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Outdoor recreation experiences in youth with visual impairments: a qualitative inquiry

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ABSTRACT

Outdoor recreation has many benefits for youth. Benefits may be more profound in youth with visual impairments as the involvement in outdoor recreation activities provides improved self-determination and socialization. The purpose of this qualitative phenomenological study was to comprehend each participant's lived outdoor recreation experiences, and to illuminate and show specific meanings that participants assign to their lived experiences. Sixteen youth between the ages of 9–19 years with visual impairments kept an outdoor recreation log for 30 days and then were interviewed about their outdoor recreation experiences in their lives. Data from the logs and the interviews were analyzed by three experts in the field and themes, subthemes, and quotes were established. Youth with visual impairment do participate in a variety of outdoor recreation experiences. The findings revealed three main themes of barriers, benefits, and facilitators. The results indicate that outdoor recreation can be very beneficial and adapted support and special programming are necessary for participants to gain benefits from outdoor recreation experiences.

KEYWORDS

Key terms; blind; adapted physical activity; adapted physical education; families; adolescents; phenomenological

The United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006) adopting a broad definition of individuals with disabilities reaffirms that all persons must enjoy fundamental freedom and human rights including rights to leisure and recreation (Article 30).”). Outdoor recreation experiences introduce youth to a realm of freedom by allowing exploration of the natural world and have significant potential to benefit physical, cognitive, emotional, and social development, as well as their health, overall well-being, self-regulation skills, and attention (Karppinen, 2012; Kemple, Oh, Kenney, & Smith-Bonahue, 2016; Staempfli, 2009; Sutherland & Legge, 2016). In addition, outdoor recreation experiences can profoundly benefit a child's brain development by progressing language centers, motor skills, and proprioception (Honig, 2017). Outdoor recreation experiences do not necessarily have to be rigorous; however, many programs involving outdoor recreation encourage individuals to push their limits, which can additionally build self-confidence when obstacles are completed (Huynh & Torquati, 2019).

In contrast to indoor physical activities, outdoor recreation experiences have shown an increase in enjoyment, satisfaction, physical, mental, and psychosocial well-being (Bailey, Johann, & Kang, 2017; Blocki, 2019; Coon et al., 2011; Dorsch, Richards, Swain, & Maxey, 2016; Duvall & Kaplan, 2014). For example, individuals who went on a walk outdoors reported having better moods and were more motivated to continue the activity than compared to the individuals who walked indoors (Coon et al., 2011). The benefits of outdoor recreation experiences have been found to be even more pronounced for people with physical, cognitive, and social-emotional disabilities (Duvall & Kaplan, 2014).

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Individuals with disabilities have been found to participate less frequently in leisure activities, including outdoor recreation activities, in comparison to their peers without disabilities (Blocki, 2019; Schreuer, Sachs, & Rosenblum, 2014; Ullenhag, Krumlinde-Sundholm, Granlund, & Almqvist, 2014; Woodmansee, Hahne, Imms, & Shields, 2016). Youth with disabilities often encounter multiple barriers when engaging in outdoor recreation experiences including limited opportunities to participate, financial, social, emotional, and structural barriers (Anaby et al., 2013; Blocki, 2019). These barriers limit the development of important recreation and leisure skills that contribute to an individual's quality of life as an adult.

Outdoor recreation experiences have also been found to be beneficial in individuals with visual impairments by promoting independence, sensory experiences, and increased knowledge of the environment (Bandukda, Singh, Berthouze, & Holloway, 2019). Bell (2019) discovered that individuals with visual impairments experienced feelings of social, mobile, and exploratory freedom from nonhuman interactions in nature. Outdoor recreation can provide youth with visual impairments a sense of empowerment and a more positive view of the world (Dorsch et al., 2016). Experiencing the outdoors and being in nature can have lifelong positive effects if provided in a safe environment. Macpherson (2017) interviewed individuals who were blind about the effects of a walking program in the English countryside and found that the well-being experiences of participants included exploration outside of known (usually urban) routes, reaching summits and areas that have collective symbolic value, the facilitation of social networks, and improvements in physical fitness and self-reported weight loss or maintenance.

