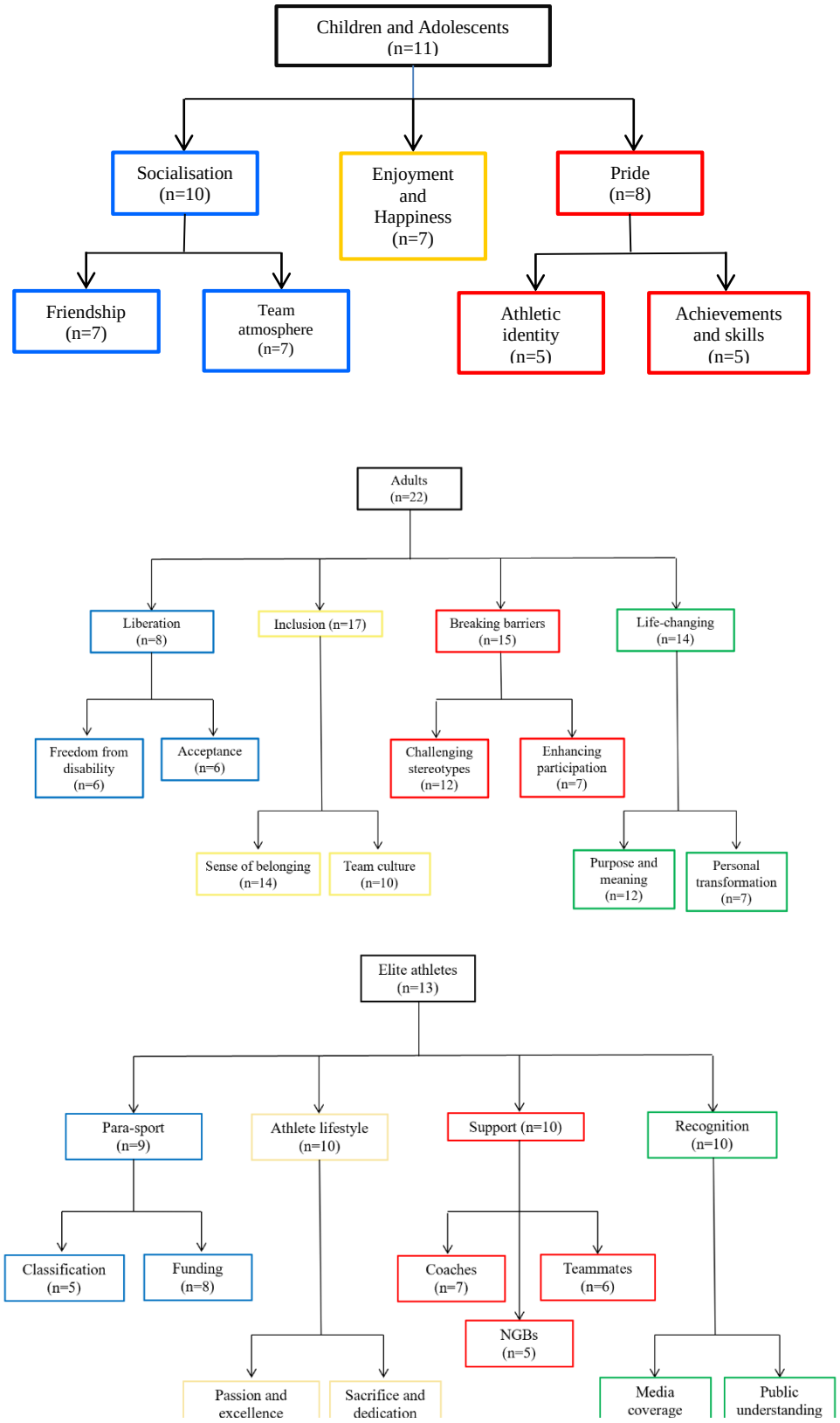

Figure 2: Themes and sub-themes from the children and adolescent, adult and elite athlete populations respectively.

Children and Adolescents

Eleven studies were synthesised under this category, with three themes and four sub-themes generated. The themes were: (a) socialisation, (b) pride and (c) enjoyment and happiness.

Socialisation theme

Socialisation referred to interacting with similar others, making friends, being part of a team and feeling a sense of belonging, demonstrating the social benefits that come with sport participation. Two sub-themes were identified: (a) friendship and (b) team atmosphere.

Friendship sub-theme. The importance of friendship was clearly expressed, including being able to socialise with others and make friends. Friendship formed a big part of their overall experience and was mentioned in seven studies, however some adverse experiences with peers were reported, including receiving negative comments about their disability and sporting ability [49,50,55,60,69,74,81].

Team atmosphere sub-theme. Participants loved being part of a team and enjoyed the team atmosphere. This again highlights how important it was to spend time with others, suggesting that sport facilitates a sense of belonging and inclusion. There were no negative comments made by participants about being part of a team and it was identified in seven studies [50,52,55,67,70,74,81].

Pride theme

Sport elicited feelings of pride, self-esteem and accomplishment, and was demonstrated through tangible achievements and through improving technique. Participants expressed pride

in being an athlete and having an athletic identity. Two sub-themes were identified: (a) athletic identity and (b) achievements and skills.

Athletic identity sub-theme. Participants were proud to be an athlete, enabling them to feel a sense of normality and to be seen as an athlete rather than someone with a disability. They expressed pride in participating in athlete-based activities, such as attending competitions, and having their own sporting equipment. This was identified in five studies [50,60,67,70,81].

Achievements and skills sub-theme. Participants were proud of, and keen to show off, the skills they had developed through sport and their tangible achievements, such as trophies and medals. This was identified in five of the eleven studies [50,52,55,60,82].

Enjoyment and happiness theme

The final theme was that of the pure enjoyment and satisfaction experienced when participating in sport. Sport was inherently fun and the participants experienced considerable happiness and joy when playing, represented in seven out of the eleven studies [49,55,60,67,69,74,81].

Health benefits:

The most frequently cited physical and mental health benefits by children and adolescents were increased fitness, functionality and confidence through sport participation.

Adults

Within the category of adults, twenty-two studies were synthesised. Four themes and eight sub-themes were generated. The four themes were: (a) liberation, (b) inclusion, (c) breaking barriers and (d) life-changing.

Liberation theme

A sense of freedom and escapism was experienced, allowing participants to forget about disability through focusing on sport. Sport also provided a means to help individuals accept their disability, become accustomed to the perceived limitations that come with it and feel proud of who they are. Within this theme, two sub-themes were generated: (a) freedom from disability and (b) acceptance.

Freedom from disability sub-theme. Feeling free from disability, forgetting one's impairment and a experiencing a sense of escapism were evidenced across a wide range of sports including scuba diving, wheelchair rugby, dancing, cycling and rowing. This sub-theme was mentioned in six of the studies [51,54,77,78,80,83].

Acceptance sub-theme. Sports participation enabled the acceptance and management of the perceived limitations of disability. Participants felt proud of who they were and embraced their disability, feeling confident and comfortable in themselves. Sport helped participants adapt and become accustomed to their new identity, feel at peace with disability. This was identified in six of the studies [51,54,59,73,80,83].

Inclusion theme

Inclusion refers to the sense of belonging, comfort and equality experienced when participating in sport and the formation of friendships through being with experientially similar others. A sense of community, connection and camaraderie was experienced through having teammates. Two sub-themes were generated: (a) Sense of belonging and (b) Team culture.

Sense of belonging sub-theme. An important aspect of the sport experience was the sense of belonging and connection that the participants felt through being involved in sport. They referred to not feeling *'out of place or different'* (Bates et al., 2019, pg. 5), fitting in through being with similar others and feeling like themselves when playing sport. This sense of belonging was mentioned in fourteen studies [4,30,52,54,56,59,64,68,75,76,78,80-82].

Team culture sub-theme. Participants felt a strong bond with teammates, likened to a family. Important aspects of the team culture included a sense of community, dedication to the team, camaraderie and support from teammates. This was identified in ten of the studies [54,56,59,64,70,73,76,78,81,83].

Breaking barriers theme

This theme refers to challenging the expectations of others and resisting society-imposed limitations, proving others wrong through demonstrating their abilities. It refers to ways in which participation may be enhanced through reducing the barriers to sport participation. Two sub-themes were identified: (a) challenging stereotypes and (b) enhancing participation.

Challenging stereotypes sub-theme. Sport allowed individuals to challenge the stereotypical restraints and expectations placed on those with a disability, whilst also in some cases breaking one's self-imposed restrictions. This concept was very evident, with this sub-theme being identified in twelve studies [51,54,56,59,70,73,75-80,83]. Conversely, certain sports such as

dance had expectations about what the dancers should look like, with participants expressing a desire to not be seen as disabled in order to look 'pretty'.

Enhancing participation sub-theme. Certain barriers and facilitators to sport participation were discussed by some participants, which could be considered when improving the sport experiences of individuals with a disability. Comments were made surrounding accessibility, specialist equipment, volunteers, guide runners and disability itself. This theme was mentioned in seven of the included studies [30,52,56,75,77,78,83].

Life-changing theme

Life-changing refers to the integral role of sport in providing a sense of purpose and meaning, providing structure and a focus, and eliciting feelings of elation, realness, passion and gratitude. It denotes how sport can transform an individual's outlook, personality and abilities, contributing to self-development and acting as an overall positive influence. There were two sub-themes: (a) purpose and meaning and (b) personal transformation.

Purpose and meaning sub-theme. Participants were grateful for sport, providing something to do, a goal and a passion. It provided a *'greater purpose'* and allowed them to *'find meaning'* [52,p.826]. Twelve studies referred to this sub-theme [30,51,52,54,64,70,75-78,80,81].

Personal transformation sub-theme. Sports participation also enabled participants to transform themselves for the better, including their outlook on life, personality and skills. This was identified in seven of the studies [51,52,64,76,80,82,83].

Health benefits:

The most frequently cited physical and mental health benefits were increased fitness, functionality, strength and self-confidence through participation in sport.

Elite Athletes

Thirteen studies included participants who were elite athletes. Four themes and nine sub-themes were generated. The themes were: (a) para-sport, (b) athlete lifestyle, (c) performance support and (c) recognition.

Para-sport theme

This theme refers to unique aspects of para-sport which are more relevant to those at the top level of elite sport rather than at the recreational and sub-elite levels. Two sub-themes were generated: (a) classification and (b) funding.

Classification sub-theme. Classification is a unique and relatively controversial area, with different issues raised by those with different disabilities and in different sports. Exaggerating the extent of disability was mentioned in visually impaired cricket and the involvement of 'minimally disabled' players was highlighted in sitting volleyball. Five studies spoke of classification within sport [48,57,62,72,76].

Funding sub-theme. The financial support received by participants was provided in the form of funding and sponsors. Funding was generally seen as a positive influence on the participants' wellbeing and performance, however there were some negative experiences, such as additional pressure and difficulties obtaining sponsorship due to a lack of awareness of para-sport. This sub-theme was identified in eight studies [48,53,57,58,62,63,72,84].

Athlete lifestyle theme

This theme refers to the qualities and attitudes necessary to be successful in elite sport, including passion for sport, the desire for excellence and the sacrifices and dedication required to achieve their goals. Two sub-themes included: (a) passion and excellence and (b) sacrifice and dedication.

Passion and excellence sub-theme. This incorporates the pure passion, love and enjoyment the participants had for their sport, as well as striving for excellence and aiming to be the best athlete possible. This concept was identified in nine studies [57,58,62,63,65,72,73,76,78].

Sacrifice and dedication sub-theme. The sacrifices made and the dedication required to be successful in elite sport was identified in five studies and involved concepts such sacrificing appearance and family time to train or compete [63,65,72,76,84].

Support theme

This refers to the three forms of performance support consistently mentioned in the studies and how the support provided both helped and hindered performance and wellbeing. There are three sub-themes: (a) coach, (b) teammates and (c) National Governing Bodies (NGBs).

Coaches sub-theme. There were mixed experiences with coaches, mainly comprising negative comments suggesting coaches lacked knowledge on para-sport and how to coach athletes with a disability. However good coaches were respected and appreciated by participants. Seven studies mentioned support from coaches [48,53,58,63,76,78,84].

Teammates sub-theme. Teammates played a key role in an athlete's experience, providing a sense of camaraderie and support, sharing knowledge to help manage disability and deal with personal problems. This was identified in six studies [48,62,65,72,76,78].

National Governing Bodies sub-theme. NGBs which were generally represented in a poor light and it was suggested that they had a lack of understanding and appreciation of the athletes. Participants reported being treated inferiorly and unfairly, feeling afraid to voice their opinions due deselection fears. This was mentioned in five studies [48,53,63,76,84].

Recognition theme

This theme refers to the need for: increasing the coverage and publicity of para-sport, raising the awareness and support for athletes and counteracting the misunderstandings surrounding para-sport. There were two sub-themes: (a) media coverage and (b) public understanding.

Media coverage sub-theme. A lack of media coverage and support was reported, along with the presence of misunderstandings surrounding para-sport and para-athletes, including being wrongly perceived as 'super human' [63, p.69]. This was identified in five studies [53,58,62,63,84].

Public understanding sub-theme. Participants spoke of the need to counteract public perceptions of disability to encourage understanding and appreciation of para-sport. When appreciation and respect for their abilities were received from the public, this was seen as very positive, demonstrating the need for more promotion. This sub-theme was identified in eight of the studies [57,63,62,65,72,76,78,84].

Health benefits:

The most frequently cited physical and mental health benefits by elite athletes were improved self-confidence and self-esteem through participation in sport.

