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Experience of Play Participation and Use of Lower Extremity Orthoses in Children with
Cerebral Palsy: Case Study

BY

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EXPERIENCE OF PLAY PARTICIPATION

Experience of Play Participation and Use of Lower Extremity Orthoses in Children with
Cerebral Palsy: Case Study

BY

LAKYN JOLLY-BURCHELL, OTS

Submitted to the Faculty of the Graduate School of
Eastern Kentucky University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

2019

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DEDICATION

I dedicate this thesis to Braxton. Our childhood experience of your disability and the hardships our family faced to overcome and provide you with the most enjoyable childhood taught me the importance of family, service, inclusion, and human connection. It is because of you and my love for you that I chose to become an Occupational Therapist, so that I could improve the lives of other individuals and their families, the way so many of your therapists did for us. I believe this calling led me to find my role as a researcher. How I wish you could be here today to share in this accomplishment and see how our family has changed and grown, though we keep pressing forward.

I also dedicate this thesis to my loving husband who has wholeheartedly supported all of my professional aspirations. I will always appreciate your witty humor and fine-tuned skills in not taking anything too seriously, reminding me that all aspects of life should be enjoyed, especially the stressful ones. It is because of you that I was able to decompress and gain some perspective whenever this process became too overwhelming. Thank you for always being my clarity when everything around me seems blurry.

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ABSTRACT

This case study sought to understand the experience of a single family of a child with cerebral palsy (CP) using lower extremity orthoses (LEOs) in natural play contexts. CP is the most commonly occurring motor disability in childhood. Associated with CP, impairments in functional mobility, spasticity, varying degrees of muscle tone, ROM, and impaired gross and fine motor control are barriers to meaningful play experiences in this population. LEOs are widely prescribed devices for children with CP, used as walking aids and to improve/offset some of these performance deficits and body structures. Although, the true efficacy of LEOs is yet to be established. Play is the primary occupation of childhood, contributing to the development of cognitive, emotional, and physical skills of the child. Because play participation is vital to development throughout childhood, it is pertinent that habilitative professionals understand how use of a widely prescribed class of orthotics for children with CP may support and/or hinder participation in meaningful play experiences. Semi-structured interviews and video-recorded play observations were used to collect data. From this data, five themes emerged. These included; “LEOs support participation in gross motor play”, “Experience of social play/participation is adversely impacted by use of LEOs”, “Self-perception of braces and choice of play varies across contexts”, “LEOs as a facilitator and/or barrier to undesirable body positioning during play”, and “Pain/Discomfort caused by LEOs during play”.

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I. Introduction

Cerebral palsy (CP) is the most commonly occurring motor disability in childhood (CDC, 2018). This developmental disability may affect a child's gross and fine motor control, cognitive functioning, postural control and functional balance abilities (Cerebral Palsy, 2018). Some evidence demonstrates that children with CP experience daily participation restrictions because of these performance deficits, adversely impacting their health and quality of life (QoL) (Shelly et al., 2008). Play can be identified as one of most important daily activities during childhood, as it reinforces emotional, cognitive, and physical abilities (Lifter, Foster-Sanda, Arzamarski, Briesch, & McClure, 2011). Because participation in play reinforces many of these invaluable skills, it is a vital component in QoL during childhood. This highlights the need for a deeper understanding of various dimensions of play among children with CP.

For some children with cerebral palsy, a recommendation for lower extremity orthoses (LEOs) may be made to support them with functional mobility (Cerebral Palsy, 2019). Ankle-foot orthoses (AFO) are a commonly prescribed lower extremity orthotic device for children with CP that supports the ankle in a functional position (Wingstrand, Hagglund, & Rodby-Bosquet, 2014). AFOs may facilitate increased functional outcomes in standing and walking in this population, although this does not necessarily indicate that the child will demonstrate improved functional performance in the areas of stair climbing, running, and jumping (APTA, 2008). These are gross motor sequences commonly utilized in play and play exploration during childhood (Case-Smith & O'Brien, 2015). Current evidence represents a disparity in outlining the true impact AFOs have on functional outcomes in children with CP despite them being widely used

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in treatment (Wingstrand, Hagglund, & Rodby-Bosquet, 2014). Because AFOs are commonly used to treat gross motor function in children with CP, it is pertinent that habilitative professionals understand the impact these orthoses may have on the experience of play participation in childhood.

It is also important to address the experience of a child's play from their family's perspective. In the practice of occupational therapy, the term "client-centered" is often used to describe the approach to delivering therapy in an individualistic and meaningful way (Maitra & Erway, 2006). In pediatrics, to emphasize client-centered care, "Family-centered" is utilized to highlight the necessity and importance of familial involvement in a child's intervention process to achieve optimal outcomes (Fingerhut et al., 2013). Families have been found to heavily influence how children spend their time, shaping play preferences, while also influencing the value and meaning a child places on play (Case-Smith & O'Brien, 2015). Because of the family's known impact on play and play preferences, the child and family's experience of play must be better understood.

The primary issue being addressed in this research is the lack of available evidence surrounding the impact of AFOs on play participation in children with CP. Further, the purpose of this research will be to describe the experience of a family of a child with Cerebral Palsy using AFOs during play participation within natural contexts.

The following case study will facilitate an in-depth description of a single family of child with CP, using AFOs within natural play contexts. The child included in this study is a 9-year-old male with a diagnosis of spastic diplegic CP. The child is ambulatory, using bilateral Ankle-foot orthoses on a daily basis, for 13-14 hours a day,

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as a walking aid. It is important to note that the child can ambulate independently without the use of AFOs, but his gait is largely more functional when wearing them. In this child's case, more functional gait means increased stability of the lower extremity joints facilitated by external supports of the AFOs and decreased excessive plantar and internal rotation of the ankles. This is a gait pattern that results in the child to drag his feet when ambulating without his braces. Also included in the following case description is the experience of the child's two parents and his younger sister. The child's parents are divorced, and he and his sister spend equal time between their parent's homes. This particular family has experience managing LEOs for roughly 7 years, as the child was first prescribed AFOs when he was 2 years old. Over this time frame, the family has experienced the introduction and adjustment to varying types of AFOs in order to determine the best fit for their child, his disability, and which orthoses will allow him to participate in everyday activities at the highest level possible. The family has experience with solid and hinged AFOs, but he currently utilizes bilateral hinged AFOs. This case is unique in that the child is not cognitively aware of a time in which he was not required to wear AFOs as part of his daily routine, thereby all play experiences throughout his early and middle childhood may have been influenced by the continuous use of a lower extremity orthotic.

Literature Review

There are a variety of orthotics that may be recommended to children with cerebral palsy, which serve the purpose of being functional and/or accommodative (Cerebral Palsy, 2019). Among the wide array of orthoses that can be prescribed, Ankle-foot

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orthoses (AFOs) are the most frequently used type in children with CP (Wingstrand, Hagglund, & Rodby-Bosquet, 2014).