Although there are many benefits of outdoor recreation experiences for individuals with visual impairments, many individuals with visual impairments fear even walking around outdoors due to the unknown (Riazi, Riazi, Yoosfi, & Bahmeei, 2016). Becoming more comfortable in an environment where one has little to no control can be beneficial in order to instill a sense of confidence and personal safety when out in public, such as an urban park. These opportunities for people with visual impairments can help ease fears of the outdoors by minimizing fear of the unknown (Yoon, 2017).

As recreation and leisure play a central role in the lives of youth with visual impairments, these activities can promote major components of the Expanded Core Curriculum (ECC) for youth with visual impairments. The ECC promotes the generally accepted nine areas of instruction that most youth with sight attain incidentally but must be clearly taught to youth who are visually impaired (Hatlen, 1996). These nine specific areas include independent living (IL), orientation and mobility (OM), recreation and leisure (RL), self-determination (SD), sensory efficiency (SE), assistive technology (AT), career education (CE), compensatory access (CA) and social interaction (SI) (Hatlen, 1996). The ECC framework gives students, families, professionals, and the community a common language and structure for curriculum and instruction (Allman & Lewis, 2014). A recent study by Lieberman, Ericson, Lepore-Stevens, and Wolffe (2021) found that engagement in physical activity and outdoor recreation activities promoted every component of the ECC for youth with visual impairments. In other words, the engagement in outdoor recreation activities has shown to promote all components of the ECC including self-determination, independent living skills, recreation, orientation and mobility, and socialization.

Considering the value of outdoor recreation for youth with visual impairments and its significance in ECC, this study aims to understand the participants' experiences in outdoor recreation while also analyzing how they experienced outdoor recreation activities using a qualitative phenomenological approach. Within this paper, we consider outdoor recreation experiences such as camping, walking, running, swimming, hiking, biking, kayaking, rock climbing, and other related activities (Huynh & Torquati, 2019). In addition, 'youth' is defined in this manuscript as individuals between 9–19 years of age, which represents early to late adolescence.

Research approach

This study analyzed the outdoor recreation experiences of youth with visual impairments and utilized an interpretative phenomenological analysis (IPA) research approach. The IPA focuses on analyzing how the participants make sense of their lived experiences in their personal and social worlds. It also helps create meaning that the experience within their world holds for them (Smith, Jarman, & Osborn, 1999; Smith & Osborn, 2008). The IPA qualitative approach to this research has a theoretical foundation taken from the fields of phenomenology, hermeneutics, and idiography (Smith, Flowers, & Larkin, 2009; Smith & Sparkes, 2017). IPA draws from phenomenology because it is mainly concerned with studying each participant's outdoor experiential recollection and not necessarily an objective description of a specific event in time (Smith et al., 1999). It is established in the area of hermeneutics in that IPA is an interpretative effort, where it is the research teams' goal to 'make sense of the participant making sense' of their embodied outdoor experiences (Smith, 2017, p. 219). Lastly, IPA is idiographic, in that it is focused on understanding the lived experiences of each participant in detail (Smith et al., 2009; Smith & Sparkes, 2017). In the case of this study, the lived experiences of youth with visual impairments related to outdoor recreation experiences is the focus of the phenomenological analysis.

Using the IPA research approach, this study aimed to achieve two things. First, comprehend each participant's day-to-day and specific (or memorable) lived outdoor recreation experiences (Larkin, Watts, & Clifton, 2006). Second, illuminate and show specific meanings that participants assign to their lived experiences. In the current study, the researchers studied participants' experiences in outdoor recreation. The researchers' main focus was to deliver a description of the participants' experiences while also analyzing how they experienced outdoor recreation activities. The researchers further provided a construction of the meaning they ascribed to those various experiences (Christensen & Jensen, 2012).

Recruitment of participants

The lead researchers' Institutional Review Board reviewed and approved the study protocols. Parents of youth who had participated in a summer sports camp for youth with visual impairments were contacted via email to find out if their child would like to participate in the study. The e-mails were part of the participant list from the current and past years campers.