Veterans

Only one study explored the longer-term experience of sport participation, with most studies looking at the experiences of sport camps, programmes or competitions. Due to the paucity of literature, it was not possible to generate themes however the interesting quotations provided offer insight into sport experiences in this population. They suggest that sport aids rehabilitation following traumatic injury, provides a competitive outlet, facilitates disability acceptance and provides a sense of purpose and normalcy.

Health benefits:

Three physical and five mental health benefits were cited; and included increased self-esteem, independence and functionality. However, analysis of the most frequently reported benefits was not possible due to insufficient literature.

Table 4: Key supportive quotations

Theme	Sub-theme	Quotation	Study
Population: Children and adolescents			
Socialisation	Friendship	*'making friends'*	Carter et al., 2014
		'*I have made a lot of friends through NEP or the USA team that I play for… we are all close and tight knit, and we all communicate with each other, we hang out and bond'*	Aytur et al., 2018
	Team atmosphere	*'Feeling a connection with everybody'*	Aytur et al., 2018
		'A sport where people in power wheelchairs, who may have not had a chance to play a sport before, can play a competitive sport and be on a team for maybe the first time'	Jeffress and Brown, 2017
Pride	Athletic identity	*'I get to tell all of the people I meet that I play and how well I do, so I'm kinda like a normal athlete'*	Jeffress and Brown, 2017
	Achievements and skills	*'I've won 8 medals!*'	Grandisson, Tetreault and Freeman, 2011
		'I like showing off my turns'	Carter et al., 2014
Enjoyment and happiness		*'I feel happy. I feel excited here actually and I like dancing here, it's really good … it's amazing'*	Aujla, 2019
		'it's the sport as such, shooting and so on that is great fun'	Kristén, Patriksson and Fridlund, 2002
Health benefits		*'I feel fitter'*	Carter et al., 2014
Population: Adults			

Liberation	Freedom from disability	*'Once you're down there, you don't have to walk so you've got all the freedom. Diving turns me back into a human being, I go down there and I've got the freedom and I'm back to being a person'*	Carin-Levy and Jones, 2007
		'When I'm playing sport I can forget about everything and focus on that [sport]'	Stephens, Neil and Smith, 2012
	Acceptance	*'I am proud of myself now, you know. I cannot change. I do not–even if there was a way to change, you know, my way, the way I am, you know, I wouldn't change'*	Bantjes, Swartz and Botha, 2019
		'It wasn't, 'Who did this to me?' It just happened and I'm fine about it. … We (you and I) are not different'	Swartz et al., 2018
Inclusion	Sense of belonging	*'I feel like myself when I play wheelchair basketball because there are lots of different people with different abilities on the team, so I don't feel out of place or different'*	Bates et al., 2019
		'You can meet with others, communicate with other people so that you can find yourself being together with other people … Here we meet people who are also blind.'	Swartz et al., 2018
	Team culture	*'[My team] is like my family'*	Côté -Leclerc et al., 2017
		'By being disabled athletes, we're all a part of a team. We're supportive of one another, regardless of disability. We are able to assist others.'	Wilhite and Shank, 2009
Breaking barriers	Challenging stereotypes	*'[I participate in sport] to show them I'm not only a disabled person. I'm not only a disabled person who can just sit in the house … doing nothing. I'm a disabled person who can do something'*	Bantjes, Swartz and Botha, 2019
		'So I just say … 'I can do it!'. I can prove to the abled people that disabled people can do it and they have the potential to do it.'	Swartz et al., 2018
	Enhancing participation	*'[The training venue is] good because it's accessible – there are no stairs, and all the resources, wheelchairs, balls, etc. we need are easily accessed'*	Bates et al., 2019
		'Equipment is a massive barrier. It's just not as expensive in able-bodied sport. £2000 for a bike, it's a lot of money and it's always going to be a same because it is a small market.'	Stephens, Neil and Smith, 2012

Life-changing	Purpose and meaning	*'Rugby is our life!'*	Litchke et al., 2012
		'So sport is a really wonderful thing and it can take you somewhere that you never thought that you'd be in your life.'	Swartz et al., 2018
	Personal transformation	*'It [disability sport] made me very positive towards life.'*	Bantjes, Swartz and Botha, 2019
		'It gave me a different outlook on life…that I shouldn't hold back, that I should take on all challenges.'	Swartz et al., 2018
Health benefits		*'I'm really strong and fit now ... I can do everything myself. I don't need anyone.''*	Richardson et al., 2017
Population: Elite athletes			
Para-sport	Classification	*'Why would anybody pretend that they couldn't see to play blind cricket?'*	Powis, 2017
		'Some people will not try to get bits of their bodies better, just in case suddenly they cannot take part in the Paralympics'	Silva, 2013
	Funding	*'The funding provides you the opportunity to not work and focus on your sport'*	Arnold et al., 2017
		'The pressure of thinking you've got to perform all the time, which isn't good for you as an athlete. You need to relax and run.'	Brittain, 2002
Athlete lifestyle	Passion and excellence	*'Deaf sport is definitely in my blood'*	Foster, Fitzgerald and Stride, 2019
		'It's really just the desire to excel'	Garci and Mandich, 2005
	Sacrifice and dedication	*'For those eight years you have, you put up blinders because your always, your nose to the grind, train, train, train, and you have the blinders up, you don't want any distractions, see any distractions, you don't want to be around any distractions'*	Garci and Mandich, 2005
Support	Coaches	*'I had this coach when I was at [Name of city] who told me that I was useless and pathetic, and that I was a drama queen. That really knocked me down and had a massive impact on me'*	Arnold et al., 2017
	Teammates	*'You spend so much time together it's like your brothers. You eat with them, you sleep with them, you play basketball with them, everything you do together.'*	Garci and Mandich, 2005
	National Governing Bodies	*'Sometimes they have the attitude, like we should be grateful that they let us go abroad to compete so that we shouldn't*	Huang, 2005

		complain about anything. It's very patronizing. They are not developing any athletes. There is no system, no practical support, no encouragement.'	
Recognition	Media coverage	*'Each time we go for competition … international high level competition… you can hardly see any report in the papers … on news …. anything … If the [public] is not exposed to our achievement, how can we manage to get sponsorship? There is no sponsorship coming in because the public is not exposed.'*	Wilson and Khoo, 2013
	Public understanding	*'[people] kept giving me free stuff, it was really bizarre, and I've been asked to give loads of speeches and talks and I've opened two schools in the area'*	Dashper, 2010
		'A lot of time we get connected with the Special Olympics, which is hard to explain to someone what the difference is without putting one or the other down'	Stillson, 2007
Health benefits		*'I think it gave me a huge amount of self-confidence, which I am not exactly short of, to be fair, now! I think it definitely created in me that confidence in my own worth and my own abilities'*	Powis, 2017
Population: Veterans			
		'Sport helped me get rid of the frustration and accept what I can do today.'	Green, 2013
		'And that was my life, sport, sport, sport. I needed to see how far I could go.'	Green, 2013

Discussion

Children and adolescents

Sport offered the opportunity to socialise and feel a sense of belonging. Children and adolescents experienced a team culture and formed friendships, offering many social benefits for young people with physical and intellectual disabilities, increasing their physical and emotional wellbeing [85,86]. They enjoyed showing off their achievements and skills through sport, proving others wrong. This is consistent with previous findings which report that sport elicits feelings of pride in being a competitive athlete, providing an opportunity to show off talent [87,88]. The happiness and enjoyment of sport experienced was very evident. The fun aspect of sport has been consistently reported, acting as a facilitator and motivator for participation, influencing commitment to sport [86,90-92].

Adults

Adults experienced community, camaraderie and closeness through being part of a team. Feeling connected to and receiving advice from others in sport reportedly elicits feelings of equality and togetherness, further supporting the review findings [83,93]. Sport provided a means to break stereotypes and society-imposed limitations. Similarly, research has shown sport helps to manage stigma, challenge public perceptions and defy expectations of disability [94-96]. Sport also provided a sense of purpose and meaning, with participants expressing gratitude for sport and its integral role in their lives. Literature supports this, suggesting that sport offers a sense of accomplishment through goal setting, providing structure and purpose [93].

Liberation was experienced in two ways: feeling free from impairment and not being restricted by perceived limitations, and accepting disability, moving forwards. Sport facilitates feelings of wholeness, liberty and independence, providing freedom of movement and an escape from perceived disability limitations [96]. It provides a greater sense of control and empowerment, benefiting mental health and overall wellbeing [97]. Accepting, adapting and being at peace with disability were often achieved through sport, enabling feelings of pride and self-confidence. Limited research has investigated self-acceptance, however greater acceptance by non-disabled teammates was associated with increased friendships and participation, however more research is required into self-acceptance and sport in adults with a disability [98,99].

Elite athletes

Elite athletes received a wide range of personal and performance-based support from teammates. Team chemistry, cohesion and trust positively influence performance, with strong interpersonal relationships linked to successful outcomes in Olympic and Paralympic athletes [100,101]. Since 2000, there has been increasingly more media coverage in Europe and a greater focus on athleticism over disability, however the findings suggest that more coverage is required to further increase public understanding [102,103]. The dedication and desire to succeed was clear – sport was priceless and was when they felt their happiest. Dedication was unique to the elite athletes and is linked to mental toughness, suggesting it is vital to reach the pinnacle of sport [104].

Funding came with additional stressors but also provided new opportunities. Findings in Olympic sport support this, with the potential reduction or removal of financial support acting as a big stressor [105]. It also influences retirement experiences of British Paralympians, however no research has explored its role on para-athlete wellbeing and performance [106].

No research was found directly exploring experiences with the classification system in elite para-sport, which is interesting given the experiences of participants in this review and speculative claims in the media around 'classification doping' [107].

Only three sources of support were mentioned which was surprising as elite athletes have access to a whole contingency of support staff monitoring wellbeing and performance [100,101,108]. It is possible that less support may have been available to participants in the earlier studies as increases in investment and awareness of Paralympic sport were just beginning [16,109]. Psychological, lifestyle, physical and financial support all interact to enable sporting success, supporting the need for more research to fill the dearth of literature surrounding social support in elite para-athletes [100,101,108].

Veterans

Analysis of the findings was not possible due to the paucity of literature; however it has been suggested that there are many positive aspects and health benefits of sport [62]. All research in this area has focused on sport camps or competitions, therefore more research is needed to explore the experiences of continued, long-term participation in sport, providing insight into this phenomenon [18,110-112].

Similarities and differences across the populations

Sport provided adults, children and adolescents and elite athletes with the opportunity to socialise and feel a sense of belonging. Participants felt part of a team and community, experiencing camaraderie, friendship and a connection with others. Sport was also used to challenge stereotypes and societal expectations. For the children and adolescents, this was

through showing off their skills and achievements, proving others wrong. Adults used sport to break society-imposed limitations, defying expectations. Elite athletes expressed the desire for more awareness of para-sport and the elimination of misunderstandings. Passion for sport was clearly evident across these three populations. Pure happiness and enjoyment were experienced by the children and adolescents, with sport playing an integral role in providing adults with purpose and meaning. Elite athletes expressed their desire and dedication to achieve success, feeling their happiest when playing sport.

Certain themes and ideas were also population specific. Only adults seemed to express feeling liberation when playing sport, mainly through feeling free from impairment and being able to accept their disability. It is interesting how this was experienced in adulthood but not childhood, suggesting that adults are more aware of society- imposed limitations, and how sport provides a means to overcome this. Elite athletes experienced unique phenomena, including funding, sponsorship, the classification system and support from NGBs, which all came with both positive and negative aspects. This suggests that these phenomena are only experienced by individuals participating at the highest level of sport.

Health benefits

The perceived physical and mental health benefits across the four populations were similar, suggesting that the benefits experienced are consistent regardless of the individual participation experiences. Findings are consistent with literature investigating these phenomena in adult populations [113-115]. However more research is required to confirm these findings in all four populations and to enable the promotion of population-specific health benefits when encouraging sport participation [113-115]. It is possible that more research into perceived

health benefits of sport for each population would enable comparisons of the health benefits across populations, providing value when promoting sport for individual populations.

Strengths and weaknesses

This systematic review was novel in exploring these phenomena across four populations. Rigorous methods were employed all stages, including using several information sources, a dual review approach, well-established research tools and methods, and the involvement of a stakeholder group which benefitted the analysis process [32,33]. The main limitation was the restricted analysis of the health benefits as very few studies reported the health benefits as demonstrated by the frequency counts in Table 4.

Conclusion

Findings suggest the value of sport participation for all four populations, offering an overall positive experience with many associated health benefits. Sport offered children and adolescents a social outlet, creating considerable happiness and pride. Adults reported experiencing feelings of freedom and purpose, and sport provided an arena to challenge disability stereotypes. Elite athletes displayed passion and dedication, craving more recognition of their achievements and support from NGBs and sport practitioners. Considerably more research is required to determine the longer-term experiences of sport participation for veterans.

Figure legends

Figure 1: PRISMA flow diagram.

Figure 2: Themes and sub-themes from the children and adolescent, adult and elite athlete populations respectively.

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Abstract

Background: Sports participation has many physical and mental health benefits for individuals with a disability including improved functionality and reduced anxiety, yet a large proportion of individuals with a disability are inactive.

Objective: To investigate the experiences and perceived health benefits of sport participation across four disability populations: children and adolescents, adults, elite athletes and veterans with a disability.