In relation AFOs those children who can ambulate in most settings without the use of a walker, are the sub-population whose play participation may be most impacted by the use of AFOs as they have increased functional mobility (Cerebral Palsy Alliance, 2018). Further, in Children who are ambulatory, development of play preferences are greatly impacted by their gross motor abilities during play participation (Case-Smith & O'Brien, 2015). For children with CP who utilize AFOs to improve stability and/or gross motor function, these are factors to consider when evaluating how use of AFOs impacts the experience of play participation in this population.

Ankle-foot Orthoses Impact on Body Structures & Functions

AFO's are prescribed to address two major functional concerns. These are improved structure and alignment of the lower extremities and improved functional performance (Wingstrand, Hagglund, & Rodby-Bosquet, 2014). Improved functional performance is demonstrated in improved ability to execute self-initiated movement as well as improved skills in sitting, transfers, and overall mobility function. (Wingstrand, Hagglund, & Rodby-Bosquet, 2014). Some previous literature has found that use of AFO's in children with CP can increase their walking speed and functionally reduce energy expenditures (Brehm, Harlaar, & Schwartz, 2008). These improvements may translate to increased participation in valued play activities that require gross motor utilization of the lower extremities, due to increased skill availability. Also, evidence suggests that children sustain more energy throughout the day from use of orthoses, thereby increasing their functional endurance and available energy for participation in

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valued play activities (Bailes et al., 2016). Gross motor skills and endurance may be improved through use of orthoses, but ROM, functional abilities or dual improvements in ROM and function were met through longitudinal rehabilitation (Wingstrand, Hagglund, & Rodby-Bosquet, 2014). The pressing question remains; exactly how these improvements in body structures contribute to the experience of meaningful participation in valuable play experiences?

The type and design of the AFO may also need to be considered when seeking insight into a child's physical and occupational needs for play interventions. Rigid AFOs are typically implemented for children who ambulate with excessive knee flexion, resulting in a gait pattern that adversely impacts functional endurance skills (Kerkum et al., 2015). These rigid design AFO's may serve as an energy conservation tool, but they substantially limit ankle ROM, which may not translate to full participation in physical play that requires ankle movement. This may include play that incorporates running, jumping, skipping, transferring from sitting/kneeling to standing while maintaining functional balance, and climbing movements. Alternatively, there are spring-like, hinged, and dynamic AFO's that allow for increased ankle ROM but decreased overall knee stability (Kerkum et al., 2015). The overall decreased knee stabilization may impose larger energy expenditures when participating in play, due to typical gait pattern of a child with CP (Kerkum et al., 2015). More specifically, hinged AFOs allow for free dorsiflexion of the ankle and 0 degrees of plantarflexion, which is utilized to counteract the excessive plantarflexion and increased spasticity of posterior leg muscles that is contradictory to a functional gait pattern in children with CP (APTA, 2008). The question remains, how does increased availability of ankle ROM translate to

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increased participation and experience of varying play occupations? As practitioners, knowledge of how AFO design may impact performance skills and body structures should be a consideration when developing activity modifications and implementing interventions to support play participation.

Relationships Between Play Participation & Cerebral Palsy

While there is no current evidence to describe the experience between using AFOs and play participation, there is ample evidence to describe the impact of a CP diagnosis on play participation. Functional mobility and manual function of the hands are two performance areas in which children with CP may be limited (Angelin, Sposito, & Pfeifer, 2018). These same categories were found to be negatively correlated, indicating that children with CP who had poorer manual function skills were also more likely to have disparities in gross mobility (Angelin, Sposito, & Pfeifer, 2018). These findings represent dual barriers to a fulfilling play experience for a child with this condition. Manual function and gross mobility are skills necessary for children to effectively interact with their environment and participate in play exploration (Case-Smith & O'Brien, 2015). Further, any impairment of functional mobility and voluntary movement was found to have a negative impact on the level of play participation in children with CP (Santos, Pfeifer, Silva, & Panuncio-Pinto, 2011). These findings are important because active-physical play was discovered to be positively associated with the physical and psychosocial health in school-age children with CP (Shikako-Thomas et al., 2012). As this evidence demonstrates, it is vital to support active physical play in this population and addressing performance barriers that reduce opportunities for active play exploration and participation, could promote improved QoL and overall health.

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In addition to the physical barriers to play participation, the chronic nature of CP may adversely impact leisure participation overtime. A prospective longitudinal study discovered that leisure participation for children with CP declined as they progressed through childhood to adolescence, even though the children still possessed a desire to perform these activities (Majnemer, Shikako-Thomas, Schmitz, & Shevell, 2015). This is a concern for sustainability and promotion of positive health and well-being in children with CP as they develop. Play is an important aspect of healthy development throughout childhood into adolescence. As clinicians, we must develop an understanding of how meaningful play experiences are influenced by the use of LEOs in such a large pediatric population.

Cerebral Palsy and Competence in Play Participation

Leisure and play participation in children with cerebral palsy may also be described by their self-perception and perceived competence. Evidence shows children with disabilities feel more competent when they are performing activities in which they receive support to engage in meaningful, child-directed play opportunities (Kramer & Hammel, 2011). The act of independent problem solving to impairment-related challenges or practicing within their natural environments were also important factors to the construct of self-competence in children with CP (Kramer & Hammel, 2011). Further, perceived competence in play activities may be associated with the skill level required for the desired activity and the child's subjective meaning of participation in that activity. Improved self-competence and QoL may be facilitated through the provision of meaningful and adapted play activities that are appropriate for the child's skill level (Shikako-Thomas et al., 2012). Participation in a play activity that is

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perceived as too hard or too easy may not be appropriate for building perceived competence and improving QOL.

Not only is it necessary to discuss the competence of children with CP in play participation, we must also discuss motivation for initiation of play. Kolehmainen et al. (2015) discovered that social-environmental factors, such as procedural rules for activities established by adults, were main determinants for participation in physical play for children with motor impairments. Researchers in this same study support that prospective participation in play activities during childhood is related to activity orientation of the child's familial environment (Kolehmainen et al., 2015). Children who are encouraged to actively participate in play by family or guardians may show an increased desire to participate in play and play exploration. Also, the frequency and intensity of play participation is influenced by level of gross motor function, higher enjoyment, adaptive behavior, and age of the child (Pailisano et al., 2011). Children with CP typically have lower levels of gross motor function compared to typically developing kids, as well as learned adaptive behaviors developed over time. It is important to develop an understanding of how these differences impact this population's motivation for choosing and participating in play activities.