The call for participants included the purpose, time commitment, and eligibility criteria for the study. The specific eligibility criteria included individuals who (a) identified as being visually impaired; (b) were between 9–19 years old; (c) identified as having participated in outdoor recreation experiences in their lives; (d) would be willing to complete a Zoom interview for 45–60 min; and (e) would be willing to keep a detailed log of their outdoor recreation experiences for one month (30 days). Only youth within the age range 9–19 years were invited, considering that most individuals who participate in the summer camp fall within this age category. Forty-five individuals who met each of the inclusion criteria were invited to participate in the study. After the six-week deadline, 16 youth ages of 9–19 years signed up for interviews. The current sample size was kept small purposely, which is typical for IPA studies (Smith & Osborn, 2008). Prior to data collection, parents' consent and participants assent were obtained. The parents signed the informed consent and uploaded it as an attachment to an e-mail. The participants assented at the beginning of the interview in the presence of their parents. Every participant was interviewed with their parent or guardian present. In most instances, the participants engaged in their outdoor experiences with their parents and families. The questions were asked to the children and the parents supported and expanded the answers when needed. Engaging in the interview with their parents helped the participants with recollection of adaptations and modifications used as well as strategies that worked for them. Pseudonyms are used to protect the participants' identities. See Table 1 for demographic data for the participants.

Table 1. Participant demographics.

Participant Characteristics	*n*	%
Gender		
Male	7	43.8
Female	9	56.3
Race		
White	7	43.8
Black	0	0
Native American	0	0
Asian	6	37.5
Other (Mixed)	3	18.8
Visual Classification		
B1 (no light perception)	3	18.8
B2 (above 20/600)	2	12.5
B3 (20/200 to 20/600)	19	62.5
B4 (20/70 to 20/200)	1	6.3
Type of School		
Public	16	100
Private	0	0
School for the blind	0	0
Homeschool	0	0
Developed Environments		
Urban	2	12.5
Rural	7	43.8
Suburban	7	43.8

Data collection

Two sources of data were utilized in this study: interviews and outdoor recreation logs. The primary source of data was semi-structured, audiotaped, Zoom interviews completed by two of the researchers. Similar to previous research examining experiences of individuals with visual impairments (Haegele, Sato, Zhu, & Avery, 2017a; Haegele & Zhu, 2017), telephone interviews, or in this case Zoom interviews, were selected in lieu of face- to-face interviews because of the issue of vast distances between participants who signed up for the study. Each participant completed an interview ranging from 45 to 60 min. in length. Each interview started with the interviewers describing the purpose of the study, as well as their background related to outdoor recreation to expose their positionality. The interviewers explicitly stated that they (a) identified as white females without a disability, (b) are employed as professors at universities, (c) currently engage in a variety of outdoor recreation activities, and (d) have been directing sport-related programs for youth with visual impairments for a number of years. Interviews were guided by semi-structured interview questions, which included broadly worded inquiries generated by the IPA framework. The interview questions were used flexibly throughout the interview to allow the participants to direct the magnitude and depth of the discussed topics (Smith & Sparkes, 2017) and worked as a checklist to confirm that the same basic questions were pursued across all participants. Participants were asked to reflect on their outdoor recreation experiences both in school and the community throughout their lives. This approach facilitated the participants to describe the experiences that were most meaningful and memorable across their outdoor recreation experiences. Sample questions included (a) Please describe your previous experience with outdoor adventure and recreation activities, (b) How did you get involved in these activities? (c) What were the benefits of your experience with outdoor adventure and recreation activities? (d) What has been helpful to you to access or participate in outdoor adventure and recreation activities?

The interview questions were validated with face and content validity by six experts in the field: three professors with expertise on visual impairment and physical activity, one physical education teacher who is blind, one college student who is a triathlete, and is visually impaired, and one

professor with an expertise in outdoor recreation and visual impairment. Two researchers were present for each interview to ensure consistency. The researchers took reflective field notes during the interview process. These notes provided the opportunity for the authors to document important points made by the participants and their parents and to ensure they were included in the development of the themes for the findings.