Methods: A mixed-methods systematic review was conducted. Eligible studies had participants who were children, adults, elite athletes or veterans with a physical, visual or intellectual disability. Data were extracted using the Joanna Briggs Institute (JBI) tool and quality assessment involved the Quality Assessment Tool for Studies with Diverse Designs (QATSDD). Content, thematic and narrative synthesis techniques were used. Confidence in cumulative evidence was determined using GRADE-CERQual and Classes of Evidence.

Results: Several positive aspects of sport participation were highlighted across all four populations, including socialisation opportunities, pure enjoyment, a sense of freedom and providing an arena to challenge stereotypes. The paucity of research within the 'veterans with a disability' group limited analysis of experiences and benefits of sport in this population.

Conclusions: This systematic review was the first to explore this phenomena, finding that overall sport is a beneficial experience for individuals with a disability. The positive aspects should be promoted when encouraging sport participation for children, adolescents, adults and elite athletes. More research is needed to explore these phenomena in veterans and to compare perceived benefits between populations to enable tailored promotion of sport.

Key words: disability, sport, para-sport, health

Introduction

Physical activity guidelines exist to promote health and wellbeing, described as any body movement requiring energy expenditure, such as dancing and walking [1]. Where a physical activity involves physical exertion (with or without a game or competition element)and skills and physical endurance are either involved or improved, this is termed as sport [1]. Sports participation provides individuals with a disability the opportunity to experience the many associated health benefits of physical activity, including increased fitness, functionality and socialisation opportunities [2-5].

Despite these benefits, almost half (40%) of adults with a disability are inactive (<30 mins/week of physical activity) in the UK, with similar figures reported in the USA (44.3%) [6-8]. Individuals with a disability also have higher rates of chronic disease than those without a disability (>40% vs. <14%), further highlighting the importance of being physically active [6]. Considering specific populations, low physical activity and high sedentary levels have been reported in children and young people with a disability, and literature indicating lower levels of activity than their non-disabled peers [8-14]. At the elite level, a steady growth in Paralympic Games participation and investment has been observed [15-17] although limited to small body of elite para-sports and with limited research exploring para-athlete experiences of sport. For veterans with a disability, participation in sport camps and competitions has been shown to improve quality of life , aid rehabilitation and increase self-confidence [18,19].

The need to explore the lived experiences of sport specifically has been suggested previously, hence this being the focus of this review [19]. Exploration of the experiences and perceptions of sport may help to better understand the beliefs and feelings surrounding sport and the role it plays in the lives of individuals with a disability. Investigating and comparing the experiences and perceived health benefits will provide insights into how these phenomena differ across the

four population groups mentioned above: children/adolescents, adults, elite athletes and veterans with a disability. This may help to inform tailored approaches to each population to promote sport, increasing activity rates and the associated health benefits experienced by individuals with a disability.

The aim therefore of this study was to explore and understand the sport experiences and perceived health benefits of sport across four different populations: children and adolescents, adults, elite athletes and veterans with a disability.

Materials and methods

A systematic review was conducted according to a pre-defined and published protocol,[20] registered with the International Prospective Register of Systematic Reviews (PROSPERO registration number: CRD42020169224). This systematic review is reported in accordance with the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) 2009 checklist and supplemented by the Enhancing Transparency in Reporting the synthesis of Qualitative research (ENTREQ) (Supplementary file1) [21,22].

Theoretical framework and study design

Subtle realism underpinned this review which considers that several valid, non-contradictory explanations exist for the same phenomena as different individuals experience phenomena in different ways [23-25]. The mixed-methods research design ensured all available, relevant studies were retrieved, enabling a comprehensive synthesis of evidence [26].

Eligibility criteria

Eligibility criteria were informed using the Sample, Phenomenon of Interest, Design, Evaluation and Research (SPIDER) concept [27]. To be eligible, studies had to meet the following eligibility criteria:

Sample: *Inclusion criteria:* Individuals with a physical, visual or intellectual disability who participated in sport competitively or recreationally. In terms of each population, children and adolescents were participants 17 years old and younger; adults were participants over 18 years of age; elite athletes were participants of international standard or were a member of a national team; and veterans were (former) members of the armed forces. Each participant must have been participating in sports or sport camps which were >6 months in duration.

Exclusion criteria: Studies with individuals that were disabled because of old age or a medical condition in isolation (e.g. diabetes) were excluded. Special Olympics participants were analysed as adults or children and adolescents as there are no qualifying times for international competition and selection is random, so were not classed as elite athletes.[29-31] There was no age limit on participants. Studies with participants who took part in sport programmes <6 months in duration were excluded because this was not determined to be continued participation in sport. Studies that explored participants' competition experiences were excluded as this only addresses one moment in time, not continued sport participation. Studies that included forms of physical activity (e.g. walking, yoga) were excluded where it was not possible to distinguish participants involved in sport and those involved in physical activity.

Phenomenon of interest: The experiences of individuals with a disability participating in sport, where experiences include aspects such as the meaning of sport, the support for participation, being part of a team sport and the barriers and facilitators. The second phenomenon of interest was the perceived health benefits of sport, both physical and mental,

which included an individual's self-reported benefits and comments suggesting the benefits of sport, e.g. increased fitness, weight management.

Design: All types of study designs were included, except reviews. Only studies in English were included. Studies not in English were excluded.

Evaluation: Any reported experiences or health benefits of participating in disability sport were explored.

Research type: Mixed-methods research.

Information sources and search strategy

Six online databases were searched from database inception until 29th February 2020. They included: Medline, EMBASE, PyschINFO, Web of Science, CINAHL Plus and SportDiscus. Grey literature sources, including OpenGrey, British Library EThOS and Explore the British Library, were searched up to February 2020 using specific key words. The following journals were hand-searched to complement the search strategy: *Qualitative Research in Sport, Exercise and Health, Psychology of Sport and Exercise, Disability and Rehabilitation, British Journal of Sports Medicine, European Journal of Sports Science* and *International Journal of Sports Science*. The references of included studies were screened to further supplement the search. The lead author (BA) and second reviewer (MB) carried out the searches independently using a search strategy which in the main was consistent across all databases, with specific search terms adjusted to reflect database-appropriate syntax [31]. The search strategy was pre-planned and comprehensive, aiming to seek all available studies (Medline search strategy in supplementary file 2).

Study selection

BA and MB independently screened potential studies using the eligibility criteria. If it was clear from the title and abstract that the content was not relevant to the objectives, the study was excluded. Full-text copies of potentially relevant studies were obtained and screened for inclusion. Articles were excluded if a full-text copy was not available. A complete dual review approach was used as two researchers screened all studies at the title and abstract stage and the full text stage, reaching a consensus on included studies after each stage [32]. This increased the identification of relevant studies, making the process more comprehensive [32,33]. Endnote was used for data management and reference storage [34].

Data collection process

Data were extracted from included studies by BA and checked for accuracy by MB, based on the standardised qualitative data extraction tool from the Joanna Briggs Institute [35]. The tool was piloted on five studies prior to data extraction and was modified to include a section for study design, reflecting the variation in study designs included in the review.

Quality Assessment

The Quality Assessment Tool for Studies with Diverse Designs (QATSDD) was used to determine a quality score for all included studies [36]. BA graded the studies and scores were checked by MB. This tool is suitable for mixed-method designs as it allows an in-depth understanding of included studies and has positive feedback regarding comprehension of the tool and ease of application [36,37]. The QATSDD has good inter-rater reliability (71.5%) and test-retest reliability (51.7-100%), further supporting its use in this review [36]. Additional

information was sought from some authors, such as interview topic guide and clarification of population demographics, enabling fair quality assessment. A follow up email was sent after 10 days, with the author given a further 10 days to reply. If there was no reply, the information provided was insufficient or was not available in English due to the study being written in another language, the study was score 0 for that criterion.

Data synthesis

There was considerable heterogeneity in study designs in this review due to the inclusion of all study types, therefore specific analysis methods were employed for each design. Mixed-method studies were analysed according to the relevance of the data to the review objectives. Studies and participants were grouped into population categories, with some present in more than one category due to mixed participant characteristics. If over 70% of a sample or the mean age of a sample matched a certain category, the whole study was assigned to that category if identification of individual participants could not be determined. Stakeholder meetings (BA, NH, AR, AS, PM) allowed discussion of concepts, contributing to theme and sub-theme generation.

Qualitative studies were analysed using thematic synthesis [38]. All text under the headings ‘results’ or ‘findings’ was coded line-by-line according to its content and meaning. Translation of concepts and ideas enabled comparison between studies whilst still preserving the meaning of single studies [39]. A bank of codes was created which were refined and grouped into descriptive themes, following which analytical themes were created [38,39].

For the quantitative studies, the stages of narrative synthesis were modified slightly when analysing them due to the small number of studies in each population category, affecting the

exploration of relationships [40]. Preliminary synthesis enabled an initial description of studies which was tabulated due to the inability to generate themes. An integration matrix juxtaposed the quantitative findings against the themes and sub-themes generated from the qualitative studies, enabling comparisons [41].

Content analysis enabled the coding of qualitative health benefits and a quantitative count of the code frequency, analysing perceived health benefits of sport [42-44]. Two main categories were created: physical health benefits and mental health benefits. For each population, reported benefits were tabulated, coded and given a frequency score [43, 45].

Confidence in cumulative evidence

The 'Grading of Recommendations Assessment, Development and Evaluation' – 'Confidence in the Evidence from Reviews of Qualitative research' (GRADE-CERQual) was used by BA to determine how much confidence to place in the findings from qualitative studies and qualitative component of mixed-method studies [46]. This tool provides a transparent, systematic framework that increases the usability of the findings [46]. Classes of Evidence (CoE) were used to rate the quality of evidence and risk of bias for quantitative studies and the quantitative component of mixed-method studies [47].

Results

Study selection

Thirty nine studies (n=39) met the eligibility criteria to be included. The PRISMA flow diagram detailing the number of included and excluded studies is detailed in Figure 1. There was 100% agreement achieved between BA and MB at the full-text stage.

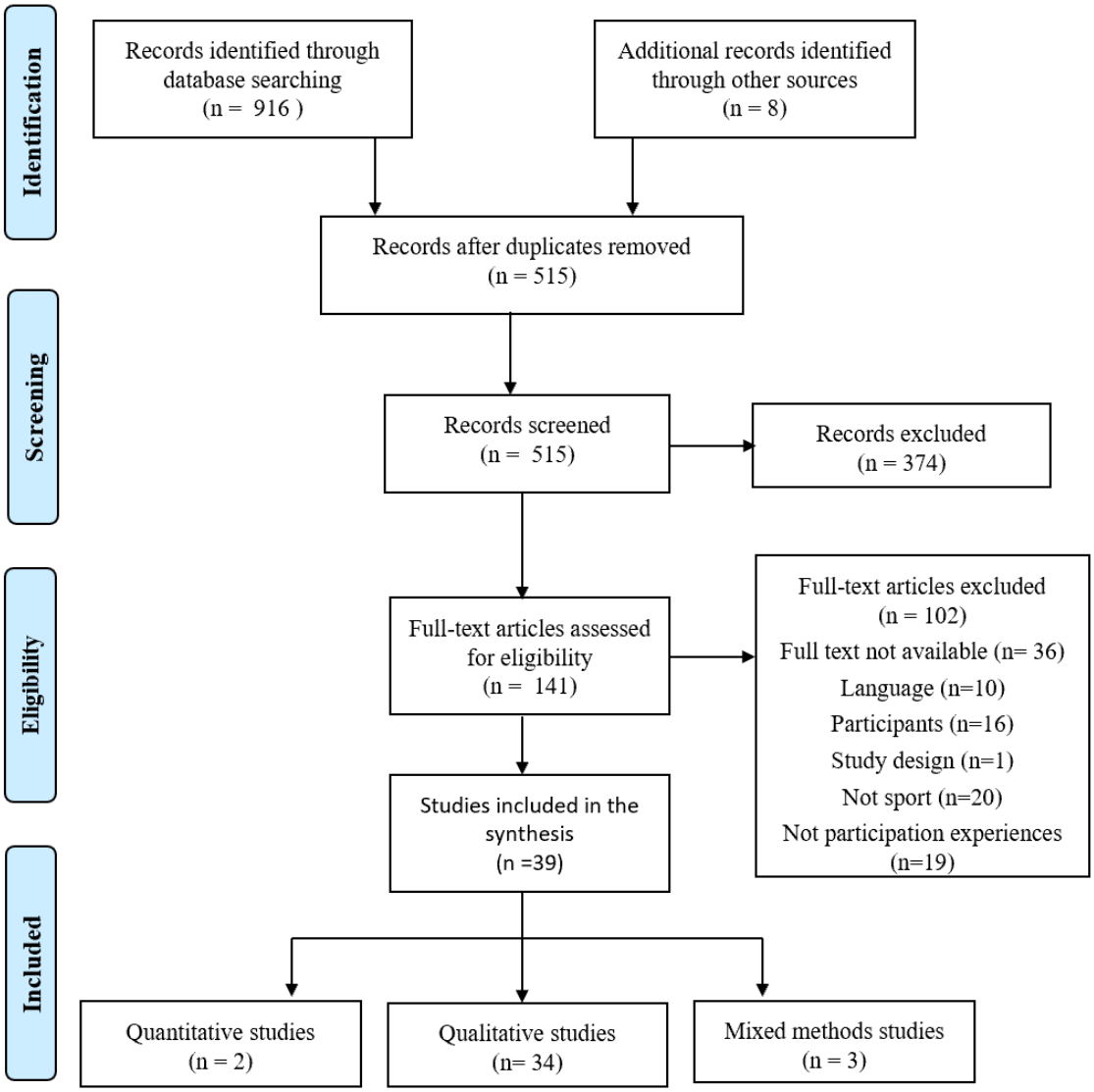

Figure 1: PRISMA flow diagram.

