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Camping for Children with Cerebral Palsy

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Camping for Children with Cerebral Palsy

Children with cerebral palsy and their families may have needs that make camping difficult or seemingly inaccessible. Through an explanation of the research backing the benefits of camping, this paper makes it clear that camping is a worthwhile activity that can be optimized through modifications. Understanding cerebral palsy and the steps of basic camping activities, it is possible to create modifications to increase family and child wellness while camping. Through a hypothetical case study, a specific look can be had at the ways to prepare for an optimal camping experience- from adapted equipment, to modified preparatory strategies. Through a review of the literature and analysis of a specific child with cerebral palsy and his family, this paper aims to educate readers on camping, cerebral palsy, and modifications, while serving as a resource for children and families planning to camp.

Literature Review

Camping

Camping is the activity of spending a vacation living in a tent or camper (Google, 2017). A difference exists between attending a camp and going camping (Jirásek et al., 2017). This study looks at going camping, as opposed to the organized activity of attending a camp. Research supports camping as an effective means of improving quality of life (Asah et al., 2012). Each person who participates in camping may have different motivations and outcomes related to the camping experience. The benefits of camping can touch all aspects ones' health and wellness, including physical, emotional, mental, spiritual, and social health. There are many reasons people camp. One study identified over 25 distinct reasons campers reported for camping. Among them were rest mentally, enjoy smells and sounds of nature, feel healthier, take some risks, help family develop their outdoor skills, and feel more self-confident. An analysis of the

literature, reviewing a collection of insights from campers all over the world showed the benefits emerge in the main themes. These include nature and spirituality, play and challenge, social, skill building, and general health.

Nature and Spirituality. Comfort, escape, spiritual experiences, and closeness to nature are among the reasons for camping identified by Australia campers in a study on camper experiences (Hassell et al., 2015). Being in touch with nature elicits feelings of awe and peace, often times an awe and peace that campers have yet to capture in any other setting, or by any other means. Breaking from the urban world, participants in a 2 week camping trip identified simply being in a natural setting as a huge benefit to their well-being, citing that the busyness of their everyday life is slightly relieved while camping (Jirásek et al., 2017). Even simple exposure to nature can be profoundly beneficial. Studies on the impact of green space on attention and stress found that within several minutes of seeing green spaces, children's stress levels fell. Further, outdoor free play protects children from the anxiety and depression associated with a hurried lifestyle (National Wildlife Federation, 2010). Research supports that exposure to nature increases positive emotions (Asah et al., 2012).

Spiritual experiences are often associated with the outdoors (Jirásek et al., 2017). Feeling small in the big world, and recharging provide spiritual enrichment to campers. When viewed as a leisure activity, camping can be seen as providing a basis for faith and an opportunity to act from internally compelling love. Additionally, many campers state that camping is valuable to their self-identity, as they seek affirmation and shaping of their self-image while camping (Hassell et al., 2015).

Play and Challenge. Camping provides opportunities for play and fun (Hassell et al., 2015). It is an optimal environment for play because of the reduced amount of outside stressors

and increased amount of space and time. Campers in an Australia National Park identified play/fun as a reason camping was meaningful to them. Hiking, fishing, kayaking and experiencing nature were among the fun activities that drew people to camp. Additionally, sports, games, campfires, swimming, and journaling are popular activities while camping (Jirásek et al., 2017).

Some people seek fun through challenge and risk, both potential benefits of camping (Hassell et al., 2015). These people love the challenges of camping and the stories they have after their trip. The stories themselves serve as important components of their self-identity. Being in nature can be uncomfortable for people, and adjusting to the environment can push and test peoples' ability to bear discomfort (Jirásek et al., 2017).

Social. Research strongly supports the power of camping to improve social skills and relationships (Jirásek et al., 2017). Friendships, and relationship building are frequently identified as some of the most beneficial factors of camping. Campers have identified their camping experiences as beneficial because while camping, they strengthen friendships, create relationships, and improve family function. They attribute this to increased time and opportunities for quality time, mutual problem solving, and socialization. Additionally, being outdoors reportedly leads people to be more in touch with their caring side, and brings forth their kindness (National Wildlife Federation, 2010). This prepares the way for enhanced social interactions.