As part of the triangulation process, the participants were asked to keep daily logs for 30 days prior to their interview. Each outdoor recreation log included columns for activity descriptions, duration of the activities, who they participated with, any barriers they faced, or modifications made, and how they felt during the outdoor activity. This log was to ensure that the researchers understood some of the activities they participated in with whom and with what modifications. The outdoor recreation log template was created by the research team and supported by the outline of the interview questions. The activity logs were kept during May-June 2020. During this time, participants were attending online classes due to the COVID-19 outbreak, and interviews were given following the conclusion of the school year. Each participant was asked to turn in their outdoor recreation log after their interview.

Data treatment and analysis

After all interviews were completed, the audio-recorded interviews were transcribed verbatim. Interview transcripts provided a written record of the interviews and included all words that were spoken by the interviewers and interviewees (Smith et al., 2009).

A four-step IPA analytical process was used to examine the transcripts of the interviews, reflective notes, and outdoor recreation logs. The goal of this procedure was to record and share the results in the form of themes of the participants' expressed experiences (Smith et al., 2009). First, the second and third author read and reread all transcripts, logs, and written field notes several times to develop a deeper understanding and to become familiar with the content (Smith & Sparkes, 2017). The authors documented specific items of interest and initial themes from the transcripts, logs, and interviewer field notes in the form of explanatory and descriptive comments. Second, the authors reduced transcripts, logs, and reflective notes into evolving experiential themes. At this point, themes were developed that exposed both the participant's experiences in words as well as the authors' interpretation of those words (Smith et al., 2009). Third, specific developing themes were compared within each participant's transcripts to develop sets of synthesized clusters of related themes. After themes were identified, the last step was to examine patterns and connections across all participants through constant comparison. At this point, two authors clarified and shared developing themes to each other to ensure that they were aligned with the purpose of the study. Thematic clusters that were believed to be in line with the purpose and framework of the study were synthesized and presented as results.

Trustworthiness

Trustworthiness refers to the level of confidence in the data, interpretation, and the process used to confirm the quality of a study (Polit & Beck, 2014). Trustworthiness in the current study was recognized in several ways. First, the researchers (a) interviewed the participants with validated research questions, (b) the 30-day logs were utilized for triangulation of the data, (c) and the parents provided support and assisted the participants to recall information.

In many cases, youth with visual impairments may need modifications and adaptations to engage in outdoor environments. In some cases, these youth did not know the traditional way that the activity was typically engaged in. The parents helped the child describe the way that they engaged in the activity successfully. The parents also helped the participant remember the details of their involvement. The parents only participated in the interviews for additional support and only

added their comments when the child forgot something or needed more depth of information. For instance, a participant focused on his success in swimming and biking with a guide but forgot that he skis in the winter.

Secondly, the sixteen participants who were interviewed were given the option to refuse participation in the study (Shenton, 2004). Lastly, a 'critical friend' reviewed all transcripts, themes and subthemes to ensure that all data were accurate and reflective of the data collected. The unbiased and outside perspective of this additional researcher who was familiar with the field was tantamount to ensure trustworthiness (Foulger, 2010). This 'critical friend' held the researchers accountable and ensured an unbiased lens.

Findings

According to the outdoor recreation logs, participants engaged in 34 different activities (see Figure 1). The most common activities were biking, walking, swimming, and sports. The logs and interviews also revealed three themes: 1) benefits with subthemes affective benefits, physical benefits, and psychosocial benefits, 2) facilitators with subthemes modifications and programming, and 3) barriers had the subthemes of physical environment, concern for health and safety, and lack of access.

Benefits

Participants revealed numerous benefits to involvement in outdoor recreation experiences in both their logs and interviews. There were so many benefits expressed that they were separated into three subthemes: affective, physical, and psychosocial.

'I felt proud': affective

Participants reported affective benefits of being physically active outside including pride, enjoyment, sense of accomplishment, and feeling energized. Tuck wrote in a log 'I felt proud of myself because I ran a mile', and Raj shared a similar log statement 'I felt proud that I did 5 laps around my block'. Many participants expressed the enjoyment they experienced participating in activities outside, such as Kacky 'I had so much fun able to stay socially distant and be active'. Fatima expressed in her log that she 'tries to get out once a day because walking makes her feel better'. She also stated that she 'felt accomplished at Camp Abilities'. Caren wrote that 'it was really fun. I learned a new skill' while swimming.