Study characteristics

Of the 39 included studies, 34 were qualitative, 2 were quantitative and 3 were mixed-methods. Of the 3 mixed-methods studies, the qualitative and quantitative components of 2 were relevant

to the study objectives, and the qualitative component of the third study was relevant. A summary of data extracted from each study can be found in Table 1.

Quality assessment and confidence in cumulative evidence

A summary of the quality score and converted percentage score for each study using the QATSDD is provided in Table 2, enabling the quality of a study to be considered alongside its results. The GRADE-CERQual assessment determined there to be high confidence in 10 of the findings, moderate confidence in 4 and low confidence in 2 (Supplementary file 3). The CoE determined the risk of bias of quantitative studies, of which 3 were high risk and 1 was moderately high risk (Supplementary file 3).

Table 1: Data extracted from included studies

Study	Population	Study design	Participants	Phenomenon of interest	Data collection	Data analysis
Arnold et al., 2017 [48]	EA	Qualitative	10M/8F Aged 17-39	The organisational stressors that athletes with a disability encounter.	Interviews.	Systematic procedures and grounded theory followed.
Aujla, 2019 [49]	C/A	Qualitative	4F (and 4 parents) Aged 15-16	The experiences and outcomes of an inclusive dance talent development programme and how such outcomes were facilitated.	Interviews and focus groups	Content analysis
Aytur et al., 2018 [50]	C/A	Qualitative	14M/1F Aged 9-16	The meaning given to the competitive sports experience by youth athletes with disabilities, and the outcomes, barriers and enablers associated with their participation.	Photovoice method and focus group	Template method
Bantjes et al., 2019 [51]	A	Qualitative	17M/5F Aged 18-67	The participation experiences of a group of athletes in competitive disability sport in South Africa and the ways they talk about issues of identity and self- representation in the context of elite disability sport.	Interviews	Thematic analysis
Barfield and Malone, 2013 [5]	C/A and A	Mixed-methods	19M/6F Mean age 28.	The perceived benefits and barriers to exercise among power wheelchair soccer players.	Survey and scale	Ranked responses and non-parametric tests
Bates et al., 2019 [52]	C/A and A	Qualitative	2M/1F Aged 12-22 (3 coordinators)	The team's experiences of wheelchair basketball and team membership.	Interviews and observational and participatory fieldwork	Identification and synthesis of key themes from the data collected
Bowers et al., 2016 [30]	A	Qualitative	15 (11 family members, 6 non-athletes, 7 family members of non-athletes, 8 staff members) From SOPHIE study: 58.2%M / 42.8%F Average age: 33 years.	The experiences and perspectives of people with intellectual disability, their families and the staff who work with them, about Special Olympics Ireland	Focus groups and interviews	Thematic analysis
Brittain, 2002 [53]	EA	Qualitative	9M/3F Aged 17-42	The factors that have an effect upon the lives of elite athletes from the time they first took up the sport of athletics to the present day.	Interviews	Critical approach

Carin-Levy and Jones, 2007 [54]	A	Qualitative	3M Aged 33-53	The psychological and social benefits of scuba diving as a recreational sport for people with physical impairments.	Interviews	Model suggested by Dey 1993

Carter et al., 2014 [55]	C/A	Qualitative	37 children Aged 3-13 (12 family members, 14 stakeholders)	Experiences and perceptions of 'The Cheetahs' and what benefits occur as a result of bringing children with disabilities and children without disability together	Observation, photographs, interviews and focus groups.	Thematic analysis
Cote-Leclerc et al., 2017 [56]	A	Mixed-methods	25M/9W Aged 18-62	The influence of adapted sport on quality of life in adult wheelchair users.	Questionnaires and interviews	Statistical analysis and thematic content analysis
Dashper, 2010 [57]	EA	Qualitative	3M/2F Aged: 19-42	The embodied, gendered experiences of disabled horse riders.	Interviews	Social model of disability
Foster, Fitzgerald and Stride, 2019 [58]	EA	Qualitative	2M/2F Aged 24-45	The experiences of 4 deaf athletes who have competed in the Deaflympics and their socialisation into sport.	Interviews	Constant comparison method
Garci and Mandich, 2005 [59]	EA	Qualitative	10M/6F Age unknown	The meaning given to participating in elite-level wheelchair basketball by athletes with lower extremity physical disabilities.	Interviews and observations	Data coded for themes. Comparative analyses
Goodwin et al., 2009 [60]	A	Qualitative	10M/1F Aged 22-48	The sense of community among WR players, how the sense of community is experienced and what gives meaning to that experience	Focus groups and photographs	Thematic analysis
Grandisson, Tetreault and Freeman, 2011 [61]	C/A	Qualitative	6M/5F Aged 12-19 (20 parents, 9 non-sport children, 39 staff)	The factors associated with the integration of adolescents with intellectual disability in sports alongside their non-disabled peers	Interviews, questionnaires and discussion group	Content analysis
Green, 2013 [62]	V	Qualitative	9M/2F Age range 20-50	How participation in adaptive sport may contribute to personnel adapting their identity and re-establishing their meaning of life post-traumatic injury	Interviews	Interpretative phenomenological analysis
Haslett, Fitzpatrick and Breslin, 2017 [63]	A and EA	Qualitative	10M Aged 22-53	The interplay of individual and societal facilitators and barriers to participation in wheelchair rugby.	Interviews	Thematic analysis
Huang, 2005 [64]	EA	Qualitative	11M/10F Aged 22-60	The experiences of elite male and female athletes in Taiwan and Britain	Interviews and documentary research	Immersion/crystallisation

Hudson et al., 2018 [65]	A	Qualitative	7M/1F Aged 24-51	Experiences of individuals with learning disabilities in secure settings engaged in community football training programmes and identify the benefits of such provision	Interviews	Template analysis undertaken
Jaarsma et al., 2014 [66]	EA	Quantitative	30M/46F Mean age 30.5	The barriers and facilitators of sports in Dutch Paralympic athletes with a physical disability.	Questionnaire	Statistical analysis
Jeffress and Brown, 2017 [67]	C/A, A and EA	Qualitative	23M/11F Aged 10-52	The experiences of power soccer players with disabilities and to examine the perceived opportunities and benefits of their involvement with power soccer.	Interviews	Thematic analysis
Kirkby, 1995 [68]	A	Quantitative	16M/20F Mean age 21.3 (21 non-disabled)	The motives and reinforcements for participation in wheelchair netball and the role of a sport psychologist.	Questionnaire	Statistical analysis
Kristen, Patriksson and Fridlund, 2002 [69]	C/A	Qualitative	13M/7F Aged 9-15	The conceptions of children and adolescents with physical disabilities about their participation in a sports programme	Interviews	Phenomenographic data analysis
Litchke et al., 2012 [70]	C/A and A	Qualitative	5M Aged 17-35	How a group of athletes perceived participation in WR as impacting their lives.	Interviews, observations and field notes	Phenomenological reduction
Macbeth, 2009 [71]	A	Qualitative	6M Aged 26-40	The challenges and constraints faced by partially sighted individuals when accessing football opportunities.	Interviews	Thematic analysis
Powis, 2017 [72]	EA	Qualitative	15M Aged 18-54	The lived experiences of the England VI cricket team and their experiences of playing VI cricket	Interviews, observation and soundscape elicitation	Thematic analysis
Richardson et al., 2017 [73]	A and EA	Qualitative	14M/2F Aged 18-40	The impact of sport on psychosocial health in developing countries.	Interviews	Thematic analysis
Sayed Ahmed et al., 2018[74]	C/A	Qualitative	19 (11 parents, 9 children). Children = 5M/6F. Aged 6-14.	The perceived factors impacting participation in sports according to children with limb absence and their parents.	Interviews	Thematic analysis
Seth and Dhillon, 2019 [75]	A	Qualitative	8F Aged 18-21 (8 non-disabled)	The experiences of 2 groups of female athletes - those with and without disability - who participate in sport	Interviews	Thematic analysis

Silva, 2013 [76]	A and EA	Qualitative	20M/12F Age range 15-65 (5 staff)	The impact of sitting volleyball participation on the personal capabilities of athletes with impairments and the influence of personal, cultural and environmental contexts of participation on capabilities.	Interviews	Interpretative phenomenological analysis.
Stephens, Neil and Smith, 2012 [77]	A	Qualitative	6M/1F Aged 26-49	The perceived benefits of becoming involved in sport and identifies the barriers to participation for individuals with spinal cord injury.	Interviews	Inductive generalisation and frequency analysis
Stillson, 2007 [78]	A and EA	Qualitative	9M/2F Aged 20-54	Perceptions of wheelchair athletes concerning involvement and continuing participation in wheelchair sports.	Interviews and observations	Analysed for themes and concepts
Swartz, Bantjes and Bissett, 2018 [79]	A	Qualitative	1M/3F Aged 18-29	How do university students with VI at a SA university experience their inclusion in ballroom dance with sighted students.	Interviews	Thematic analysis
Swartz et al., 2018 [80]	A	Qualitative	16M/6F Aged over 18	How athletes with disabilities talk about their experiences of participating in competitive sport in South Africa.	Interviews	Thematic content analysis.
Weiss et al., 2017 [81]	C/A and A	Qualitative	1M/4F Aged 13-33	The experiences of participating in Special Olympics from the perspectives of athletes with ID.	Photo-elicitation and interviews	Thematic analysis
Wickman, 2015 [82]	C/A and A	Qualitative	5M/5F Aged 16-29	How young people with disabilities make sense of sport.	Interviews	Thematic content analysis
Wilhite and Shank, 2009 [83]	A	Qualitative	7M/5F Aged 29-58	How participating in sport helps persons with a disability achieve and maintain health and health-related components of wellbeing.	Interviews	Cross-case content analysis
Wilson and Khoo, 2013 [84]	EA	Mixed-methods	95M/28F Aged 15-59	The benefits and barriers influencing participation for athletes with disabilities from a developing country.	Questionnaire and focus groups	Statistical analysis and coding of transcripts

Key for Table 1: C/A – children and adolescents. A – adults EA – elite athletes. V – veterans. M – male, F – female.

Table 2: Quality assessment of included studies

Author/Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**Score**	**%**
Arnold et al. 2017	3	2	2	1	3	2	2	2	x	x	0	3	0	0	2	2	24/42	57
Aujla 2019	0	3	3	0	1	2	0	1	x	x	0	3	1	0	0	0	14/42	33
Aytur et al.2018	3	3	3	0	2	3	3	3	x	x	2	3	3	3	0	2	33/42	79
Bantjes, Swartz and Botha, 2018	2	3	3	0	3	1	0	2	x	x	3	3	3	2	0	2	27/42	64
Barfield and Malone 2013	0	2	2	0	2	2	1	1	1	3	1	2	0	0	0	1	18/48	38
Bates et al., 2019	2	1	2	0	1	2	0	1	x	x	3	3	0	3	0	1	19/42	45
Bowers et al. 2016	0	3	3	0	3	2	0	2	x	x	2	3	0	0	2	2	22/42	52
Brittain 2002	3	3	3	1	3	3	3	3	x	x	2	3	3	0	0	2	32/42	76
Carin-Levey and Jones 2007	3	3	3	1	1	2	2	1	x	x	3	3	0	0	0	2	24/42	57
Carter et al. 2014	3	3	3	0	3	2	1	0	x	x	3	3	1	0	0	0	22/42	52
Cote-Leclerc et al. 2017	0	3	2	0	3	3	2	1	2	3	0	3	0	3	1	3	29/48	60
Dashper 2010	3	2	2	0	1	1	0	0	x	x	0	2	0	0	0	1	12/42	29
Foster, Fitzgerald and Stride, 2019	0	3	3	1	2	1	0	2	x	x	0	3	0	0	0	0	15/42	36
Garci and Mandich, 2005	0	2	2	0	3	2	0	2	x	x	0	3	0	0	0	0	14/42	33
Goodwin et al., 2009	1	3	2	0	1	2	0	1	x	x	0	3	0	3	0	2	18/42	43
Grandisson, Tetreault and Freeman, 2011	2	3	2	0	3	2	1	3	x	x	0	2	1	3	2	3	27/42	64
Green, 2013	3	3	3	3	2	3	3	3	x	x	3	3	3	2	0	2	36/42	86
Haslett, Fitzpatrick and Breslin, 2017	3	3	2	0	1	2	0	1	x	x	3	3	1	2	2	2	25/42	60
Huang, 2005	3	2	3	3	3	3	3	2	x	x	2	3	3	0	0	0	30/42	71
Hudson et al. 2017	0	1	3	0	2	2	0	3	x	x	3	3	1	1	0	2	21/42	50
Jaarsma et al. 2014	3	3	3	0	3	2	2	1	1	3	x	3	0	x	0	2	26/42	62
Jeffress and Brown 2017	3	3	3	0	3	3	2	1	x	x	0	3	0	0	0	0	21/42	50
Kirbky 1995	0	1	1	0	2	2	0	3	0	2	x	2	0	x	0	1	14/42	33
Kristen, Patriksson and Fridlund, 2002	3	3	2	0	3	3	2	2	x	x	0	3	2	1	0	3	27/42	64
Litchke et al., 2012	3	3	3	0	2	2	1	1	x	x	3	3	2	1	2	1	27/42	64
Macbeth 2009	2	1	2	1	1	1	0	1	x	x	0	3	0	0	0	0	12/42	29
Powis, 2017	3	3	3	0	3	3	3	1	x	x	2	3	3	0	0	1	28/42	67
Richardson et al., 2017	3	3	3	0	3	2	3	2	x	x	0	3	3	0	0	2	27/42	64
Sayed Ahmed et al. 2018	2	3	3	2	2	2	0	2	x	x	3	3	0	1	0	2	25/42	60