Increased time and opportunities are complimented by the simplification of life (no power, no televisions, no phones, and no employment) while camping, which provides increased time and an environment that enhances relationships (Hassell et al., 2015). Increased simplicity suspends normal life to expose potential new roles. Relating to family members while camping is

similar to relating to people in the earlier, simpler era, when distractions were fewer and relating was more straightforward (Jirásek et al., 2017). Participants used the Latin word *communitas*, which implies a specific spirit of community, equality of people, solidarity and togetherness, to describe the camping relationships they cherish (Jirásek et al., 2017). Sharing in the spiritual aspects of camping, such as connection to nature, brings these communities closer together. Camping provides a unique groundwork for relationship building. The power of socialization while camping has potential to be strong, even outside of the direct benefits of relationship building (Eliasson et al., 2003). It may have had significant positive influence on the effectiveness of a health intervention being studied.

Skill Building. Skills associated with camping are many (Jirásek et al., 2017). Some are specific to the tasks of camping, such as setting up and taking down camp, handling tools, building fires, tying knots, recognizing plants and trees, even recognizing programs such as Greek myths. These camping specific tasks have aspects that carry over to other areas of life. Setting up and taking down camp requires not only know-how and skills specific to the task, but also effective use of teamwork and cooperation, which are applicable to most areas of life. Personal resilience, and recognition of the importance of health are more skills practiced during camping task performance reported by families who completed a 2 week camping trip. Families reported that because the chores of everyday life seem natural while camping, family members are more likely to engage in them, creating more frequent learning opportunities. In fact, the outputs of many camping activities are seen as informal learning.

While people of all ages can learn these skills, research specifically supports the benefit of learning these skills at an early age (Asah et al., 2012). Childhood interactions with nature support major developmental processes of adolescence, improve social behavior and moral

judgment, enhance pro-environmental attitudes, and increase self-discipline. Further, parents can teach their children valuable life lessons while camping (Hassell et al., 2015). Many of the skills learned while camping are life-long (Asah et al., 2012). The sooner the skill is learned, the sooner it can be used.

General Health. Sedentary indoor lifestyles are becoming more common, which has contributed to an increase of childhood chronic conditions, including ADHD, vitamin D deficiency, asthma, and obesity, in the recent decades (McCurdy et al., 2010). The American Pediatric Association recommends children engage in at least 60 minute of physical activity each day. Many children are falling short of this. A study on outdoor activity's impact on children's health found that exposure to natural environments played a vital role in reducing health inequalities. Time spent outdoors is linked to increased physical activity. Camping typically involves unstructured free play, which lowers risk of obesity (Hassell et al., 2015). The benefits of this unstructured free play are especially notable when compared to their common alternative choice of free time, extended use of technology. Exercise outdoors has been shown to reduce blood pressure and increase positive mood (McCurdy et al., 2010). Obesity and blood-pressure are not the only physical health factor directly benefited by camping (National Wildlife Federation, 2010). Spending time outdoors, as one does when camping, raises levels of Vitamin D, which reduces risk of further health problems in children, such as heart disease and diabetes. An additional health benefit associated with increased time spent outdoors is improved distance vision and decreased chances of nearsightedness.

The mind also benefits from camping and the time outside it involves. Camping increases cognitive functioning and mental health for children (Hassell et al., 2015). Studies show that exposure to the outdoors is effective in reducing ADHD symptoms (National Wildlife

Federation, 2010). In one study, as tree cover increased, symptoms of ADHD decreased in severity (McCurdy et al., 2010). Schools with environmental education programs score higher on standardized tests in reading, writing, listening, and math (National Wildlife Federation, 2010). Also, students significantly improve performance on critical skill measures when exposed to environment-based education.

To access these benefits, people must engage in camping, which requires a certain set of resources, lifestyle characteristics, and skills. Of those, physical capabilities is a significant consideration. In order to fully investigate how a child with cerebral palsy can have an optimal camping experience, an understanding of cerebral palsy is essential.