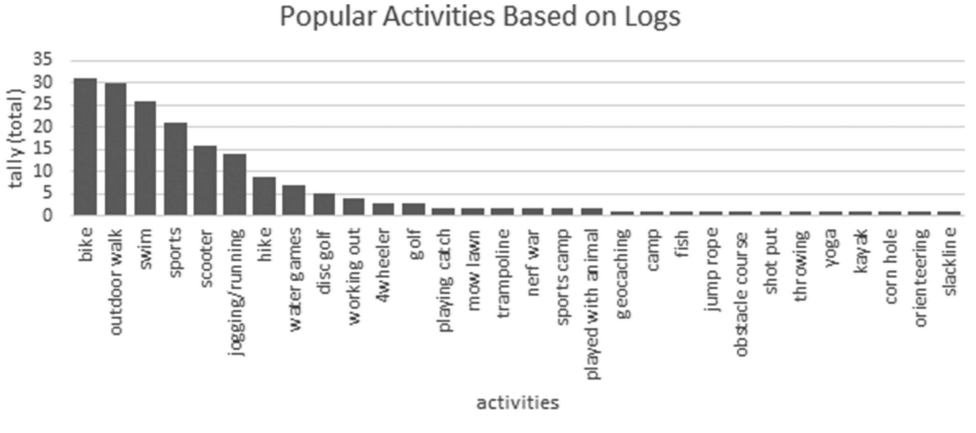

Figure 1. Popular activities based on the activity logs.

Other participants expressed the benefits of solitude 'If I'm hiking, it's peaceful. I like getting away from everything and relaxing', stated Zared. Tuck expressed other benefits of being alone outdoors, 'It helps me enjoy nature. I like the outside, the animals, and the birds outside'.

'I've gotten stronger': physical

Physical benefits were also discussed by the participants including improvements to both fitness and motor competence. Zared specifically stated being outdoors helped him with 'staying fit' and Daria similarly expressed that the outdoors enabled her to obtain 'a good amount of exercise'. Others asserted enjoying the physicality afforded by the outdoors, such as Ariana saying I 'like exerting myself' and Bruce saying, 'felt comfortable with working out'. Other participants discussed the motor competence benefits such as Lennan expressing that he 'learned how to dive very good' and Raj 'felt proud that I (he) did 5 laps around my (his) block'. Kacky stated that she had 'gotten stronger with (her) biking skills' and Alex 'experienced how to improve (his) auditory skills' in basketball. He also expressed how he improved his accuracy with his frisbee throwing.

'Being social': psychosocial

Participants also expressed a variety of psychosocial benefits such as the additional opportunities to be social with family and friends. Zared stated he enjoyed 'being social, hanging out with family, and trying new things'. Daria specifically stated 'socialization' was her biggest benefit of outdoor activities. Bruce mentioned 'fun swimming with his cousins' and Raj stated that he enjoyed 'teach-(ing) cousins how he does things'. Alex also enjoyed the teaching aspect as he stated 'it made me feel good because I could help my brother out' in basketball. Some participants benefited from others teaching and motivating them as Bonnie who stated, 'everyone is so helpful and nice about teaching you how to do things' and Ariana discussed 'when Peter made me run the miles and I kind of fell in love with pushing myself and being competitive'.

Facilitators

The main theme of Facilitators which focused on what helped the participants to be involved in outdoor recreation experiences, had the subthemes of modifications and programming.

'Now I can go all over the place': adapted support

The participants shared many adapted supports that facilitated their ability to participate in outdoor activities including equipment, guides, and cues or strategies. Individuals with visual impairment will often need varying levels of adaptations or tailoring in order to access outdoor recreation activities. Equipment modifications included beeping and bright colored balls, protective eye wear from the sun, guide wires, tethers for both running and kayaking, tandem bike, and nets for a trampoline. Zared discussed 'different color helmets for different eyesight' (B1/B2) being useful. Many participants discussed human guides (the term used when being guided by a person), dogs, or even just having a friend or parent nearby. Participants also discussed some strategies that were effective such as having 'people at each end of the zipline so they told you what was going to happen before you went so you don't get off at other places' said Zared, or 'using a special clap when I was really close to a target, so I didn't hit it' stated Bonnie and similarly expressed by Tuck. Kacky also mentioned the strategy of snowshoeing on flat ground where there were not a lot of trees made it much easier for her to snowshoe without a guide. Several participants stated that they chose empty parking lots or closed areas to bike as well as preferring to bike on cloudy days to reduce the glare of the sun. A use of a tandem bike was also helpful as mentioned by Ariana, 'He [my dad] ended up getting me a tandem bike which is much better [than a single] because if he got a regular bike, I couldn't go very far, now I can go all over the place [with tandem]'