Seth and Dhillon, 2019	3	3	3	0	3	2	3	1	x	x	3	3	2	0	0	1	27/42	64
Silva, 2013	3	3	3	0	3	3	3	2	x	x	3	3	2	0	0	3	31/42	74
Stephens, Neil and Smith 2012	0	3	3	0	3	2	0	1	x	x	0	3	0	3	2	2	22/42	52
Stillson, 2007	0	3	3	0	3	3	2	2	x	x	2	3	0	0	0	2	23/42	55
Swartz, Bantjes and Bisset, 2018	3	2	3	0	1	1	0	0	x	x	3	3	0	3	0	0	19/42	45
Swartz et al. 2018	0	2	3	0	3	3	1	1	x	x	3	3	1	2	0	2	24/42	57
Weiss et al. 2017	0	3	3	0	1	2	3	3	x	x	0	3	2	3	0	3	26/42	62
Wickman, 2015	1	3	1	1	2	2	1	2	x	x	0	2	0	0	0	1	16/42	38
Wilhite and Shank, 2009	3	2	1	0	3	2	1	1	x	x	2	3	1	3	0	0	22/42	52
Wilson and Khoo 2013	0	3	3	0	3	2	0	1	0	0	0	1	0	0	1	0	14/48	29

Key for Table 2:

1 - Explicit theoretical framework
2 – Statement of aims/objectives in main body of report
3 – Clear description of research setting
4 – Evidence of sample size considered in terms of analysis
5 –Representative sample of target group of a reasonable size
6 –Description of procedure for data collection
7 – Rationale for choice of data collection tool(s)
8 –Detailed recruitment data
9 –Statistical assessment of reliability and validity of measurement tool(s) QUANT
10 –Fit between stated research question and method of data collection (QUANT)
11 –Fit between stated research question and format and content of data collection tool (QUAL)
12 –Fit between research question and method of analysis
13 – Good justification for analytical method selected
14 – Assessment of reliability of analytical process (QUAL)
15 – Evidence of user involvement in design
16 –Strength and limitations critically discussed

Findings

Figures 2a, 2b and 2c display the themes and sub-themes generated for the children and adolescent, adult and elite athlete population respectively. The perceived health benefits and frequency counts for each of the four populations are displayed in Table 3. Not every study explored health benefits and in those that did, not all participants reported health benefits. Therefore, the frequency counts are low and the analysis was limited. Supportive quotations for the themes and sub-themes are presented in Table 4.

Table 3: Perceived health benefits of participating in sport either directly reported or referred to by participants in the included studies for the four populations

Children and Adolescents				**Adults**			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ strength	2	↑ independence	2	↑ functionality	6	↑ self-confidence	6
↑ muscle mass	1	↑ self-efficacy	1	↑ strength	6	↑self-esteem	5
↑ fitness	3	↑ confidence	3	↑ fitness	9	↑self-efficacy	1
↑ functionality	3	↑ self-esteem	1	↓ infection/illness	2	Stress release	4
↓ infection/illness	1			↑ sleep quality	3	↑ mental health	5
Pain management	1			Disability management	4	↑ independence	5
Weight management	1						
↑ sleep quality	1			↑ muscle mass	1		
				Weight management	4		
Elite athletes				**Veterans**			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ fitness	2	↑ self-confidence	3	Weight management	1	↑ self-esteem	1
↑ strength	2	↑ independence	2	↑ functionality	1	↑ self-confidence	1
Weight management	1	↑ mental health	1	Pain management	1	↑ mental health	1
		↑ self-esteem	3			↑ independence	1
						Stress release	1

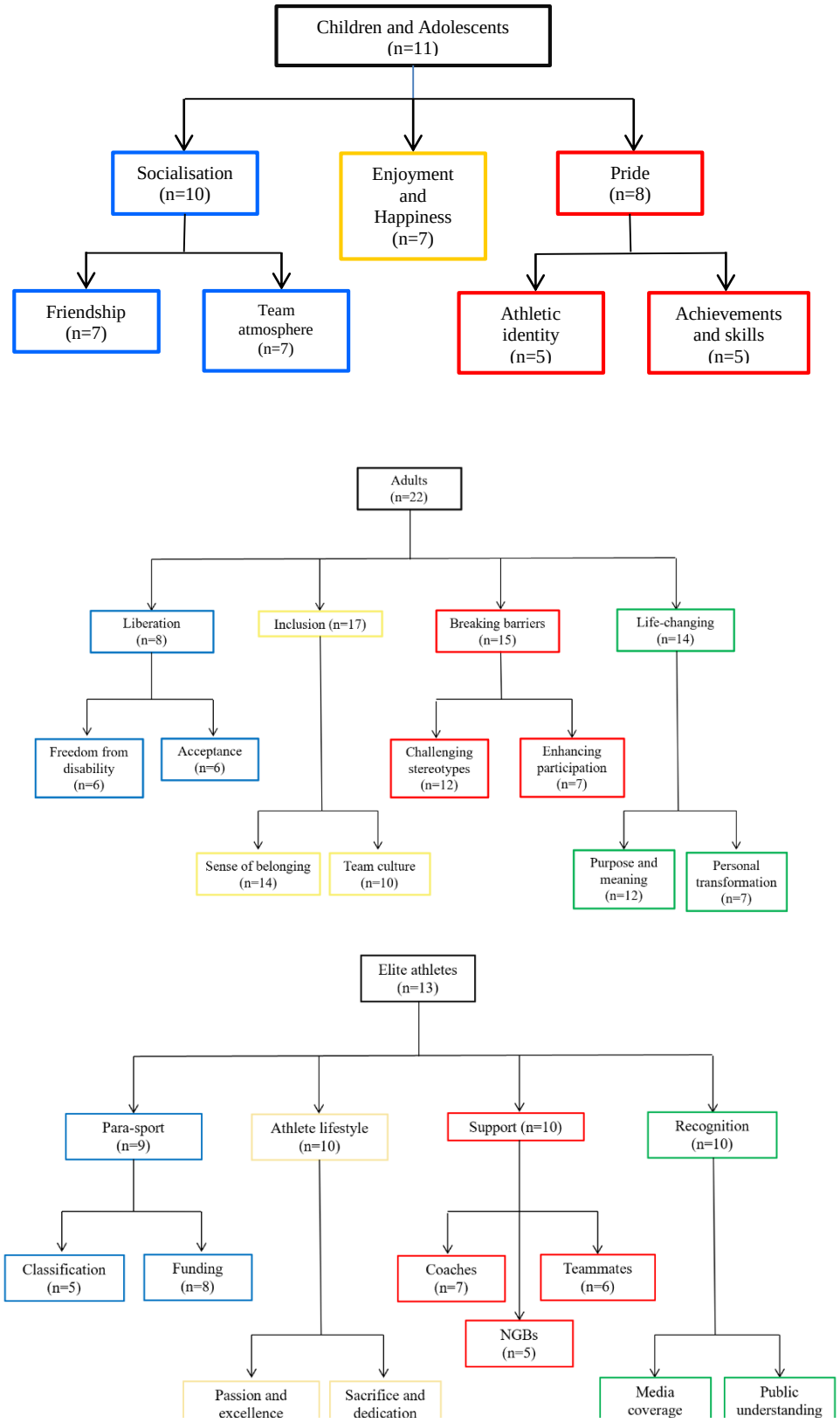

Figure 2: Themes and sub-themes from the children and adolescent, adult and elite athlete populations respectively.

Children and Adolescents

Eleven studies were synthesised under this category, with three themes and four sub-themes generated. The themes were: (a) socialisation, (b) pride and (c) enjoyment and happiness.

Socialisation theme

Socialisation referred to interacting with similar others, making friends, being part of a team and feeling a sense of belonging, demonstrating the social benefits that come with sport participation. Two sub-themes were identified: (a) friendship and (b) team atmosphere.

Friendship sub-theme. The importance of friendship was clearly expressed, including being able to socialise with others and make friends. Friendship formed a big part of their overall experience and was mentioned in seven studies, however some adverse experiences with peers were reported, including receiving negative comments about their disability and sporting ability [49,50,55,60,69,74,81].

Team atmosphere sub-theme. Participants loved being part of a team and enjoyed the team atmosphere. This again highlights how important it was to spend time with others, suggesting that sport facilitates a sense of belonging and inclusion. There were no negative comments made by participants about being part of a team and it was identified in seven studies [50,52,55,67,70,74,81].

Pride theme

Sport elicited feelings of pride, self-esteem and accomplishment, and was demonstrated through tangible achievements and through improving technique. Participants expressed pride

in being an athlete and having an athletic identity. Two sub-themes were identified: (a) athletic identity and (b) achievements and skills.

Athletic identity sub-theme. Participants were proud to be an athlete, enabling them to feel a sense of normality and to be seen as an athlete rather than someone with a disability. They expressed pride in participating in athlete-based activities, such as attending competitions, and having their own sporting equipment. This was identified in five studies [50,60,67,70,81].

Achievements and skills sub-theme. Participants were proud of, and keen to show off, the skills they had developed through sport and their tangible achievements, such as trophies and medals. This was identified in five of the eleven studies [50,52,55,60,82].

Enjoyment and happiness theme

The final theme was that of the pure enjoyment and satisfaction experienced when participating in sport. Sport was inherently fun and the participants experienced considerable happiness and joy when playing, represented in seven out of the eleven studies [49,55,60,67,69,74,81].

Health benefits:

The most frequently cited physical and mental health benefits by children and adolescents were increased fitness, functionality and confidence through sport participation.

Adults

Within the category of adults, twenty-two studies were synthesised. Four themes and eight sub-themes were generated. The four themes were: (a) liberation, (b) inclusion, (c) breaking barriers and (d) life-changing.

Liberation theme

A sense of freedom and escapism was experienced, allowing participants to forget about disability through focusing on sport. Sport also provided a means to help individuals accept their disability, become accustomed to the perceived limitations that come with it and feel proud of who they are. Within this theme, two sub-themes were generated: (a) freedom from disability and (b) acceptance.

Freedom from disability sub-theme. Feeling free from disability, forgetting one's impairment and a experiencing a sense of escapism were evidenced across a wide range of sports including scuba diving, wheelchair rugby, dancing, cycling and rowing. This sub-theme was mentioned in six of the studies [51,54,77,78,80,83].

Acceptance sub-theme. Sports participation enabled the acceptance and management of the perceived limitations of disability. Participants felt proud of who they were and embraced their disability, feeling confident and comfortable in themselves. Sport helped participants adapt and become accustomed to their new identity, feel at peace with disability. This was identified in six of the studies [51,54,59,73,80,83].

Inclusion theme

Inclusion refers to the sense of belonging, comfort and equality experienced when participating in sport and the formation of friendships through being with experientially similar others. A sense of community, connection and camaraderie was experienced through having teammates. Two sub-themes were generated: (a) Sense of belonging and (b) Team culture.

Sense of belonging sub-theme. An important aspect of the sport experience was the sense of belonging and connection that the participants felt through being involved in sport. They referred to not feeling *'out of place or different'* (Bates et al., 2019, pg. 5), fitting in through being with similar others and feeling like themselves when playing sport. This sense of belonging was mentioned in fourteen studies [4,30,52,54,56,59,64,68,75,76,78,80-82].

Team culture sub-theme. Participants felt a strong bond with teammates, likened to a family. Important aspects of the team culture included a sense of community, dedication to the team, camaraderie and support from teammates. This was identified in ten of the studies [54,56,59,64,70,73,76,78,81,83].

Breaking barriers theme

This theme refers to challenging the expectations of others and resisting society-imposed limitations, proving others wrong through demonstrating their abilities. It refers to ways in which participation may be enhanced through reducing the barriers to sport participation. Two sub-themes were identified: (a) challenging stereotypes and (b) enhancing participation.

Challenging stereotypes sub-theme. Sport allowed individuals to challenge the stereotypical restraints and expectations placed on those with a disability, whilst also in some cases breaking one's self-imposed restrictions. This concept was very evident, with this sub-theme being identified in twelve studies [51,54,56,59,70,73,75-80,83]. Conversely, certain sports such as

dance had expectations about what the dancers should look like, with participants expressing a desire to not be seen as disabled in order to look 'pretty'.

Enhancing participation sub-theme. Certain barriers and facilitators to sport participation were discussed by some participants, which could be considered when improving the sport experiences of individuals with a disability. Comments were made surrounding accessibility, specialist equipment, volunteers, guide runners and disability itself. This theme was mentioned in seven of the included studies [30,52,56,75,77,78,83].

Life-changing theme

Life-changing refers to the integral role of sport in providing a sense of purpose and meaning, providing structure and a focus, and eliciting feelings of elation, realness, passion and gratitude. It denotes how sport can transform an individual's outlook, personality and abilities, contributing to self-development and acting as an overall positive influence. There were two sub-themes: (a) purpose and meaning and (b) personal transformation.

Purpose and meaning sub-theme. Participants were grateful for sport, providing something to do, a goal and a passion. It provided a *'greater purpose'* and allowed them to *'find meaning'* [52,p.826]. Twelve studies referred to this sub-theme [30,51,52,54,64,70,75-78,80,81].

Personal transformation sub-theme. Sports participation also enabled participants to transform themselves for the better, including their outlook on life, personality and skills. This was identified in seven of the studies [51,52,64,76,80,82,83].