To understand how utilization of AFOs impacts the experience of play, we must first understand the classifications of play activities preferred and commonly practiced by children with CP. Research conducted on the leisure interests of school-age children with CP found that their sample most preferred to participate in social and recreational activities as a form of play (Majnemar et al., 2010). These findings are representative of limited participation in physical play activities, which impose a higher demand on a

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child's skill set and performance capacity as compared to social and recreational play. These findings are cause for concern because of the pre-established relationship between participation in physical play and health and QoL (Shikako-Thomas et al., 2012). In addition, children with CP are more likely to participate in informal, rather than formal activities and play as compared to typically developing children (Imms, Reilly, & Dodd, 2008). Low intensity of play participation may affect skill development, acceptance in peer circles, sense of self, and the development of diverse friendships (Imms, Reilly, Dodd, 2008).

II. Research

Methods

The primary researcher in this study is graduate student, who is a MS in occupational therapy candidate with a bachelor's in the field of Occupational Science. The researcher has previous experience in working with this study's population, as a community living support worker (CLS) providing supportive services to a child with a diagnosis of spastic diplegic cerebral palsy, wearing AFOs on a daily basis. This previous experience coupled with the primary researcher's background in the science of Occupation and practical knowledge of Occupational Therapy allowed the researcher a unique lens in approaching such a job position. During this time as a CLS worker, the researcher observed and assisted the client's play participation across a variety of contexts, with and without the use of AFOs. These observations led the researcher to develop a query about whether AFOs support the experience of valued play in childhood for this population, or if they are a barrier to meaningful play participation. The researcher should identify any assumptions of results they may have had in conducting this qualitative case study. The researcher assumed that use of LEOs in children with CP would adversely impact the experience of play participation, rather than supporting the experience. In an attempt to minimize personal bias in this study's results, the researcher used journaling and reflexivity throughout various stages of the research to reflect on why this initial bias was present and how the data being collected both worked to support and contradict said bias.

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Design

This research study was conducted using a case study design. This qualitative research seeks to describe the experience of a single family of a child with cerebral palsy using LEOs in natural play contexts. Because the primary researcher's aim of this study is to develop an in-depth understanding of a single family within real-life contexts and settings, and a case study design allows the researcher to report data findings in the form of a rich case description culminating in thematic findings. The researcher utilized semi-structured interviews and video-recorded play observations. The child and each of his parents were asked to participate in individual semi-structured interviews. Following the interviews, the child was then asked to allow the researcher to video record him participating in play, on three separate occasions.

Participants

There was a single child participant in this study. He is a 9-year old male with a diagnosis of spastic diplegic cerebral palsy and is independently ambulatory but wears hinged AFOs as an aid to improve his gait and body structure alignment. The child has no cognitive function limitations. The two parent participants in this study are divorced and the child and his sibling spend an equal amount of their time between both parents' homes, with the homes being in the same neighborhood. This family is part of the upper-middle class in terms of socioeconomic status (SES). The parents are each intensely involved in their child's healthcare needs and facilitate opportunities within their home and community for maximum participation. Lastly, the child and his sibling are close in age and largely participate in play together. The sibling was not interviewed for this research study.

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Procedure

An expedited review application was submitted to the Eastern Kentucky University Institutional Review Board (IRB) along with drafts of Informed Consent, Assent, Verbal Recruitment Script, and a Recruitment Flyer. Upon approval by this institutions IRB of the proposed research and accompanying documents, the researcher began the search for prospective participants. Inclusion criteria for this study was as follows: The child participant must have a diagnosis that requires them to have a lower extremity orthotic and be between the ages of 5-10, parent participants must be 18 or older, and participants must be fluent in English. Participants were only excluded from this study if they could not fluently speak English.

The researcher created a flyer describing the nature of the prospective study, type of participants needed, and general responsibilities required of prospective participants. This flyer also included the name, number, and email address of the primary researcher. Interested parties were asked to contact the researcher. The family included in this case study contacted the researcher with interest in participation. After initial contact was made, the researcher recited a pre-drafted verbal recruitment script verbatim to each parent, which described the general purpose of the research and what activities the child and parents would be expected to participate in as part of the research process. Upon cross-referencing this family's characteristics with inclusion and exclusion criteria, sampling was complete as the researcher only wished to enroll a single family in this study. Following recitation of this verbal recruitment script and attaining the parent's verbal consent, the researcher confirmed dates with each of the parents to begin collecting informed consent and child's assent to participate. Informed

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consent was obtained from each of the parents, confirming their knowledge of their responsibilities in this study and that participation is completely voluntary, as well as what was expected of their child. Assent to participate from the child was obtained by the researcher through a written short description of the research's purpose, what the child would be asked to participate in, and the indication that participation is completely voluntary. The child indicated their desire to participate by circling a "smiley-face" on the assent form, rather than circling the "frowney-face".

Data Collection

Interviews and video observations were carried out from the beginning of August 2019 to the end of August 2019. Semi-structured interviews with each parent participant were conducted in their homes, with the child's semi-structured interview being conducted in the mother's home. Each interview was audio-recorded and transcribed verbatim at a later date. The researcher experienced technical difficulties in recording the mother's interview, resulting in the loss of some interview data. Because of this, the researcher conducted a follow-up phone interview with the child's mother to inquire about the data lost on the initial recording. This phone interview was also audio-recorded and transcribed verbatim. This unforeseen technical difficulty resulted in the primary researcher conducting a total of four semi-structured interviews; two with the mother, one with the father, and one with the child. The interviews were approximately 15-20 minutes each in duration. The researcher also received consent/assent for child and parents to conduct three separate video-recorded play observations of the child while wearing his LEOs, in locations of their choosing occurring between the beginning of August 2019 through the end of August 2019. The first two play observations were in

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the mother's home. One instance of the child participating in floor-based play and another occasion of the child participating in gross motor outdoor play. The last play observation took place in a local park, observing and video-recording play on playground equipment, at the request of the child and parents.

The purpose of these interviews was to gain a rich description of the child and family's play experiences and their perspective on how using LEOs has influenced those experiences. The purpose of utilizing video recorded play observations as a data collection method was to observe the child playing in a variety of contexts when using his LEOs, and to further utilize activity analysis when analyzing data to determine how use of orthoses may have impacted play performance during these observations. The parental interviews were conducted using the same semi-structured interview guide with questions as follows: "Can you tell me about your child's play experiences?", "Describe how your child plays with you. What about siblings? Friends?", "Tell me about your experience with braces", "What are your thoughts on your child's perception of their braces?", "Tell me about the complications your family encounters with your child's braces", "Describe when your child wears their braces", "Talk about how your child's braces fit into your family's routine", "Describe the types of play your child participates in", "Describe what you notice when your child is playing with their braces on", and "What about when they are off?". The child's interview included the following questions as a guide: "Tell me about something you wear on your feet", "Talk to me about how you put them on. Take them off?", "When do you wear them?", "What do you enjoy about wearing your braces?", "What do you dislike about wearing your braces?", "Tell me about the kinds of games you like to play?", "Describe the toys you

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like to play with”, “Tell me about how it feels to play with your braces on”, and “Describe what it is like to wear your braces at school”. Probing questions were used, and their content varied based on participants responses and/or lack thereof. Lastly, during video observations of play, the researcher did not participate or interact with the child in anyway unless requested/prompted by the child to do so.