Participants also mentioned some adapted supports to assist them with sun sensitivity. Ivy shared, 'my glasses turn into sunglasses so I can see'. Another participant expressed the need to wear prescription sunglasses and wearing a hat to block the sun when outside during activity. Raj said, 'it's better to run outside when there are cloudy skies, it's easier to run when it's not sunny'.

'I do Camp Abilities': programming

Several participants were introduced to many outdoor activities through a variety of programs. For example, Daria said, 'I do Camp Abilities' and Lennan mentioned that 'most of the hiking and camping is with my Boy Scout troop'. Participants also attributed much of their enjoyment and interest in outdoor activities to these programs. Alex said, 'I did not know I could bike until my first year of Camp Abilities', and Zared 's mother stated that the Ready program helps kids with blindness get out of their comfort zone and get used to different activities and getting out in the world. Zared went ziplining and he was determined thathe wasn't going to go but finally the instructor talked him through to it, and he finallydecided last minute that he would do it.

Programs mentioned by the participants included The Olmstead Center, Olympic games, Ready Program, Boy Scouts and Camp Abilities. These programs focused on many outdoor recreation experiences, several also focused on the inclusion of individuals with visual impairments. Although many of the participants engaged in outdoor recreation activities with their families, these specialty programs were keys to opening doors in the outdoor recreation area.

Barriers

Participants expressed a variety of barriers to their involvement and enjoyment of outdoor activities. Subthemes of barriers included the physical environment, concern for health and safety, and lack of access.

'Too hot': physical environment

Individuals with visual impairments and, in particular, albinism face additional challenges when adjusting to extreme weather conditions. Several participants expressed these challenges including the heat, terrain, and humidity. Kacky stated 'it was hot, I didn't really enjoy it' when discussing outdoor walking. She also mentioned the terrain, 'I didn't really like the steep hills, but it made me realize I need better shoes'. Daria similarly asserted the 'weather was too hot or muggy sometimes' as did Alex, 'it was too hot, too many bugs, grass was too long'. He also asserted that he didn't enjoy to 'work out in very humid and muggy weather."

'I was scared': concern for health and safety

Most participants mentioned concern for health and safety impeding their outdoor physical activities. Zared was particularly nervous about crossing four-way roads and Bruce similarly stated that he 'can't see oncoming cars' while biking. Tuck, Cherelle, and Caren also expressed safety concerns with biking or riding a scooter with Cherelle saying that she felt 'nervous at first about not knowing the trails' because 'sometimes I can't see'. Other participants expressed safety concerns with ball sports. Bruce stated that he 'couldn't see the ball coming at me (him)'. Tuck 'felt nervous that (he'd) get hit in the face' following an incident with a ball. He also developed a fear after falling from a slackline. These feeling were exacerbated by well-meaning teachers and family members who often expressed a fear of injury with these activities.

In addition to safety from the environment, fatigue also affected the comfort level of the participants. Several participants discussed fatigue as their limiting factor to participating in outdoor activities. Ivy stated that when riding her bike, she 'gets easily tired and (I) start to get a headache and I don't feel good and start to see dots.' Curtis further mentioned feeling side effects of fatigue such as soreness and feeling light-headed due to being 'out of shape for hiking'.

'Had to sit out or not participate': lack of access

Several participants discussed that they have limited their outdoor activities at times when there was a lack of adequate modifications to access outdoor activities. Kacky asserted 'it was frustrating because voiceover won't read the directions, so my brother led instead of me and the cache was broken open with the log gone' when geocaching. Fatima expressed frustration with 'having a different guide every time and (having to) explain everything all over again'. Such challenges have caused some participants to have to 'sit out or not participate in something', Ivy or find their own accommodations to be able 'to run independently', Raj .