Cerebral Palsy

Cerebral palsy (CP) is a diagnosis characterized by lost or impaired movement, muscle tone, or posture caused by brain damage (Mayo Clinic Staff, 2017). CP is a congenital disorder and the brain damage can take place from brain injury or abnormal development while a child's brain is still developing- before, during, and immediately after birth. Signs and symptoms are presented during infancy. Symptoms vary greatly between people and may include abnormal reflexes, hypertonicity or spasticity of the limbs and trunk, abnormal posture, involuntary movements, unsteady walking, swallowing difficulties, and eye muscle imbalance.

Causes. Abnormality or disruption in brain development causes CP, although the exact cause is not always known (Mayo Clinic Staff, 2017). Causes may include mutations in genes, maternal infections, fetal stroke, infant infections, traumatic head injury, or lack of injury related to difficult labor or delivery. All of these possible causes take place before, during, or immediately after birth.

Symptoms. Symptoms and signs can vary greatly (Mayo Clinic Staff, 2017). Movement and coordination problems associated with cerebral palsy may include muscle tone variations, slow movements, difficulty walking, asymmetrical gait, excessive drooling, or difficulties with precise movements.

Prognosis/ Progression. Cerebral palsy starts at birth and does not worsen with time (Yamamoto, 2012). The presentation varies greatly on severity, type, and comorbidities. Some individuals reach developmental milestones at the 'designated' time, others, often with more severe cases, do not ever reach developmental milestones.

Types. The three main types of cerebral palsy are spastic, athetoid, and ataxia (Yamamoto, 2012). Spastic, the most common type, includes hypertonicity, which is abnormally high muscle tone. The regions of the body affected determine the exact type of spasticity. Hemiplegic is the type where one entire side of the body is affected. Diplegic is the type where the lower extremities are affected with minor effect on upper extremities. Quadriplegic is the type where the entire body is affected. For example, a person with hypertonicity in their left arm, left leg, and left region of head, neck and trunk would have spastic hemiplegia. The second type of cerebral palsy mentioned, athetoid/dyskinetic, is known for involuntary and uncontrolled movements. Lastly, ataxia is unsteadiness and balance difficulties, especially when walking. A combination of any of these three may exist.

Treatment. Medications or Botox injections can be used to decrease muscle tone, and increase function (Mayo Clinic Staff, 2017). However, several side effects exist with both interventions that leave reason to fully consider the pros and cons of using the medicine before using it. Occupational therapy, physical therapy, speech and language pathology, and recreation therapy are interventions that have proven beneficial in improving the lives of children and

adults with cerebral palsy. Surgical options of orthopedic or nerve based surgery exist and are used by individuals who have severe contractures and have had made minimal gains with therapy as intervention.

Camping and Cerebral Palsy

Motor movements are always impacted in individuals with cerebral palsy, regardless of the type of CP (Yamamoto, 2012). This may present challenges in completion of daily functional tasks, and engagement in meaningful activities. That being said, participating in such activities helps strengthen and improve skills, and increase purpose and life satisfaction. The many benefits of camping are equally important for people with or without cerebral palsy, if not more important for people with cerebral palsy. The physical demands of camping can serve as intervention specifically addressing the neuromusculoskeletal deficits of cerebral palsy. Also, camping and the creative thinking and adaptations it requires presents mental and emotional health strengthening opportunities in people with cerebral palsy.

The often relaxed nature of camping eliminates pressures for speed and productivity, and provides children opportunities to complete tasks independently and work on their skills. Further, the social pressures and expectations of society are relaxed in the camping experience, so people with cerebral palsy and their families may be more comfortable trying new things to gain confidence that can be carried outside of camping. For example, a child with cerebral palsy who has difficulties self-feeding may be more comfortable self-feeding while camping because of the reduced pressures of cleanliness and etiquette.

Research shows that psychological and physical health of caregivers of children with cerebral palsy are largely predicted by caregiving demands (Raina et al., 2005). The demands and stress on individuals with cerebral palsy and their caregivers and loved ones can be

alleviated through engagement in camping, as rejuvenation, reflection, and relaxation, as well as fun, thrills, and adventure, both of which could serve as a bond and positive change of pace for families who experience the demands that can come with cerebral palsy. Focusing on the family as intervention is one of the most effective ways to address the demands of caregiving and as stated earlier, research shows social and familial relationships are improved while camping.