Data Analysis

Upon completion of semi-structured interviews and video recorded observation, the researcher began data analysis procedures. Each interview was first listened to by the researcher, and then transcribed verbatim. After transcription, the researcher conducted an initial read through of each transcript and utilized memos to describe first impressions of data from these read-throughs. In order to ensure validity, the research implored the use of member checking among study participants by asking them to review their interview transcripts. After this, the researcher utilized a line-by-line coding method to iteratively analyze the transcripts. Codes were used to describe meaningful statements found in each of the interviews. After coding each transcript, the researcher used memos to describe what was coded for each data set, what the codes meant and how they informed the research question. After codes were developed, the researcher classified each code into a category. These categories were identified using the Occupational Therapy Practice Framework (OTPF) (AOTA, 2014). The categories consisted of the five domains of the OTPF; Occupation, Client factors, Performance Skills, Performance Patterns, and Context & Environment. The OTPF was utilized in this data analysis as the researcher’s primary aim to understand how use of LEOs influences the experience of play participation, an aspect of the occupational domain in

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the OTPF (AOTA, 2014). After applying said codes to each of these categories, the researcher compiled sub-categories under each domain to further organize the data. From information gathered under each OTPF domain and subcategories within them, the researcher was able to develop themes and assess emerging interpretations. The video observations were analyzed by the primary researcher after coding and categorizing interview transcripts. The researcher watched each observation several times and took notes with the research question in mind in order to identify aspects that either supported or disproved data found through interviews. As a result of interview and video observation data, the researcher identified 5 recurring themes. In order to confirm the reliability of these themes, the researcher recruited the study's thesis chair and a thesis committee member to review all identified codes, confirm or deny them, as well as a thorough review and confirmation of the determined themes.

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Results

Interviews with the child and each of his parents provided extensive insight into various ways the child's AFOs have influenced his participation in play over time, how they currently influence play participation, and how the child's self-perception of his braces and play preferences may vary across contexts. From descriptive coding and OTPF categories, the primary researcher constructed 5 recurring themes to represent the data set. These included "AFOs support participation in gross motor play", "Experience of social play/participation is adversely impacted by use of AFOs", "Self-perception of AFOs and choice of play varies across play contexts", "AFOs as a support to functional body positioning during play", and "Pain/discomfort caused by AFOs during play".

Ankle-foot Orthoses Support Participation in Gross Motor Play The child highly values gross motor play and his parents further reinforce these values through the facilitation of gross motor play opportunities for him. Gross motor play activities such as bike riding, baseball, kickball, playground play, and tag were all frequently identified by the child and family as valued play activities. Because of the high value placed on these play activities, it is important to the family that the child's functional ability to actively participate is supported. The child's AFOs were found to support participation in these activities. For example, the child identified various performance skills improved through orthoses wear when participating in play. When asked by the researcher "How does it feel to play kickball with your braces on versus with you braces off?" and his reasoning behind his response, the child stated "It's probably easier with my braces on....because they make me kick better". In response to inquiries about running bases during baseball and kickball with his braces on, the child established that

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this activity was easier when wearing his braces. The child also had other valuable insights regarding how braces support his performance skills and participation in gross motor play, confirming that while he may not like his braces, he believes that they help him participate in gross motor play. He stated, “They help me throughout the day... I think they help me climb”.

In addition to the child’s experience of play with AFOs, his parents reflected on their own perspectives of how they believe gross motor play participation is positively influenced by orthoses wear. The child’s father openly discusses how LEOs provide needed support, stability, and facilitate increased functional endurance during gross motor play, allowing the child to push himself further than previously possible without orthoses wear. Responding to a line of questioning about AFOs and their influence on his child’s participation in baseball, he replied:

I think it (AFOs) helps him in the same way. Standing for long periods of time having to do stuff. I don’t always know...I don’t always know that it helps his gait or his walk as much as we would like it to, but I do think that it helps give him stability and pushing himself, especially in sports.

This insight from the child’s father describes how the child’s utilization of LEOs facilitates more functional participation in gross motor play, such as baseball and other gross motor games. Also, this further reinforces the child’s own assertions that baseball and other gross motor play activities are easier when wearing AFOs.

The child’s mother also provided a unique and observant perspective of variances in her child’s functional skill level when wearing his AFOs, versus when he is not, during gross motor play participation. Through the mother’s interview, it was discovered that the child’s wear of LEOs facilitates increased performance during outdoor play participation, facilitates functional lower extremity alignment and provides

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lower extremity support. She provides detailed examples of the largest differences she notices in her son's play performance when he is wearing his AFOs:

I mean he stays on his feet – he falls down less when his braces are on. Like if we're talking about outside play and stuff, he doesn't drag his toes because he can't with braces on. He doesn't turn his feet in as badly as he does when his braces are off, I don't feel like. He doesn't hyperextend his knees with his braces on, like he does when they're off.

Overall, this child's experience of gross motor play seems to be positively influenced through utilization of lower extremity orthoses. This is demonstrated through the family and child's identification of increased performance skills when wearing braces, increased functional endurance, and AFOs as a support to correct body structures.

Experience of Social Play is Adversely Impacted by Use of Ankle-foot Orthoses

The child was found to highly value social participation and social play opportunities, with his mother describing "He is very people oriented. He likes fitting in and having friends and socializing with other kids". When asked how her son's interests have evolved over time as he has gotten acclimated to wearing AFOs as part of his daily routine, she describes how he has always had a consistent desire to fit in "As he's gotten older his desire to fit in and desire for everybody to like him and desire to be a part of everything has stayed the same".

Despite highly valuing participation in social play, it was discovered that the child is often excluded from social play opportunities by his peers in the community and at school, because of his AFOs. Across each interview, there was a consistent emergence of social exclusion and being taken advantage of by peers during group play. These social contexts were found to arise from the child's wear of LEOs. His mother

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goes into detail about how her son wishes he did not have to wear braces and attributes this to a social environment with limited understanding, saying:

I think he probably wishes he did not have to wear them. The older kids get it seems like the meaner they get. And a lot of kids have questions or don't understand something and instead of asking they just make assumptions or don't want him to be a part of stuff because of his having braces, and they view him as different.

She further reflects on a recurring experience in which she believes her son in singled out during social play because of his disability and use of AFO s:

When playing tag people always tell him that he has to be "it" and it is hard for him to catch them because he can't run as fast. That was a constant issue last year. Or that people wouldn't want to race with him on the playground because they said, "well you can't be on our team because you can't run fast".