Discussion

In this study, sixteen youth with visual impairments were interviewed about their involvement in outdoor recreation activities. Each participant had some experience in outdoor recreation activities with the most popular activities being biking, walking, swimming, and sports. They all expressed enjoyment during these activities. The logs and interviews revealed the three themes of: 1) benefits with subthemes affective, physical, and psychosocial benefits, 2) facilitators with subthemes adapted support and programming, and 3) barriers with subthemes of physical environment, concern for health and safety, and lack of access.

Similar to Bell (2019), the findings from the current study revealed that most of the participants experienced a variety of benefits to being involved in outdoor recreation activities. From an affective standpoint, participants felt proud, happy, accomplished, and energized from participating in outdoor recreation activities. Physically, participants indicated improvements to both fitness and motor competence. Participants also enjoyed social aspects of outdoor recreation since many participated with friends and family members. These findings align well to the three needs of self-determination theory: (1) autonomy, (2) competence, and (3) relatedness (Deci & Ryan, 2012). When these needs are met, it leads to more self-determined motivation. For example, Cmar and Markoski (2019) found that youth with visual impairments are more likely to lead a happier, self-directed life when they have the abilities necessary to accomplish a goal.

Self-determination is also one of the skills within the ECC (Hatlen, 1996). Directing youth with visual impairments to set goals for themselves and to take greater responsibility and control in their lives will eventually lead to a more successful transition into adulthood with a more positive outlook (Robinson & Lieberman, 2004). By engaging in experiences, such as outdoor recreation, youth with visual impairments may improve self-determination, study participants may feel more inclined to accomplish more in school, as well as perform better during physical activity since they have the intrinsic motivation to take direction in their own life (Robinson & Lieberman, 2004). The freedom that comes from independence can boost their self-confidence to accomplish goals that they otherwise may have viewed as unobtainable.

The theme of facilitators sheds light on the adapted supports that helped the participants engage in outdoor recreation experiences as well as programming that provided opportunities for outdoor recreation experiences. The idea that participants in this study could engage in outdoor recreation experiences with modifications is directly linked to several components of ECC. Through engaging in outdoor recreation with adapted supports they are becoming more self-determined as well as being social, engaging in recreation, and working on their mobility and independent living skills, which are all main components of the ECC. This is important to note since the nine areas of the ECC have been shown to be weak areas that must be addressed. Outdoor recreation engagement can be one way to improve these essential areas. This is similar to the research of Lieberman and colleagues (2021), who found that all components of the ECC can be met through physical activity and recreation. The more teachers and families can promote outdoor recreation experiences for their youth with visual impairments the greater their engagement in all areas of the ECC. Conversely, as seen in this study, lack of access can cause frustration, and unnecessary exclusion which is commonly experienced by youth with visual impairments (Conroy, 2012; Haegele & Buckley, 2019).

However, research has shown that parents and teachers do not often know how to modify physical activities to include youth with visual impairments (Ball, Lieberman, Haibach-Beach, Perreault, & Tirone, 2021; Columna et al., 2019; Lirgg, Gorman, Merrie, & Shewmake, 2017). Due to this issue, there is a need to promote self-advocacy when they learn what adapted supports work for them to actively engage in outdoor recreation experiences (Lieberman & Childs, 2020). This is especially relevant those with unique needs. For example, several participants who had albinism needed eye protection and a hat to minimize the glare when outside. They also have a need to protect their skin due to lack of pigment (Lieberman & Ball, in press). They must learn what they need, when they need it, and how to ask for it (Test, Fowler, Wood, Brewer, & Eddy, 2005).

The second subtheme under facilitators was programming. In this study, the participants expressed opportunities to engage in outdoor recreation experiences through a variety of programs that were both inclusive and segregated. This allowed participants to gain insight into many outdoor recreation activities that they could engage in at home and in the community. These findings are contrary to those of Linsenbigler, Petersen, and Lieberman (2017) where the barriers to physical activity participation from 1984–2015 included lack of programs. Based on the findings of the current study, it does appear that this is a barrier that is improving over time; however, continued research is needed.