Hypothetical Case Study: Rood Family

The Rood family, situated in Brighton, MI is five people strong. Jamie, the 45 year old wife and mom manages a CrossFit gym that she started up ten years ago. She is involved in the PTA at her children's schools. She and her husband Matt have been married for 18 years. Jamie has minimal camping experience, but has a great desire to get outdoors. Matt, the 47 year old husband and dad works as a high school history teacher, and has for the past 20 years. He is also the Boy Scout troop leader for his son Rupert's troop. Matt goes on week-long rustic camping trip with his childhood buddies every other year, a tradition that started 35 years ago.

Rupert is a 16 year old male, busy with the demands of being a junior in high school, active Boy Scout and varsity basketball player. His camping experience consists of platform tent camping during Boy Scout summer camp. Ronnie is a 13 year old female who participates in travel soccer and church choir, in addition to the academic works of the seventh grade. Similar to her mom, Ronnie has minimal camping experience, but she has a great desire to be outdoors and wants to learn how to camp. Ralph, a 12 year old male sixth grade student in middle school, loves Boy Scouts and school, especially social studies class. Ralph has right hemiplegic cerebral palsy. He uses his right arm to stabilize items (ex: piece of paper on a table) and can hold items larger than a can of soup and smaller than a basketball between his right arm and chest. His left hand and arm are low strength, but have full range of motion. Ralph uses his left arm in dressing

and grooming, but still needs assistance. His bilateral coordination is impaired, and he is unable to use both sides of the body to perform activities in a coordinated way. He ambulates independently, although has low endurance and difficulty running and jumping. He wears an AFO on his right leg/foot. He often drags his right foot, and is at increased fall risk when stepping over things because of it. Ralph can independently stand up from sitting by using a strategy learned in physical therapy. His overall physical endurance is weak and he needs additional assistance when he is sleepy. For walking long distances, his mom or dad push him in a manual wheelchair. His cognition and communication are at the developmental level of 12 year old males. He is able to write independently with his left hand, while stabilizing paper with his right arm. He has no difficulties swallowing, and he feeds independently.

Ralph attends both occupational therapy and physical therapy one time each per week at a local outpatient clinic. He is working diligently to become independent in dressing and grooming. His family is very supportive and encouraging as Ralph works towards his goals, just as they are for each other member of the family.

The Roods are financially stable and feel comfortable and prepared to spend money for 'non-essentials' like camping and vacations, as long as the trips are family trips. Past family vacations have been to locations within a 5 hour drive, and have consisted of exploring cities and urban areas, or playing in resort/water park venues. They are a close-knit family and enjoy spending time together playing board games, trying new restaurants, and watching the Detroit Lions play football on TV. They live in a subdivision, in a two floor home in Brighton, MI, where they have lived for the past 14 years.

Activity Analysis

The Rood family is planning a camping trip to a campground about a 1 hour drive away. Planning for the 4 day August camping trip started in June. This will be the family's first all family camping experience, and the first camping experience ever for 3 out of the 5 family members. Preparation includes assessing necessary adaptations the family may need to create an ideal environment for the whole family, especially considering Ralph's needs. Guided by the Occupational Therapy Practice Framework (2014) and the Activity Analysis Template (2005), the following is a resource focused on analyzing and modifying the tasks of sleeping in a tent and making s'mores. The specific contents are based off author experience with camping, camping with children with cerebral palsy, and collaborative conversations with occupational therapists and campers. Modifications were validated through analysis of an actor performing tasks with said limitations and modifications.

Sleeping in a Tent

The Rood family will be staying in tents, one kid tent made to fit three people, and one parent tent, made to fit two people. The tents will be setup on a cleared out section of dirt, within ten feet of each other. Tents are made to be snug, and the three person tent Rupert, Ronnie, and Ralph are sharing is no exception, there will be limited free space. Perceived challenges of sleeping in the tent specific to Ralph are as follows:

- Difficulty zipping and unzipping tent door / limited use of upper extremities
- Difficulty stepping into tent / tendency to drag right foot
- Difficulty maneuvering in tight and dark space (removing AFO, positioning to bed and into sleeping bag, dressing, navigating inside luggage, using bathroom, fending off bugs, etc.) / lack of coordination, endurance and strength, unfavorable environmental conditions (space and lighting constraints), and decreased proprioception when decreased vision
- Difficulty sleeping / muscle weakness and tonicity not conducive with rough terrain

Activity Summary. Sleeping on the ground in a tent for the night using a sleeping bag, sleeping pad and small pillow. Ralph will be doing this three nights in a row.