When asking the father about various experiences his child has had with peers at school and in his community during social play, the father discussed how the child commonly reacts to negative comments from his peers about his AFOs.

He lets it roll off a little bit. He doesn't say it right away and then one day he'll say I don't want to wear my braces because other kids don't want me to play with them because I have braces or other kids tag me first when they play tag because he has braces...I think he doesn't feel like they always want to be fair, they want to take advantage of him because he has his braces.

In addition to external factors during social play, such as other children's perception of his LEOs, the child's own perception of his LEOs and abilities during social play have contributed to adverse social play experiences. His mother describes how her child has expressed that he believes he is not good enough to play socially with other children because of his LEOs and disability.

So, I think sometimes he feels that he is singled out...If its like the relay and speed is an issue, he already knows he's not as fast as the other kids are. I think he kind of maybe feels like it's because of his braces or because he has to wear braces that people don't want him on their team.

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When asked about his experience of wearing LEOs at school, the child shared his concerns about using them in a school environment, stating that he does not like wearing them at school “because people can make fun of me”.

The child’s negative experiences during social play participation seem to have evolved his own self-perception of his disability and his use of LEOs, resulting in him feeling uncomfortable about wearing them in social contexts. Further, negative comments and exclusionary actions the child has experienced during social play participation may be directed at the child’s need for AFOs. Because of this, the child’s use of AFOs in social contexts appears to commonly result in adverse social play experiences.

Self-Perception of Ankle-foot Orthoses and Choice of Play Varies Across Play Contexts

Throughout the interviews, there were clear themes of the child’s self-perception of his AFOS and how his self-perception and choice of play activities varied across play contexts. His self-perception was comprised of how he perceived himself and his relationship with his AFOs while wearing his braces in various environments. Also, it was discovered that the child’s choice of play and self-efficacy for these activities varied across contexts. Self-efficacy and choice of play was determined by his participation in play with his AFOs on, versus off. For instance, there were various accounts throughout the interviews in which his parents described how the child’s use of AFOs when playing in his home environment did not contribute to the diminishment of his self-esteem, unlike his self-perception of his braces in social contexts. When asked if her son looks forward to taking his braces off towards the end of the day when

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he is in his home environment, the mother discussed how her son doesn't usually request to take his braces off and does not seem to think about them:

Sometimes I don't think he even notices it (wearing AFOs)... It's almost like he's not usually coming to me and saying "I want to take my braces off"... When he's home, I don't think he ever thinks about the fact that he has them on, you know?

She also provided further detail when asked about her own perception of how her child feels about his braces, clearly stating:

I mean that's kind of tough, because I think it depends on what setting he's in. Like I said, when he's at home his braces are just kind of default. They're just part of (child's name). So, I don't think he thinks about them too much when he's at home.

Alternatively, it was discovered that the child's self-image when wearing his braces in school and community contexts was diminished. He consistently compares himself and his need for braces to his typically developing peers, resulting in him feeling inadequate. Both his parents detailed instances in which, as their child ages, he increasingly asks questions about why he must wear braces, comparing himself to his peers, as well as getting frustrated when others ask about his braces. His mother describes her son's current emotional relationship with his need for LEOs, stating:

At this point in his life, I think it frustrates him, just because he doesn't like to wear something that is different than everybody else....As he gets older he recognizes more and more how his peers look and as kids get older they're more cognizant of how everybody looks.

She goes on to describe how her child's braces are beginning to influence his self-confidence, saying:

He doesn't want to be perceived differently than everybody else. He wants everybody to feel like he's the exact same because he's always been a social kid who wants to fit.

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There were also recurring themes of self-efficacy for certain play activities in his home environment being influenced by his wear of LEOs. His father described how there are certain play activities in the home environment in which his child feels he can successfully perform with his AFOs on or off:

In that normal play scenario outside in the yard with his sister or with friends just messing around I think he would be just as comfortable with them off. On a sports field or something I think he likes having them.

The child's mother also gave descriptions regarding her child's play choices and self-perception of braces based on the context of the play activity. She describes how her son's choice of play in his home environment may vary depending on whether he is wearing his braces or not. This difference supports that assertion that there are certain play activities in which the child feels more confident in his performance skills and capacity for play participation when he is not wearing his braces. More specifically, his mother describes:

Outside play, there are certain things he might be more comfortable doing without braces. Hes got a couple of toys to ride outside that are easier for him to ride without his braces on.... So what he chooses to play might be a little different (with braces on or off), but I would say that is more outside than inside.

Overall, the child's self-perception and relationship with his AFOs was found to be connected to his comparison of himself to his typically developing peers and his desire to fit in without being perceived as different. Also, it seems that the child's choice of play, specifically in outdoor and gross motor play activities, is influenced by his wear of or lack of braces. The child was found to feel more competent in his ability to perform certain play activities, as determined by whether he was wearing his AFOs or not.

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Ankle-foot Orthoses as a Support to Functional Body Positioning During Play

This theme was developed through aspects of the parents' and child's interviews in which they perceive his AFOs as preventing certain body positions during play that may be contradictory to functional positioning of the lower extremities. For example, the child's mother was able to describe the differences she notices in her child's play when he is and is not wearing his AFOs. When describing these differences in the context of indoor and floor-based play, she indicated that she perceives her son's lower extremity orthoses as assisting in limiting the frequency in which her child W-sits when playing, a common and comfortable seating position for children with cerebral palsy when participating in floor-based play. She describes, "he is still capable of w-sitting with his braces on, but it seems like he probably does it more when they are off".

Pain/Discomfort Caused by Ankle-foot Orthoses During Play

Across each interview, and confirmed by video observations, was the theme that use of the child's lower extremity orthoses during certain types of play caused the child pain and discomfort. First, the child described a consistent play experience in which he attempts to ride his motor bike to play outdoors with his sister and neighborhood peers, but due to the required position of his lower extremities when riding this toy, combined with use of his AFOs, he experiences pinching discomfort and pain in his proximal calf area. The child described this experience of pain as being an identifiable reason as to why he dislikes his AFOs. During video observations of the child participating in play, the child-initiated play with this motor bike and quickly experienced this pain, causing him to cease playing with the toy. He became visibly and verbally frustrated when he could not participate in this desired play activity, due to the pain.

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In addition to the child's subjective experience of pain resulting from his AFOs during play participation, his parents also provided insight into their own perceptions and experiences of their child's pain during play. For example, the child's father discussed his previous use of rigid AFOs. He identified that they had to get their child fitted for a different classification of AFOs after using them for period of time because the rigid AFOs resulted in lower extremity pain during play. While the father identified experiences of pain with rigid AFOs, he also described instances in which the child experiences pain when wearing his dynamic AFOs during bike riding. His father discussed how the child was just fitted with a new set of dynamic AFOs, which typically require an adjustment period for comfort. His father described the experience of pain during bike riding, stating "The new ones, he had trouble because they're pinching his legs in the top so there was a definite adjustment area".