Health benefits:

The most frequently cited physical and mental health benefits were increased fitness, functionality, strength and self-confidence through participation in sport.

Elite Athletes

Thirteen studies included participants who were elite athletes. Four themes and nine sub-themes were generated. The themes were: (a) para-sport, (b) athlete lifestyle, (c) performance support and (c) recognition.

Para-sport theme

This theme refers to unique aspects of para-sport which are more relevant to those at the top level of elite sport rather than at the recreational and sub-elite levels. Two sub-themes were generated: (a) classification and (b) funding.

Classification sub-theme. Classification is a unique and relatively controversial area, with different issues raised by those with different disabilities and in different sports. Exaggerating the extent of disability was mentioned in visually impaired cricket and the involvement of 'minimally disabled' players was highlighted in sitting volleyball. Five studies spoke of classification within sport [48,57,62,72,76].

Funding sub-theme. The financial support received by participants was provided in the form of funding and sponsors. Funding was generally seen as a positive influence on the participants' wellbeing and performance, however there were some negative experiences, such as additional pressure and difficulties obtaining sponsorship due to a lack of awareness of para-sport. This sub-theme was identified in eight studies [48,53,57,58,62,63,72,84].

Athlete lifestyle theme

This theme refers to the qualities and attitudes necessary to be successful in elite sport, including passion for sport, the desire for excellence and the sacrifices and dedication required to achieve their goals. Two sub-themes included: (a) passion and excellence and (b) sacrifice and dedication.

Passion and excellence sub-theme. This incorporates the pure passion, love and enjoyment the participants had for their sport, as well as striving for excellence and aiming to be the best athlete possible. This concept was identified in nine studies [57,58,62,63,65,72,73,76,78].

Sacrifice and dedication sub-theme. The sacrifices made and the dedication required to be successful in elite sport was identified in five studies and involved concepts such sacrificing appearance and family time to train or compete [63,65,72,76,84].

Support theme

This refers to the three forms of performance support consistently mentioned in the studies and how the support provided both helped and hindered performance and wellbeing. There are three sub-themes: (a) coach, (b) teammates and (c) National Governing Bodies (NGBs).

Coaches sub-theme. There were mixed experiences with coaches, mainly comprising negative comments suggesting coaches lacked knowledge on para-sport and how to coach athletes with a disability. However good coaches were respected and appreciated by participants. Seven studies mentioned support from coaches [48,53,58,63,76,78,84].

Teammates sub-theme. Teammates played a key role in an athlete's experience, providing a sense of camaraderie and support, sharing knowledge to help manage disability and deal with personal problems. This was identified in six studies [48,62,65,72,76,78].

National Governing Bodies sub-theme. NGBs which were generally represented in a poor light and it was suggested that they had a lack of understanding and appreciation of the athletes. Participants reported being treated inferiorly and unfairly, feeling afraid to voice their opinions due deselection fears. This was mentioned in five studies [48,53,63,76,84].

Recognition theme

This theme refers to the need for: increasing the coverage and publicity of para-sport, raising the awareness and support for athletes and counteracting the misunderstandings surrounding para-sport. There were two sub-themes: (a) media coverage and (b) public understanding.

Media coverage sub-theme. A lack of media coverage and support was reported, along with the presence of misunderstandings surrounding para-sport and para-athletes, including being wrongly perceived as 'super human' [63, p.69]. This was identified in five studies [53,58,62,63,84].

Public understanding sub-theme. Participants spoke of the need to counteract public perceptions of disability to encourage understanding and appreciation of para-sport. When appreciation and respect for their abilities were received from the public, this was seen as very positive, demonstrating the need for more promotion. This sub-theme was identified in eight of the studies [57,63,62,65,72,76,78,84].

Health benefits:

The most frequently cited physical and mental health benefits by elite athletes were improved self-confidence and self-esteem through participation in sport.

Veterans

Only one study explored the longer-term experience of sport participation, with most studies looking at the experiences of sport camps, programmes or competitions. Due to the paucity of literature, it was not possible to generate themes however the interesting quotations provided offer insight into sport experiences in this population. They suggest that sport aids rehabilitation following traumatic injury, provides a competitive outlet, facilitates disability acceptance and provides a sense of purpose and normalcy.

Health benefits:

Three physical and five mental health benefits were cited; and included increased self-esteem, independence and functionality. However, analysis of the most frequently reported benefits was not possible due to insufficient literature.

Table 4: Key supportive quotations

Theme	Sub-theme	Quotation	Study
Population: Children and adolescents			
Socialisation	Friendship	*'making friends'*	Carter et al., 2014
		'*I have made a lot of friends through NEP or the USA team that I play for… we are all close and tight knit, and we all communicate with each other, we hang out and bond'*	Aytur et al., 2018
	Team atmosphere	*'Feeling a connection with everybody'*	Aytur et al., 2018
		'A sport where people in power wheelchairs, who may have not had a chance to play a sport before, can play a competitive sport and be on a team for maybe the first time'	Jeffress and Brown, 2017
Pride	Athletic identity	*'I get to tell all of the people I meet that I play and how well I do, so I'm kinda like a normal athlete'*	Jeffress and Brown, 2017
	Achievements and skills	*'I've won 8 medals!*'	Grandisson, Tetreault and Freeman, 2011
		'I like showing off my turns'	Carter et al., 2014
Enjoyment and happiness		*'I feel happy. I feel excited here actually and I like dancing here, it's really good … it's amazing'*	Aujla, 2019
		'it's the sport as such, shooting and so on that is great fun'	Kristén, Patriksson and Fridlund, 2002
Health benefits		*'I feel fitter'*	Carter et al., 2014
Population: Adults			

Liberation	Freedom from disability	*'Once you're down there, you don't have to walk so you've got all the freedom. Diving turns me back into a human being, I go down there and I've got the freedom and I'm back to being a person'*	Carin-Levy and Jones, 2007
		'When I'm playing sport I can forget about everything and focus on that [sport]'	Stephens, Neil and Smith, 2012
	Acceptance	*'I am proud of myself now, you know. I cannot change. I do not–even if there was a way to change, you know, my way, the way I am, you know, I wouldn't change'*	Bantjes, Swartz and Botha, 2019
		'It wasn't, 'Who did this to me?' It just happened and I'm fine about it. … We (you and I) are not different'	Swartz et al., 2018
Inclusion	Sense of belonging	*'I feel like myself when I play wheelchair basketball because there are lots of different people with different abilities on the team, so I don't feel out of place or different'*	Bates et al., 2019
		'You can meet with others, communicate with other people so that you can find yourself being together with other people … Here we meet people who are also blind.'	Swartz et al., 2018
	Team culture	*'[My team] is like my family'*	Côté -Leclerc et al., 2017
		'By being disabled athletes, we're all a part of a team. We're supportive of one another, regardless of disability. We are able to assist others.'	Wilhite and Shank, 2009
Breaking barriers	Challenging stereotypes	*'[I participate in sport] to show them I'm not only a disabled person. I'm not only a disabled person who can just sit in the house … doing nothing. I'm a disabled person who can do something'*	Bantjes, Swartz and Botha, 2019
		'So I just say … 'I can do it!'. I can prove to the abled people that disabled people can do it and they have the potential to do it.'	Swartz et al., 2018
	Enhancing participation	*'[The training venue is] good because it's accessible – there are no stairs, and all the resources, wheelchairs, balls, etc. we need are easily accessed'*	Bates et al., 2019
		'Equipment is a massive barrier. It's just not as expensive in able-bodied sport. £2000 for a bike, it's a lot of money and it's always going to be a same because it is a small market.'	Stephens, Neil and Smith, 2012

Life-changing	Purpose and meaning	*'Rugby is our life!'*	Litchke et al., 2012
		'So sport is a really wonderful thing and it can take you somewhere that you never thought that you'd be in your life.'	Swartz et al., 2018
	Personal transformation	*'It [disability sport] made me very positive towards life.'*	Bantjes, Swartz and Botha, 2019
		'It gave me a different outlook on life…that I shouldn't hold back, that I should take on all challenges.'	Swartz et al., 2018
Health benefits		*'I'm really strong and fit now ... I can do everything myself. I don't need anyone.''*	Richardson et al., 2017
Population: Elite athletes			
Para-sport	Classification	*'Why would anybody pretend that they couldn't see to play blind cricket?'*	Powis, 2017
		'Some people will not try to get bits of their bodies better, just in case suddenly they cannot take part in the Paralympics'	Silva, 2013
	Funding	*'The funding provides you the opportunity to not work and focus on your sport'*	Arnold et al., 2017
		'The pressure of thinking you've got to perform all the time, which isn't good for you as an athlete. You need to relax and run.'	Brittain, 2002
Athlete lifestyle	Passion and excellence	*'Deaf sport is definitely in my blood'*	Foster, Fitzgerald and Stride, 2019
		'It's really just the desire to excel'	Garci and Mandich, 2005
	Sacrifice and dedication	*'For those eight years you have, you put up blinders because your always, your nose to the grind, train, train, train, and you have the blinders up, you don't want any distractions, see any distractions, you don't want to be around any distractions'*	Garci and Mandich, 2005
Support	Coaches	*'I had this coach when I was at [Name of city] who told me that I was useless and pathetic, and that I was a drama queen. That really knocked me down and had a massive impact on me'*	Arnold et al., 2017
	Teammates	*'You spend so much time together it's like your brothers. You eat with them, you sleep with them, you play basketball with them, everything you do together.'*	Garci and Mandich, 2005
	National Governing Bodies	*'Sometimes they have the attitude, like we should be grateful that they let us go abroad to compete so that we shouldn't*	Huang, 2005

		complain about anything. It's very patronizing. They are not developing any athletes. There is no system, no practical support, no encouragement.'	
Recognition	Media coverage	*'Each time we go for competition … international high level competition… you can hardly see any report in the papers … on news …. anything … If the [public] is not exposed to our achievement, how can we manage to get sponsorship? There is no sponsorship coming in because the public is not exposed.'*	Wilson and Khoo, 2013
	Public understanding	*'[people] kept giving me free stuff, it was really bizarre, and I've been asked to give loads of speeches and talks and I've opened two schools in the area'*	Dashper, 2010
		'A lot of time we get connected with the Special Olympics, which is hard to explain to someone what the difference is without putting one or the other down'	Stillson, 2007
Health benefits		*'I think it gave me a huge amount of self-confidence, which I am not exactly short of, to be fair, now! I think it definitely created in me that confidence in my own worth and my own abilities'*	Powis, 2017
Population: Veterans			
		'Sport helped me get rid of the frustration and accept what I can do today.'	Green, 2013
		'And that was my life, sport, sport, sport. I needed to see how far I could go.'	Green, 2013

Discussion

Children and adolescents

Sport offered the opportunity to socialise and feel a sense of belonging. Children and adolescents experienced a team culture and formed friendships, offering many social benefits for young people with physical and intellectual disabilities, increasing their physical and emotional wellbeing [85,86]. They enjoyed showing off their achievements and skills through sport, proving others wrong. This is consistent with previous findings which report that sport elicits feelings of pride in being a competitive athlete, providing an opportunity to show off talent [87,88]. The happiness and enjoyment of sport experienced was very evident. The fun aspect of sport has been consistently reported, acting as a facilitator and motivator for participation, influencing commitment to sport [86,90-92].

Adults

Adults experienced community, camaraderie and closeness through being part of a team. Feeling connected to and receiving advice from others in sport reportedly elicits feelings of equality and togetherness, further supporting the review findings [83,93]. Sport provided a means to break stereotypes and society-imposed limitations. Similarly, research has shown sport helps to manage stigma, challenge public perceptions and defy expectations of disability [94-96]. Sport also provided a sense of purpose and meaning, with participants expressing gratitude for sport and its integral role in their lives. Literature supports this, suggesting that sport offers a sense of accomplishment through goal setting, providing structure and purpose [93].

Liberation was experienced in two ways: feeling free from impairment and not being restricted by perceived limitations, and accepting disability, moving forwards. Sport facilitates feelings of wholeness, liberty and independence, providing freedom of movement and an escape from perceived disability limitations [96]. It provides a greater sense of control and empowerment, benefiting mental health and overall wellbeing [97]. Accepting, adapting and being at peace with disability were often achieved through sport, enabling feelings of pride and self-confidence. Limited research has investigated self-acceptance, however greater acceptance by non-disabled teammates was associated with increased friendships and participation, however more research is required into self-acceptance and sport in adults with a disability [98,99].

Elite athletes

Elite athletes received a wide range of personal and performance-based support from teammates. Team chemistry, cohesion and trust positively influence performance, with strong interpersonal relationships linked to successful outcomes in Olympic and Paralympic athletes [100,101]. Since 2000, there has been increasingly more media coverage in Europe and a greater focus on athleticism over disability, however the findings suggest that more coverage is required to further increase public understanding [102,103]. The dedication and desire to succeed was clear – sport was priceless and was when they felt their happiest. Dedication was unique to the elite athletes and is linked to mental toughness, suggesting it is vital to reach the pinnacle of sport [104].

Funding came with additional stressors but also provided new opportunities. Findings in Olympic sport support this, with the potential reduction or removal of financial support acting as a big stressor [105]. It also influences retirement experiences of British Paralympians, however no research has explored its role on para-athlete wellbeing and performance [106].

No research was found directly exploring experiences with the classification system in elite para-sport, which is interesting given the experiences of participants in this review and speculative claims in the media around 'classification doping' [107].