The theme of barriers had subthemes of physical environment, concern for health and safety, and lack of access. It is important that youth with visual impairments, their parents and program organizers are made aware of ways to prepare for weather conditions, increase physical activity levels, and to be proactive about protection from the sun if they have sun sensitivity. The participants have expressed their discomfort due to the heat which is common in extreme weather conditions. The heat in the programs they were involved in was excessive and the discomfort from heat is understandable. In some cases, the participants expressed that they were just not in adequate physical condition and felt fatigued which is found in several studies specific to those with visual impairments (Augestad & Jiang, 2015; Brian et al., 2019; Haegele & Porretta, 2015). Concern for health and safety can lead avoidance of physical activity which leads to increased sedentary behavior (Augestad & Jiang, 2015). The added barrier of overprotection which is tied into the comments related to safety (Khadka, Ryan, & Margrain, 2012) can lead to decreased involvement in outdoor activities. In addition, the glare of the sun can have adverse effects particularly for study participants with albinism due to their lack of pigment. Without added protection from the sun through sun glasses, sun screen and/or hats, their enjoyment of outdoor recreation activities can be adversely affected.

The barrier subtheme of lack of adapted support was not surprising as it is consistent with previous literature (Ball et al., 2021; Linsenbigler et al., 2017: Lirgg et al., 2017). Although adapted supports have been a long-standing barrier, there are many resources available today that can help parents, teachers, and program directors with modifications to a variety of outdoor recreation experiences. Another manuscript by Linsenbigler et al. (2017) describes a variety of specific ways to modify outdoor recreation experiences such as kayaking, stand up paddleboard, canoeing, rock climbing, archery, rollerblading, biking, horseback riding, and fishing. Teaching whole-part-whole with the inclusion of tactile teaching techniques is a common and useful approach to teaching novel skills to youth who are visually impaired or blind (Lieberman, Ponchillia, & Ponchillia, 2013; Lieberman & Haibach, 2016. In addition, utilizing a tactile map to simulate a large- scale outdoor environment with youth with visual impairments has been shown to increase learning and navigational skills (Renshaw & Zimmerman, 2007). Other resources, such as several books (Aillaud & Lieberman, 2013; Lieberman & Cowart, 2011; Lieberman, Modell, & Jackson, 2006; Lieberman et al., 2013) and web sites (www.campabilities.org, www.aph.org) can help promote modifications to programming.

Limitations

This study was conducted during the COVID-19 pandemic. The pandemic may have impeded the participants' ability to engage in community supported outdoor recreation experiences such as rock climbing, canoeing, or kayaking. Nonetheless, the participants still engaged in a wide variety of outdoor recreation experiences. Additionally, the interviews covered outdoor recreation experiences during the 30 days the participants kept daily logs as well as any they have participated in throughout their lives, so this limitation is not extremely impactful. Another limitation was the fact that we had to conduct the interviews on an online interface. Despite the fact that we could see the participants and their parents' faces, we could not see some of their mannerisms or body language during the interview. Lastly, we did not do member checks with the participants. We feel that the triangulation of the logs, interviews, and reflective notes provided enough breadth and depth of information to ensure Trustworthiness.

Future research

Future research should include a longer duration of tracking participants outdoor activities, modifications, and social aspects which could cover multiple seasons. Parents should also participate in the log process to ensure accuracy of adaptations and modifications since the participants may not know the typical or traditional way the activity is set up due to the visual impairment. Teacher perspectives upon their barriers and facilitators to teaching outdoor recreation to youth with visual impairments would also shed light on this important area. Lastly, future research should explore outdoor recreation experiences outside of the educational sports camp for youth with visual impairments. For example, exploring youth with visual impairments at schools for the blind.

Conclusions

Youth with visual impairments participate in numerous outdoor recreation experiences including biking, walking, running, outdoor sports, and many others. Three themes emerged from the logs and interviews including benefits, facilitators, and barriers. The findings from this study indicate a variety of benefits for youth with visual impairments who participate in outdoor recreation. However, many individuals require adapted support and special programming to be able to safely participate. Findings from this qualitative study can inform physical educators who work with youth with visual impairments and parents on the importance of outdoor recreation and how to help their student/child be successful in these types of activities.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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