Overall, the child's experience of certain play activities, bike and motor bike riding, are negatively influenced by his use of AFOs when they result in pain and discomfort. The pain and discomfort seems to be derived from an adjustment period to a new set of braces and/or the required positing of the lower extremities to effectively play with said toys. This experience of pain and discomfort were found to cause the child to cease participation in the valued play activity, further contributing to a negative play experience.

Discussion

This research was rooted in understanding the experience of a single family of a child with cerebral palsy using lower extremity orthoses in natural play contexts. Further, the researcher sought to understand how use of LEOs influenced participation

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in gross motor and stationary play activities. Based on the previous outlined results, the child and family provided great detail in describing their experiences of play participation and their perspectives regarding about their child's AFOs contribute to the experience of play.

This research provided insight into how the use of lower extremity orthoses impacts the experience of gross motor play. According to the results, the child and his parents believe their child's use of AFOs supports participation in gross motor play activities. This increased participation seems to be the result of improved performance skills and client factors through AFO wear. Performance skills such as climbing, running, jumping, kicking seem to be improved by AFO use. Additionally, client factors unique to CP and this child, such as decreased joint stability and limited joint range of motion (ROM) seem to be improved through his utilization of AFOs. Increased lower extremity ROM as a result of AFO use is further confirmed by Wingstrand, Hagglund, and Rodby-Bousquet's (2014) finding that two thirds of children who use AFOs to improve their ROM attain this through long-term AFO wear. This child's improved ability to climb, jump, and perform kicking motions during play may be attributed to this increase in ROM. There were also findings that the child's use of AFOs increased his functional endurance during gross motor play activities. This is supported by a study conducted by Brehm, Harlaar, and Schwartz (2008) in which they discovered use of AFOs in children with CP significantly reduce the energy cost of walking. Reduced energy cost of waking when wearing AFOs directly translates to an increase in functional endurance for gross motor play activities. This child was found to highly value participation in gross motor play activities and this current research highlights

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how use of AFOs improves performance skills and client factors, thereby increasing the child's capacity to participate in valued gross motor play activities

The parents and the child in this study reported instances of exclusion and negative experiences when participating in social play, and they attributed these negative experiences to the child's wear of AFOs. This assertion that their child's peers do not respond positively to their child's use of orthoses in social contexts demonstrates how their child's experience of participation in social play is adversely impacted by use of LEOs. This finding of social exclusion is congruent with Lindsay and McPherson's (2011) research which discovered that school-aged children with cerebral palsy are victims of bullying and social exclusion within their school environment. The current research also further contributes to this truth by adding the facet of lower extremity orthoses use as another reason for social exclusion in this population. Further, because the data shed light on the increasing value this child places on social participation and social play, his need for LEOs seems to be preventing him from participating in positive social play experiences. It is important to understand that the child's negative social play experiences due to braces wear is not solely the result of the child's self-perception of his own braces, but rather because his social environment is unaccepting of a client factor that makes the child unique.

Participants described how the child's self-perception of his braces varies across the contexts of his home, school, and community environments. The child did not possess a negative perception of his need for AFOs within play contexts of his home environment, although the data suggests that this was not consistent when participating in play in his school and community environments. The child's self-perception of

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himself and his need for braces in school and community play environments was characterized by his comparison of himself to his typically developing peers and feelings of inadequacy. This may be a result of the child feeling comfortable in his home environment, without fear of being judged by his peers for his use of AFOs. Research conducted by Kramer and Hamel (2011) further confirms the findings in this study, as they discovered that children with cerebral palsy feel more competent when the qualities of people, places, and tools in their immediate environment were consistent with their abilities and needs. This study's finding demonstrates this in that the child's self-perception of his abilities and his need for braces is increasingly supported in his home environment by his family and selection of toys, versus his community and school environment.

In addition to the child's self-perception of his AFOs varying across play contexts, this study also highlighted how his choice of play activities varies across contexts and is integrally linked to his wear of, or lack of AFOs during play participation. This finding is important because it alludes to the ways in which his self-perception of his own abilities and decision to participate in a variety of play activities is partially influenced by his wear of AFOs. In other words, his AFOs may improve his experience of play for certain play activities by increasing his self-competence to perform. Kramer and Hamel (2011) highlighted how children with CP's personal strengths supported their sense of competence, and that their impairments had minimal influence on their sense of competence when the environment matched their abilities and needs. The child feels more competent during certain play activities when he

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believed that his AFOs, as part of his environment, were congruent with his abilities and need to do so.

The reduction in frequency of w-sitting when using his AFOs, demonstrates how use of these orthoses impacts this child's participation and experience in stationary play. Further, the child's wear of AFOs and influence in reducing his ability to W-sit during floor-based play may potentially increase his available performance skills and the experience of play through more functional body positioning. The W-body positioning is seen as compensatory for diminished postural stability, as well as known to limit a child's ability to cross midline during play and may result in increased tightness in lower extremity joints (Pathways, 2019). The child's tendency to sit in this non-functional position when he is not wearing his braces is supported by research findings that children with spastic diplegic cerebral palsy have increased postural instability (Saxena, Rao, & Kumaran, 2014). When the child is wearing his braces, thereby decreasing his potential to W-sit, he may have increased availability of performance skills needed to experience successful floor-based play.

Both parents and the child in this study identified experiences in which the child's braces result in pain when he is participating in play, specifically outdoor and gross motor play. The child's experience of pain during play resulting from use of his AFOs may further diminish the relationship he has with his AFOs, as well as contribute to a negative play experience. This is demonstrated through the child's assertion that the pain he experiences during play negatively influences his perception of his AFOs, as well as prevents him from participating in meaningful play activities. The influence of pain in promoting negative play experiences during physical activity in children with

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cerebral palsy has been pre-established (Lauruschkus, Nordmark, & Hallstrom, 2014). These findings further reinforce the findings in this study, while also contributing the concept that pain and the use of AFOs during physical play may be another facet of the experience of pain in this population, not previously explored.

Implications for Practice

This study highlights the experience of play when using AFOs in natural play contexts from the perspectives of the child, as well as the parents. The inclusion of the parent's perspective in this study contributes to the concept of family-centered practice (FCP), commonly utilized in pediatric occupational therapy (Fingerhut et al., 2013). The current study and its results have implications for the promotion of FCP, as the parent's perspectives conveyed through this study highlight the importance of including them into practitioners' therapeutic decision-making process. Parents perspectives in this study were crucial to gaining in-depth insight into how the child's use of AFOs impact the experience of meaningful and productive play. Further, the practice of occupational therapy recognizes the distinct value of parental involvement through the understanding that caregivers know the most about the child (AOTA, 2016). Practitioners working with children with cerebral palsy using AFOs should continue to implore parental insight into evaluation, goal setting, intervention planning, and decision-making as the child's lived experience of disability coincides with the parents.