Only three sources of support were mentioned which was surprising as elite athletes have access to a whole contingency of support staff monitoring wellbeing and performance [100,101,108]. It is possible that less support may have been available to participants in the earlier studies as increases in investment and awareness of Paralympic sport were just beginning [16,109]. Psychological, lifestyle, physical and financial support all interact to enable sporting success, supporting the need for more research to fill the dearth of literature surrounding social support in elite para-athletes [100,101,108].

Veterans

Analysis of the findings was not possible due to the paucity of literature; however it has been suggested that there are many positive aspects and health benefits of sport [62]. All research in this area has focused on sport camps or competitions, therefore more research is needed to explore the experiences of continued, long-term participation in sport, providing insight into this phenomenon [18,110-112].

Similarities and differences across the populations

Sport provided adults, children and adolescents and elite athletes with the opportunity to socialise and feel a sense of belonging. Participants felt part of a team and community, experiencing camaraderie, friendship and a connection with others. Sport was also used to challenge stereotypes and societal expectations. For the children and adolescents, this was

through showing off their skills and achievements, proving others wrong. Adults used sport to break society-imposed limitations, defying expectations. Elite athletes expressed the desire for more awareness of para-sport and the elimination of misunderstandings. Passion for sport was clearly evident across these three populations. Pure happiness and enjoyment were experienced by the children and adolescents, with sport playing an integral role in providing adults with purpose and meaning. Elite athletes expressed their desire and dedication to achieve success, feeling their happiest when playing sport.

Certain themes and ideas were also population specific. Only adults seemed to express feeling liberation when playing sport, mainly through feeling free from impairment and being able to accept their disability. It is interesting how this was experienced in adulthood but not childhood, suggesting that adults are more aware of society- imposed limitations, and how sport provides a means to overcome this. Elite athletes experienced unique phenomena, including funding, sponsorship, the classification system and support from NGBs, which all came with both positive and negative aspects. This suggests that these phenomena are only experienced by individuals participating at the highest level of sport.

Health benefits

The perceived physical and mental health benefits across the four populations were similar, suggesting that the benefits experienced are consistent regardless of the individual participation experiences. Findings are consistent with literature investigating these phenomena in adult populations [113-115]. However more research is required to confirm these findings in all four populations and to enable the promotion of population-specific health benefits when encouraging sport participation [113-115]. It is possible that more research into perceived

health benefits of sport for each population would enable comparisons of the health benefits across populations, providing value when promoting sport for individual populations.

Strengths and weaknesses

This systematic review was novel in exploring these phenomena across four populations. Rigorous methods were employed all stages, including using several information sources, a dual review approach, well-established research tools and methods, and the involvement of a stakeholder group which benefitted the analysis process [32,33]. The main limitation was the restricted analysis of the health benefits as very few studies reported the health benefits as demonstrated by the frequency counts in Table 4.

Conclusion

Findings suggest the value of sport participation for all four populations, offering an overall positive experience with many associated health benefits. Sport offered children and adolescents a social outlet, creating considerable happiness and pride. Adults reported experiencing feelings of freedom and purpose, and sport provided an arena to challenge disability stereotypes. Elite athletes displayed passion and dedication, craving more recognition of their achievements and support from NGBs and sport practitioners. Considerably more research is required to determine the longer-term experiences of sport participation for veterans.

Figure legends

Figure 1: PRISMA flow diagram.

Figure 2: Themes and sub-themes from the children and adolescent, adult and elite athlete populations respectively.

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Table 1. Study characteristics

Study	Pop.	Study design	Participants	Phenomenon of interest	Data collection	Data analysis
Arnold et al., 2017 [48]	EA	Qualitative	10M/8F Aged 17-39	The organisational stressors that athletes with a disability encounter.	Interviews.	Systematic procedures and grounded theory followed.
Aujla, 2019 [49]	C/A	Qualitative	4F (and 4 parents) Aged 15-16	The experiences and outcomes of an inclusive dance talent development programme and how such outcomes were facilitated.	Interviews and focus groups	Content analysis
Aytur et al., 2018 [50]	C/A	Qualitative	14M/1F Aged 9-16	The meaning given to the competitive sports experience by youth athletes with disabilities, and the outcomes, barriers and enablers associated with their participation.	Photovoice method and focus group	Template method
Bantjes et al., 2019 [51]	A	Qualitative	17M/5F Aged 18-67	The participation experiences of a group of athletes in competitive disability sport in South Africa and the ways they talk about issues of identity and self- representation in the context of elite disability sport.	Interviews	Thematic analysis
Barfield and Malone, 2013 [5]	C/A and A	Mixed methods	19M/6F Mean age 28.	The perceived benefits and barriers to exercise among power wheelchair soccer players.	Survey and scale	Ranked responses and non-parametric tests
Bates et al., 2019 [52]	C/A and A	Qualitative	2M/1F Aged 12-22 (3 coordinators)	The team's experiences of wheelchair basketball and team membership.	Interviews and observational and participatory fieldwork	Identification and synthesis of key themes from the data collected
Bowers et al., 2016 [30]	A	Qualitative	15 (11 family members, 6 non-athletes, 7 family members of non-athletes, 8 staff members) From SOPHIE study: 58.2%M / 42.8%F Average age: 33 years.	The experiences and perspectives of people with intellectual disability, their families and the staff who work with them, about Special Olympics Ireland	Focus groups and interviews	Thematic analysis
Brittain, 2002 [53]	EA	Qualitative	9M/3F Aged 17-42	The factors that have an effect upon the lives of elite athletes from the time they first took up the sport of athletics to the present day.	Interviews	Critical approach

Carin-Levy and Jones, 2007 [54]	A	Qualitative	3M Aged 33-53	The psychological and social benefits of scuba diving as a recreational sport for people with physical impairments.	Interviews	Model suggested by Dey 1993
Carter et al., 2014 [55]	C/A	Qualitative	37 children Aged 3-13 (12 family members, 14 stakeholders)	Experiences and perceptions of 'The Cheetahs' and what benefits occur as a result of bringing children with disabilities and children without disability together	Observation, photographs, interviews and focus groups.	Thematic analysis
Cote-Leclerc et al., 2017 [56]	A	Mixed methods	25M/9W Aged 18-62	The influence of adapted sport on quality of life in adult wheelchair users.	Questionnaires and interviews	Statistical analysis and thematic content analysis
Dashper, 2010 [57]	EA	Qualitative	3M/2F Aged: 19-42	The embodied, gendered experiences of disabled horse riders.	Interviews	Social model of disability
Foster, Fitzgerald and Stride, 2019 [58]	EA	Qualitative	2M/2F Aged 24-45	The experiences of 4 deaf athletes who have competed in the Deaflympics and their socialisation into sport.	Interviews	Constant comparison method
Garci and Mandich, 2005 [59]	EA	Qualitative	10M/6F Age unknown	The meaning given to participating in elite-level wheelchair basketball by athletes with lower extremity physical disabilities.	Interviews and observations	Data coded for themes. Comparative analyses
Goodwin et al., 2009 [60]	A	Qualitative	10M/1F Aged 22-48	The sense of community among WR players, how the sense of community is experienced and what gives meaning to that experience	Focus groups and photographs	Thematic analysis
Grandisson, Tetreault and Freeman, 2011 [61]	C/A	Qualitative	6M/5F Aged 12-19 (20 parents, 9 non-sport children, 39 staff)	The factors associated with the integration of adolescents with intellectual disability in sports alongside their non-disabled peers	Interviews, questionnaires and discussion group	Content analysis
Green, 2013 [62]	V	Qualitative	9M/2F Age range 20-50	How participation in adaptive sport may contribute to personnel adapting their identity and re-establishing their meaning of life post-traumatic injury	Interviews	Interpretative phenomenological analysis
Haslett, Fitzpatrick and Breslin, 2017 [63]	A and EA	Qualitative	10M Aged 22-53	The interplay of individual and societal facilitators and barriers to participation in wheelchair rugby.	Interviews	Thematic analysis

Huang, 2005 [64]	EA	Qualitative	11M/10F Aged 22-60	The experiences of elite male and female athletes in Taiwan and Britain	Interviews and documentary research	Immersion/crystallisation
Hudson et al., 2018 [65]	A	Qualitative	7M/1F Aged 24-51	Experiences of individuals with learning disabilities in secure settings engaged in community football training programmes and identify the benefits of such provision	Interviews	Template analysis undertaken
Jaarsma et al., 2014 [66]	EA	Quantitative	30M/46F Mean age 30.5	The barriers and facilitators of sports in Dutch Paralympic athletes with a physical disability.	Questionnaire	Statistical analysis
Jeffress and Brown, 2017 [67]	C/A, A and EA	Qualitative	23M/11F Aged 10-52	The experiences of power soccer players with disabilities and to examine the perceived opportunities and benefits of their involvement with power soccer.	Interviews	Thematic analysis
Kirkby, 1995 [68]	A	Quantitative	16M/20F Mean age 21.3 (21 non-disabled)	The motives and reinforcements for participation in wheelchair netball and the role of a sport psychologist.	Questionnaire	Statistical analysis
Kristen, Patriksson and Fridlund, 2002 [69]	C/A	Qualitative	13M/7F Aged 9-15	The conceptions of children and adolescents with physical disabilities about their participation in a sports programme	Interviews	Phenomenographic data analysis
Litchke et al., 2012 [70]	C/A and A	Qualitative	5M Aged 17-35	How a group of athletes perceived participation in WR as impacting their lives.	Interviews, observations and field notes	Phenomenological reduction
Macbeth, 2009 [71]	A	Qualitative	6M Aged 26-40	The challenges and constraints faced by partially sighted individuals when accessing football opportunities.	Interviews	Thematic analysis
Powis, 2017 [72]	EA	Qualitative	15M Aged 18-54	The lived experiences of the England VI cricket team and their experiences of playing VI cricket	Interviews, observation and soundscape elicitation	Thematic analysis
Richardson et al., 2017 [73]	A and EA	Qualitative	14M/2F Aged 18-40	The impact of sport on psychosocial health in developing countries.	Interviews	Thematic analysis
Sayed Ahmed et al., 2018[74]	C/A	Qualitative	19 (11 parents, 9 children). Children = 5M/6F. Aged 6-14.	The perceived factors impacting participation in sports according to children with limb absence and their parents.	Interviews	Thematic analysis
Seth and Dhillon, 2019 [75]	A	Qualitative	8F Aged 18-21 (8 non-disabled)	The experiences of 2 groups of female athletes - those with and without disability - who participate in sport	Interviews	Thematic analysis

Silva, 2013 [76]	A and EA	Qualitative	20M/12F Age range 15-65 (5 staff)	The impact of sitting volleyball participation on the personal capabilities of athletes with impairments and the influence of personal, cultural and environmental contexts of participation on capabilities.	Interviews	Interpretative phenomenological analysis.
Stephens, Neil and Smith, 2012 [77]	A	Qualitative	6M/1F Aged 26-49	The perceived benefits of becoming involved in sport and identifies the barriers to participation for individuals with spinal cord injury.	Interviews	Inductive generalisation and frequency analysis
Stillson, 2007 [78]	A and EA	Qualitative	9M/2F Aged 20-54	Perceptions of wheelchair athletes concerning involvement and continuing participation in wheelchair sports.	Interviews and observations	Analysed for themes and concepts
Swartz, Bantjes and Bissett, 2018 [79]	A	Qualitative	1M/3F Aged 18-29	How do university students with VI at a SA university experience their inclusion in ballroom dance with sighted students.	Interviews	Thematic analysis
Swartz et al., 2018 [80]	A	Qualitative	16M/6F Aged over 18	How athletes with disabilities talk about their experiences of participating in competitive sport in South Africa.	Interviews	Thematic content analysis.
Weiss et al., 2017 [81]	C/A and A	Qualitative	1M/4F Aged 13-33	The experiences of participating in Special Olympics from the perspectives of athletes with ID.	Photo-elicitation and interviews	Thematic analysis
Wickman, 2015 [82]	C/A and A	Qualitative	5M/5F Aged 16-29	How young people with disabilities make sense of sport.	Interviews	Thematic content analysis
Wilhite and Shank, 2009 [83]	A	Qualitative	7M/5F Aged 29-58	How participating in sport helps persons with a disability achieve and maintain health and health-related components of wellbeing.	Interviews	Cross-case content analysis
Wilson and Khoo, 2013 [84]	EA	Mixed methods	95M/28F Aged 15-59	The benefits and barriers influencing participation for athletes with disabilities from a developing country.	Questionnaire and focus groups	Statistical analysis and coding of transcripts

M; male, F; female, EA; elite athletes, A; adults, CA; children and adolescent, V; veteran