Sequence of Major Steps Typically Performed	Step Modifications
Zip tent door open	<ul style="list-style-type: none"> • Step on tent edge with left foot or put a stake with string that keeps the tent tight in ground to decrease slack for optimal zip • Extend zipper handle size and shape, creating a large handle • Create a grip on the zipper that can be opened by closing mouth around it
Remove footwear	<ul style="list-style-type: none"> • Position a stable bar or stool near tent door as a stabilizer or seat • Enter arms first, spin to sitting on bottom, take off footwear and AFO and pull both feet in
Step into tent	<ul style="list-style-type: none"> • Put a rug/mat over the lip of the tent to eliminate the need for stepping over the lip • Use a tent with minimal lip • Position a stable bar or stool near tent door as a stabilizer or seat • Step on the lip of tent with left foot to lower the lip while passing right foot through • Enter arms first, spin to sitting on bottom, take off footwear and AFO and pull both feet in
Zip tent door closed	<ul style="list-style-type: none"> • Step on tent edge with left foot or put a stake with string that keeps the tent tight in ground to decrease slack for optimal zip • Extend zipper handle size and shape, creating a large handle • Create a grip on the zipper that can be opened by closing mouth around it
Maneuver to sleeping spot (cot or sleeping pad)	<ul style="list-style-type: none"> • Position brightly colored yoga mat on the floor to prevent slipping and to designate path • Use a headlight or necklace light to increase visibility
Sit on sleeping spot	<ul style="list-style-type: none"> • Allot enough room to use strategy for moving from sit to stand and stand to sit
Locate clothing	<ul style="list-style-type: none"> • Use a tote that once had the sleeping bags, etc. as a table surface, where clothes are placed during daylight in preparation for nighttime • Have clothes pre-grouped in bags according to what time they are to be put on (ex: Ralph simply grabs the ‘night bag’ to retrieve his pajamas) • Use hooks in tent to hang clothes, or clothes line for hanging clothes to keep organized

Dress or undress for sleeping	<ul style="list-style-type: none"> • Move the stool inside, or have an additional stool inside for sitting while dressing, especially if no cot • Use a bag hanging from the tent as designated AFO holder
Open sleeping bag zipper	<ul style="list-style-type: none"> • Use foot to keep tension in sleeping bag to unzip it • Use fitted sheet (around cot or sleeping pad), loose sheet, and blanket • Fasten ends of sleeping bag to ends of cot or sleeping pad • Use a sleeping bag that has a zipper on the left side, or an upside down sleeping bag with no hood
Move body into sleeping bag, feet first	<ul style="list-style-type: none"> • Use support provided by cot or sleeping pad • Use fitted sheet (around cot or sleeping pad), loose sheet, and blanket • Fasten ends of sleeping bag to ends of cot or sleeping pad • Use a reacher that magnetically sticks to bottom of cot to grab the top of sleeping bag if necessary • Place hood over head to keep bag tight and organized while lying down
Zip sleeping bag closed while lowering body down	<ul style="list-style-type: none"> • Use head in hood and feet in bottom to keep the sleeping bag tight for optimal zipping
Fending off bugs	<ul style="list-style-type: none"> • Use a precautionary bug spray coating of the sleeping bag, clothing, and Ralph himself • Use a mosquito net
Using the bathroom at night	<ul style="list-style-type: none"> • Set up a bucket or hospital bed pan in tent to avoid having to go outside • Keep light on a designated hook

Precautions.

- Bed sores, and pressures from rocks, etc.
- Bed mobility in sleeping bag and staying on sleeping spot, falling from sleeping spot, sinking in to sleeping spot
- Decreased proprioception with decreased visibility increases fall risk

Activity Demands.

Objects and their properties:

- Tent- taller is better, tall door, low lip at the door, hooks inside, non-extending rainfly, enlarged zipper
- Rug/mat- easy to clean, easy to grip, light weight
- Stool- stable and lightweight so easy to use and supportive
- Cot or sleeping pad- must be appropriate firmness, providing comfort and something to push off to help stand. It must not be too soft and caved in towards the middle. Paco Pads are good for camping. Cot is easiest to get to and from.