The findings that the use of AFOs support positive experiences in and participation in gross motor play has clinical implications for intervention. OTs have the unique skill set to build improved gross motor abilities through participation in play (Case-Smith & O'Brien, 2015), and this study indicates that gross motor play

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intervention used with this population may be more effective through the use of AFOs during therapy. AFOs in this study were found to improve the child's performance skills and offset client factors that were a barrier to participation in meaningful gross motor play experiences. Practitioners should consider these findings when developing play interventions and recommendations that incorporate use of AFOs to improve skill building capacity, as well as the child's overall experience of play.

This study demonstrates that the child's use of AFOs in social contexts culminates in exclusion and being taken advantage of by his peers, leading to adverse social play experiences. AOTA (2019) recognizes the responsibility of occupational therapists in promoting the inclusion of children with disabilities in social play within school and community contexts. OTs working in such settings with children with CP using AFOs should consider these results and how they can better promote more positive social play experiences by reducing exclusion through peer education on disability and improving social emotional skills in clients to better cope with arising negative social experiences. Also, this theme of the child's poor social play experiences because of his need for AFOs in school and community contexts have important implications for practitioners attempting to create social and physical environmental adaptations and modifications that further integrate inclusionary practices. Laverdure, Paulsen, Rumery & Strunk (2016) advocate for the inclusion of children with disabilities and their families in a variety of contexts, identifying that building inclusive communities and creating an inclusive culture involves differences among children being acknowledged and celebrated so that children of all abilities can gain skills needed for self-advocacy and community belonging that will be used in further stages

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of life. As Occupational Therapists, this necessity creates a large role for practitioners to play in universally designing school and community environments that can be accessed by children of all abilities, so that a child's disability is not amplified in social contexts by their need for environmental modifications and adaptations. OTs also have a vital role to play in educating children and adults working directly with them on how to recognize differences among them and further celebrate the uniqueness within them in an effort to reduce stigma. Results from this study demonstrate how the child's self-perception of his braces and choice of play activities can vary across play contexts. This identifies implications for OT practitioners, as the OTPF (AOTA, 2014) highlights the importance of understanding the influence context and environment poses on successful participation in occupation. In working with children with cerebral palsy using AFOs across play contexts (home, school community), practitioners should consider these findings and how a child's self-perception and efficacy may be contributing to successful, or lack thereof, performance during play. According to AOTA (2015), practitioners must focus on selecting environments and contexts that align with the child's skill set and needs, while also maximizing participation. OTs should utilize this understanding when assessing a child's occupational performance, goal setting, and planning interventions with consideration to a child's self-perception, choice of, and performance of play and how that may vary across different play settings in terms of AFOs

Limitations & Future Research

Limitations of the present case study would include a small sample size, technical difficulties experienced during data collection, and the researchers pre-

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established relationship with child and family as their Community Living Support (CLS) worker. The small sample size indicates that the results of the study may not be generalizable to the broader population of school aged children with cerebral palsy using AFOs during play. The technical difficulties experienced with audio recording of the Mother's interview during data collection requires the researcher to conduct a follow-up interview, creating potential for collection of mis-representative data. Also, the researcher's relationship with the child and family as a CLS worker introduces the potential for bias in data collection and analysis procedures. Although, the researcher made attempts to minimize all biases during research procedures, the relationship should still be identified.

Because this is such a small study, the researcher implores the need for a larger study to investigate the overall impact the use of a widely prescribed orthoses can have on the play experiences of children with cerebral palsy and their family. This study lays the groundwork for future studies in identifying the possible negative and positive effects of using AFOs during play. Because cerebral palsy is the most commonly occurring motor disability during childhood and AFOs are the largest classification of lower extremity orthotics prescribed for this population, more intensive research is needed to understand the true impact these orthoses have on play participation.

Conclusion

This small case study sought to understand the experience of play in natural contexts of a family and child with cerebral palsy, using AFOs. Through semi-structured interviews and the utilization of play observations, the researcher was able to identify how the child's experience of play is impacted, both positively and negatively,

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by the use of AFOs. Results from this study describe how the child's experience of gross motor play participation is supported by use of his AFOs. This was demonstrated through participants' perceived improvements in the child's performance skills of running, jumping, kicking, and balance skills, as well as improved client factors such as decreased joint stability and functional endurance, and limited ankle ROM .

Alternatively, there was a reoccurring theme of the child's participation and experience of social play being adversely influenced by his need for AFOs. The child's self-perception of his need for AFOs and his coinciding choice of play was found to vary across his home, school, and community contexts and his AFOs were found to be a support to functional body positioning during play. Lastly, the data demonstrated that the child's AFOs can sometimes result in pain/discomfort during certain play activities, contributing to negative play experiences. Further, the results from this research demonstrates the importance of family-centered practice and the integration of parental perspectives for practitioners working with children with CP using AFOs within natural play contexts. OTs seeking to improve gross motor play skills in this population through skilled intervention should consider integrating the use of AFOs during intervention and home program planning. Lastly, practitioners should consider how a child's self-perception of their AFOs and choice of play may vary across play contexts and how these variations may further influence their overall performance in play.

Bibliography

- Angelin, A. C., Sposito, A. M., & Pfeifer, L. I. (2018). Influence of functional mobility and manual function on play in preschool children with cerebral palsy. *Hong Kong Journal of Occupational Therapy*, 3(1). doi: 10.1177/1569186118783889
- AOTA. (2015). Occupational therapy's perspective on the use of environments and contexts to facilitate health, well-being, and participation in occupations. *American Journal of Occupational Therapy*, 69(Suppl. 3), 6913410050. <http://dx.doi.org/10.5014/ajot.2015.696S05>
- AOTA. (2016). Occupational therapy's distinct value. *Children & Youth: Family Engagement*. Retrieved from <https://www.aota.org/~media/Corporate/Files/Secure/Practice/Children/distinct-value-children-youth.pdf>
- AOTA (2014b). Occupational therapy practice framework: Domain and Process (3rd ed.). *American Journal of Occupational Therapy*, 68(Suppl. 1.), S1-S48. <http://dxloi.org/10.5014ajot.2014.682006>).
- APTA. (2008). Fact Sheet: Using evidence to select and ankle foot orthosis for children with cerebral palsy. *Section on Pediatrics*. Retrieved from <https://pediatricapta.org/includes/factsheets/pdfs/AFO%20Fact%20Sheet.pdf>
- Bailes, A. F., Caldwell, C., Clay, M., Tremper, M., Dunning, M., & Long, J. (2017). An exploratory study of gait and functional outcomes after neuroprosthesis use in children with hemiplegic cerebral palsy. *Disability*

EXPERIENCE OF PLAY PARTICIPATION

and Rehabilitation, 39(22), 2277-2285, DOI:

10.1080/09638288.2016.1225827

Brehm, M. A., Harlaar, J., Schwartz, M., (2008). Effect of ankle-foot orthoses on walking efficiency and gait in children with cerebral palsy. *J*

Rehabilitation Med, 40(7). pp. 529-534.