Table 2. QATSDD Scores

Author/Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Score	%
Arnold et al. 2017	3	2	2	1	3	2	2	2	x	x	0	3	0	0	2	2	24/42	57
Aujla 2019	0	3	3	0	1	2	0	1	x	x	0	3	1	0	0	0	14/42	33
Aytur et al.2018	3	3	3	0	2	3	3	3	x	x	2	3	3	3	0	2	33/42	79
Bantjes, Swartz and Botha, 2018	2	3	3	0	3	1	0	2	x	x	3	3	3	2	0	2	27/42	64
Barfield and Malone 2013	0	2	2	0	2	2	1	1	1	3	1	2	0	0	0	1	18/48	38
Bates et al., 2019	2	1	2	0	1	2	0	1	x	x	3	3	0	3	0	1	19/42	45
Bowers et al. 2016	0	3	3	0	3	2	0	2	x	x	2	3	0	0	2	2	22/42	52
Brittain 2002	3	3	3	1	3	3	3	3	x	x	2	3	3	0	0	2	32/42	76
Carin-Levey and Jones 2007	3	3	3	1	1	2	2	1	x	x	3	3	0	0	0	2	24/42	57
Carter et al. 2014	3	3	3	0	3	2	1	0	x	x	3	3	1	0	0	0	22/42	52
Cote-Leclerc et al. 2017	0	3	2	0	3	3	2	1	2	3	0	3	0	3	1	3	29/48	60
Dashper 2010	3	2	2	0	1	1	0	0	x	x	0	2	0	0	0	1	12/42	29
Foster, Fitzgerald and Stride, 2019	0	3	3	1	2	1	0	2	x	x	0	3	0	0	0	0	15/42	36
Garci and Mandich, 2005	0	2	2	0	3	2	0	2	x	x	0	3	0	0	0	0	14/42	33
Goodwin et al., 2009	1	3	2	0	1	2	0	1	x	x	0	3	0	3	0	2	18/42	43
Grandisson, Tetreault and Freeman, 2011	2	3	2	0	3	2	1	3	x	x	0	2	1	3	2	3	27/42	64
Green, 2013	3	3	3	3	2	3	3	3	x	x	3	3	3	2	0	2	36/42	86
Haslett, Fitzpatrick and Breslin, 2017	3	3	2	0	1	2	0	1	x	x	3	3	1	2	2	2	25/42	60
Huang, 2005	3	2	3	3	3	3	3	2	x	x	2	3	3	0	0	0	30/42	71
Hudson et al. 2017	0	1	3	0	2	2	0	3	x	x	3	3	1	1	0	2	21/42	50
Jaarsma et al. 2014	3	3	3	0	3	2	2	1	1	3	x	3	0	x	0	2	26/42	62
Jeffress and Brown 2017	3	3	3	0	3	3	2	1	x	x	0	3	0	0	0	0	21/42	50
Kirbky 1995	0	1	1	0	2	2	0	3	0	2	x	2	0	x	0	1	14/42	33
Kristen, Patriksson and Fridlund, 2002	3	3	2	0	3	3	2	2	x	x	0	3	2	1	0	3	27/42	64
Litchke et al., 2012	3	3	3	0	2	2	1	1	x	x	3	3	2	1	2	1	27/42	64
Macbeth 2009	2	1	2	1	1	1	0	1	x	x	0	3	0	0	0	0	12/42	29
Powis, 2017	3	3	3	0	3	3	3	1	x	x	2	3	3	0	0	1	28/42	67

Richardson et al., 2017	3	3	3	0	3	2	3	2	x	x	0	3	3	0	0	2	27/42	64
Sayed Ahmed et al. 2018	2	3	3	2	2	2	0	2	x	x	3	3	0	1	0	2	25/42	60
Seth and Dhillon, 2019	3	3	3	0	3	2	3	1	x	x	3	3	2	0	0	1	27/42	64
Silva, 2013	3	3	3	0	3	3	3	2	x	x	3	3	2	0	0	3	31/42	74
Stephens, Neil and Smith 2012	0	3	3	0	3	2	0	1	x	x	0	3	0	3	2	2	22/42	52
Stillson, 2007	0	3	3	0	3	3	2	2	x	x	2	3	0	0	0	2	23/42	55
Swartz, Bantjes and Bisset, 2018	3	2	3	0	1	1	0	0	x	x	3	3	0	3	0	0	19/42	45
Swartz et al. 2018	0	2	3	0	3	3	1	1	x	x	3	3	1	2	0	2	24/42	57
Weiss et al. 2017	0	3	3	0	1	2	3	3	x	x	0	3	2	3	0	3	26/42	62
Wickman, 2015	1	3	1	1	2	2	1	2	x	x	0	2	0	0	0	1	16/42	38
Wilhite and Shank, 2009	3	2	1	0	3	2	1	1	x	x	2	3	1	3	0	0	22/42	52
Wilson and Khoo 2013	0	3	3	0	3	2	0	1	0	0	0	1	0	0	1	0	14/48	29

Table 3. The perceived health benefits and frequency counts for each of the four populations

Children and Adolescents				Adults			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ strength	2	↑ independence	2	↑ functionality	6	↑ self-confidence	6
↑ muscle mass	1	↑ self-efficacy	1	↑ strength	6	↑self-esteem	5
↑ fitness	3	↑ confidence	3	↑ fitness	9	↑self-efficacy	1
↑ functionality	3	↑ self-esteem	1	↓ infection/illness	2	Stress release	4
↓ infection/illness	1			↑ sleep quality	3	↑ mental health	5
Pain management	1			Disability management	4	↑ independence	5
Weight management	1			↑ muscle mass	1		
↑ sleep quality	1			Weight management	4		
Elite athletes				**Veterans**			
Physical	**#**	**Mental**	**#**	**Physical**	**#**	**Mental**	**#**
↑ fitness	2	↑ self-confidence	3	Weight management	1	↑ self-esteem	1
↑ strength	2	↑ independence	2	↑ functionality	1	↑ self-confidence	1
Weight management	1	↑ mental health	1	Pain management	1	↑ mental health	1
		↑ self-esteem	3			↑ independence	1
						Stress release	1

Table 4. Supportive quotations for the themes and sub-themes

Theme	Sub-theme	Quotation	Study
Population: Children and adolescents			
Socialisation	Friendship	*'making friends'*	Carter et al., 2014
		'*I have made a lot of friends through NEP or the USA team that I play for… we are all close and tight knit, and we all communicate with each other, we hang out and bond'*	Aytur et al., 2018
	Team atmosphere	*'Feeling a connection with everybody'*	Aytur et al., 2018
		'A sport where people in power wheelchairs, who may have not had a chance to play a sport before, can play a competitive sport and be on a team for maybe the first time'	Jeffress and Brown, 2017
Pride	Athletic identity	*'I get to tell all of the people I meet that I play and how well I do, so I'm kinda like a normal athlete'*	Jeffress and Brown, 2017
	Achievements and skills	*'I've won 8 medals!*'	Grandisson, Tetreault and Freeman, 2011
		'I like showing off my turns'	Carter et al., 2014
Enjoyment and happiness		*'I feel happy. I feel excited here actually and I like dancing here, it's really good … it's amazing'*	Aujla, 2019
		'it's the sport as such, shooting and so on that is great fun'	Kristén, Patriksson and Fridlund, 2002
Health benefits		*'I feel fitter'*	Carter et al., 2014
Population: Adults			
Liberation	Freedom from disability	*'Once you're down there, you don't have to walk so you've got all the freedom. Diving turns me back into a human being, I go down there and I've got the freedom and I'm back to being a person'*	Carin-Levy and Jones, 2007
		'When I'm playing sport I can forget about everything and focus on that [sport]'	Stephens, Neil and Smith, 2012
	Acceptance	*'I am proud of myself now, you know. I cannot change. I do not–even if there was a way to change, you know, my way, the way I am, you know, I wouldn't change'*	Bantjes, Swartz and Botha, 2019
		'It wasn't, 'Who did this to me?' It just happened and I'm fine about it. … We (you and I) are not different'	Swartz et al., 2018
Inclusion	Sense of belonging	*'I feel like myself when I play wheelchair basketball because there are lots of different*	Bates et al., 2019

		people with different abilities on the team, so I don't feel out of place or different'	
		'You can meet with others, communicate with other people so that you can find yourself being together with other people … Here we meet people who are also blind.'	Swartz et al., 2018
	Team culture	*'[My team] is like my family'*	Côté -Leclerc et al., 2017
		'By being disabled athletes, we're all a part of a team. We're supportive of one another, regardless of disability. We are able to assist others.'	Wilhite and Shank, 2009
Breaking barriers	Challenging stereotypes	*'[I participate in sport] to show them I'm not only a disabled person. I'm not only a disabled person who can just sit in the house … doing nothing. I'm a disabled person who can do something'*	Bantjes, Swartz and Botha, 2019
		'So I just say … 'I can do it!'. I can prove to the abled people that disabled people can do it and they have the potential to do it.'	Swartz et al., 2018
	Enhancing participation	*'[The training venue is] good because it's accessible – there are no stairs, and all the resources, wheelchairs, balls, etc. we need are easily accessed'*	Bates et al., 2019
		'Equipment is a massive barrier. It's just not as expensive in able-bodied sport. £2000 for a bike, it's a lot of money and it's always going to be a same because it is a small market.'	Stephens, Neil and Smith, 2012
Life-changing	Purpose and meaning	*'Rugby is our life!'*	Litchke et al., 2012
		'So sport is a really wonderful thing and it can take you somewhere that you never thought that you'd be in your life.'	Swartz et al., 2018
	Personal transformation	*'It [disability sport] made me very positive towards life.'*	Bantjes, Swartz and Botha, 2019
		'It gave me a different outlook on life…that I shouldn't hold back, that I should take on all challenges.'	Swartz et al., 2018
Health benefits		*'I'm really strong and fit now ... I can do everything myself. I don't need anyone.''*	Richardson et al., 2017
Population: Elite athletes			
Para-sport	Classification	*'Why would anybody pretend that they couldn't see to play blind cricket?'*	Powis, 2017
		'Some people will not try to get bits of their bodies better, just in case suddenly they cannot take part in the Paralympics'	Silva, 2013
	Funding	*'The funding provides you the opportunity to not work and focus on your sport'*	Arnold et al., 2017

		'The pressure of thinking you've got to perform all the time, which isn't good for you as an athlete. You need to relax and run.'	Brittain, 2002
Athlete lifestyle	Passion and excellence	*'Deaf sport is definitely in my blood'*	Foster, Fitzgerald and Stride, 2019
		'It's really just the desire to excel'	Garci and Mandich, 2005
	Sacrifice and dedication	*'For those eight years you have, you put up blinders because your always, your nose to the grind, train, train, train, and you have the blinders up, you don't want any distractions, see any distractions, you don't want to be around any distractions'*	Garci and Mandich, 2005
Support	Coaches	*'I had this coach when I was at [Name of city] who told me that I was useless and pathetic, and that I was a drama queen. That really knocked me down and had a massive impact on me'*	Arnold et al., 2017
	Teammates	*'You spend so much time together it's like your brothers. You eat with them, you sleep with them, you play basketball with them, everything you do together.'*	Garci and Mandich, 2005
	National Governing Bodies	*'Sometimes they have the attitude, like we should be grateful that they let us go abroad to compete so that we shouldn't complain about anything. It's very patronizing. They are not developing any athletes. There is no system, no practical support, no encouragement.'*	Huang, 2005
Recognition	Media coverage	*'Each time we go for competition … international high level competition… you can hardly see any report in the papers … on news …. anything … If the [public] is not exposed to our achievement, how can we manage to get sponsorship? There is no sponsorship coming in because the public is not exposed.'*	Wilson and Khoo, 2013
	Public understanding	*'[people] kept giving me free stuff, it was really bizarre, and I've been asked to give loads of speeches and talks and I've opened two schools in the area'*	Dashper, 2010
		'A lot of time we get connected with the Special Olympics, which is hard to explain to someone what the difference is without putting one or the other down'	Stillson, 2007
Health benefits		*'I think it gave me a huge amount of self-confidence, which I am not exactly short of, to be fair, now! I think it definitely created in me that confidence in my own worth and my own abilities'*	Powis, 2017
Population: Veterans			

	'Sport helped me get rid of the frustration and accept what I can do today.'	Green, 2013
	'And that was my life, sport, sport, sport. I needed to see how far I could go.'	Green, 2013

Guideline/checklist (see author information)

Supplementary file 1.

PRISMA-P 2015 Checklist

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol

Section and topic	Item No	Checklist item	Signpost
ADMINISTRATIVE INFORMATION			
Title:			
Identification	1a	Identify the report as a protocol of a systematic review	P1. Lived experiences of disabled individuals in sport: a systematic review protocol
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	Not applicable
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	P1. PROSPERO: CRD42020169224
Authors:			
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	P1. Beth Aitchison University of Birmingham Email: bla923@student.bham.ac.uk Dr Nicola Heneghan Lecturer in Physiotherapy School of Sport, Exercise and Rehabilitation Sciences College of Life and Environmental Sciences University of Birmingham Edgbaston, Birmingham, B15 2TT, UK Tel: 0121 415 8367 Email: n.heneghan@bham.ac.uk Dr Alison Rushton University of Birmingham

			a.b.rushton@bham.ac.uk Paul Martin Paralympic Sport Technical Lead English Institute of Sport Paul.Martin@eis2win.co.uk
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	P9. BA developed the protocol with guidance and feedback from NH and AR. BA is first reviewer and second reviewer is Marc Barr (MB). NH is third reviewer. All authors have contributed to the development of the protocol and will contribute to the data interpretation. All authors have approved the final manuscript.
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	Not applicable
Support:			
Sources	5a	Indicate sources of financial or other support for the review	P9. 'This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.'
Sponsor	5b	Provide name for the review funder and/or sponsor	Not applicable
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	Not applicable
INTRODUCTION			
Rationale	6	Describe the rationale for the review in the context of what is already known	P4 and P5. Introduction (rationale)
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	P5. Introduction (objectives)
METHODS			
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	P5 and P6. Eligibility criteria.
Information sources	9	Describe all intended information sources (such as electronic	P6. Information sources.

		databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	P6 and P7 and supplementary file 2.
Study records:			
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	P7. Data management.
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	P7. Selection process
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	P7 and P8. Data collection process.
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	P8. Data items.
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	P8. Outcomes and prioritisation.
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	P8. Risk of bias in individual studies.
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	P8 and P9. Data synthesis.
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	P8 and P9. Data synthesis
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	Not applicable.
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	P8 and P9. Data synthesis.
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	P9. Discussion.

Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	P9. Confidence in cumulative evidence.

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g764