Case-Smith, J., O'Brien, J., C. (2015). *Occupational therapy for children and adolescents*. St. Louis, MS: Elsevier Mosby.

Cerebral Palsy. (2018). About Cerebral Palsy. Retrieved from

<https://www.cerebralpalsy.org/about-cerebral-palsy>

Cerebral Palsy. (2019). Orthotic Devices. Retrieved from

<https://www.cerebralpalsy.org/information/mobility/orthotics>

[Cerebral Palsy Alliance. \(2018\). Gross motor function classification system](#)

[\(GMFCS\). Retrieved from https://cerebralpalsy.org.au/our-research/about-cerebral-palsy/what-is-cerebral-palsy/severity-of-cerebral-palsy/gross-motor-function-classification-system/](https://cerebralpalsy.org.au/our-research/about-cerebral-palsy/what-is-cerebral-palsy/severity-of-cerebral-palsy/gross-motor-function-classification-system/)

CDC. (2018). Data & statistics for cerebral palsy. Centers for Disease Control

and Prevention. Retrieved from <https://www.cdc.gov/ncbddd/cp/data.html>.

Fingerhut, P. E., Piro, J., Sutton, A., Campbell, R., Lewis, C., Lawji, D., &

Martinez, N. (2013). Family-centered principles implemented in home-

based, clinic-based, and school-based pediatric settings. *American Journal of Occupational Therapy*, 67, 228–235.

<http://dx.doi.org/10.5014/ajot.2013.006957>

EXPERIENCE OF PLAY PARTICIPATION

GMFCS - E & R © Robert Palisano, Peter Rosenbaum, Doreen Bartlett, Michael Livingston, 2007 CanChild Centre for Childhood Disability Research, McMaster University

Imms, C. , Reilly, S. , Carlin, J. and Dodd, K. (2008), Diversity of participation in children with cerebral palsy. *Developmental Medicine & Child Neurology*, 50, 363-369. doi:10.1111/j.1469-8749.2008.02051.x

Kerkum, Y. L., Buizer, A. I., van den Noort, J. C., Becher, J. G., Harlaar, J., & Brehm, M. A. (2015). The effects of varying ankle foot orthosis stiffness on gait in children with spastic cerebral palsy who walk with excessive knee flexion. *PLoS ONE*, 10(11), 1–19.

<https://doi.org/10.1371/journal.pone.0142878>

Kolehmainen, N., Ramsay, C., McKee, L., Missiuna, C., Owen, C., & Francis, J. (2015). Participation in physical play and leisure in children with motor impairments: Mixed-methods study to generate evidence for developing an intervention. *Physical Therapy*, 95(10), 1374–1386. doi 10.2522/ptj.20140404

Kramer, J. M., & Hammel, J. (2011). “I Do Lots of Things”: Children with cerebral palsy’s competence for everyday activities. *International Journal of Disability, Development & Education*, 58(2), 121–136. doi: 10.1080/1034912X.2011.570496

Laverdure, P., Paulsen, M., Rumery, E., & Strunk, A. (2016). Promoting inclusion for children with disabilities and their families. *OT Practice* 21(5), 9–12.

EXPERIENCE OF PLAY PARTICIPATION

Lifter, K., Foster-Sanda, S., Arzamarski, C., Briesch, J., & McClure, E. (2011).

Overview of play – Its uses and importance in early intervention/early childhood special education. *Infants & Young Children*, 24, 225–245.

Lindsay, S., McPherson, A. C. (2011). Experiences of social exclusion and bullying at school among children and youth with cerebral palsy.

Disability and Rehabilitation, 34(2).

<https://doi.org/10.3109/09638288.2011.587086>

Lauruschkus, K., Nordmark, E., & Hallstrom, I. (2014). “Its fun, but...”

Children with cerebral palsy and their experiences of participation in physical activities. *Disability and Rehabilitation*, 37(4). DOI:

10.3109/09638288.2014.915348

Maitra, K. K., & Erway, F., (2006). Perception of client-centered practice in occupational therapists and their clients. *American Journal of Occupational Therapy*, 60, 298-310.

Majnemer, A., Shikako-Thomas, K., Schmitz, N., Shevell, M., & Lach, L.

(2015). Stability of leisure participation from school-age to adolescence in individuals with cerebral palsy. *Research in Developmental Disabilities*, 43. pp 73-79. doi: 10.1016/j.ridd.2015.08.00

Palisano, R. J., Chiarello, L. A., Orlin, M., Oeffinger, D., Polansky, M., Maggs, J., Gorton, G. (2011). Determinants of Intensity of Participation in Leisure and Recreational Activities by Children with Cerebral Palsy.

Developmental Medicine & Child Neurology, 53(2), 142–149.

Pathways. (2019). What is w-sitting?. Retrieved from <https://pathways.org/what-is-w-sitting/>

EXPERIENCE OF PLAY PARTICIPATION

Santos, T. R., Pfeifer, L. I., Silva, D. B. R., & PanuncioPinto, M. P. (2011).

Avaliac, ~ao do comportamento l udico de crianc, as com paralisia cerebral. *Arquivos Brasileiros de Paralisia Cerebral*, 5, 18–25.

Saxena, S., Rao, B. K., & Kumaran, S. (2014). Analysis of Postural Stability in

Children With Cerebral Palsy and Children With Typical Development: An Observational Study. *Pediatric Physical Therapy*, 26(3), 325–330.

<https://doi.org/10.1097/PEP.0000000000000060>

Shelly, A., Davis, E., Waters, E., Mackinnon, A., Reddihough, D., Boyd, R.,

Reid, S. & Graham, H. K. (2008., The relationship between quality of life and functioning for children with cerebral palsy. *Developmental Medicine & Child Neurology*, 50. 199-203. doi:[10.1111/j.1469-8749.2008.02031.x](https://doi.org/10.1111/j.1469-8749.2008.02031.x)

Shikako-Thomas, K., Dahan-Oliel, N., Shevell, M., Law, M., Birnbaum, R.,

Rosenbaum, P., Poulin, C., & Majnemer, A. (2012). Play and be happy? Leisure participation and quality of life in school-aged children with cerebral palsy. *International Journal of Pediatrics*.

doi:10.1155/2012/387280

Wingstrand, M., Hagglund, G., Rodby-Bosquet, E. (2014). Ankle-foot orthoses

in children with cerebral palsy: a cross sectional population-based study of 2200 children. *Musculoskeletal Disorders*, 15 (327).