- Sleeping bag- hood to aid in positioning sleeping bag, zipper on left side
- Headlight- button that is easily pressed on and off, need gripping materials on back of light and on inside of strap, consider necklace light in place of headlight

Space demands:

- Size of sleeping pads and bags is often small
- Quarters are tight and crowded
- Lighting is limited
- Temperature can fluctuate greatly
- Bugs and natural annoyances may be present
- Balance of maintaining proper temperature and covering skin from bugs is frustrating
- People already asleep in tent requires quiet and contained performance of task

Social demands:

- Manage this process while engaging in conversations and storytelling
- Manage this process quietly if people are sleeping
- Perform task independently to avoid needing assistance, because a 12 year old boy does not want assistance going to bed

Performance Skills.

Motor	<ul style="list-style-type: none"> • Reach, manipulate, grasp, and flow through the tent door and sleeping bag zipping processes • Stabilize self while stepping into tent • Position and bend body into sleeping bag • Coordinate lying down while zipping sleeping bag • Endure through task, often quietly
Process	<ul style="list-style-type: none"> • Attend to task • Handle equipment appropriately • Navigate through tent, avoid obstacles, often with limited lighting • Notice and respond to the situational characteristics of the environment
Social Interaction	<ul style="list-style-type: none"> • Produce speech to ask someone to move, or to ask for help • Speak fluently while performing task to engage in dialogue with others in the tent • Accommodate to prevent inappropriate social communication, such as yelling if people are asleep

Client Factors.

Body Function Categories	<p>Specific Mental Functions</p> <ul style="list-style-type: none"> • <i>Higher-level cognitive-</i> Demonstrate cognitive flexibility if an item is not in designated location • <i>Attention-</i> Concentrate while performing multi-dimension steps, like zipping sleeping bag while lying down
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- *Memory*- Recall where the light is located
- *Perception*- Stay regulated in an environment where limited lighting may make proprioception even more difficult
- *Mental functions of sequencing complex movement*- Regulate the speed and quality of movements is especially important in the crowded tent where people may be sleeping
- *Emotional*- Regulate emotions when frustrated by difficulty of zipping zippers
- *Experience of self and time*- Maintain sense of position and awareness of others in the tent

Global Mental Functions

- *Consciousness*- Stay alert while performing task, especially while in a sleepy state
- *Temperament and personality*- Demonstrate impulse control when performing tasks in an environment that requires maintenance of a calm environment
- *Energy and drive*- Stay motivated to complete tasks in full, despite difficulties
- *Sleep*- Wind down mind and body to proper sleep state

Sensory Functions

- *Visual functions*- Demonstrate visual awareness of surroundings, even in dark
- *Hearing functions*- Distinguish location based on sounds, for example location of sleeping sibling
- *Vestibular functions*- Keep balance on sleeping spot while removing AFO
- *Proprioceptive functions*- Demonstrate body awareness to stay on designated path
- *Touch functions*- Distinguish between various items based on touch for dressing in tent
- *Pain*- Demonstrate awareness of pain, especially dealing with potentially sharp and pointy zippers

Neuromusculoskeletal and movement-related functions

- *Joint mobility*- Exhibit full ROM for tasks like arm moving full range of zipper
- *Joint stability*- Exhibit structural integrity for weight bearing for all joints, like when stepping/sliding through tent door

Muscle functions

- *Muscle power*- Exhibit core strength to remove AFOs and undress while sitting independently
- *Muscle tone*- Be aware that muscle tone may increase difficulty of maneuvering sleeping bag, etc.

	<ul style="list-style-type: none"> • <i>Muscle endurance</i>- Demonstrate sustained muscle engagement for dressing in tent <p>Movement functions</p> <ul style="list-style-type: none"> • <i>Involuntary movement reactions</i>- Demonstrate body adjustment to safely get from outside tent to sleeping spot • <i>Control of voluntary movement</i>- Cross midline to zip up sleeping bag if zipper on right side • <i>Gait patterns</i>- Demonstrate gait to step in tent <p>Cardiovascular, hematological, immunological, and respiratory systems functions</p> <ul style="list-style-type: none"> • <i>Respiratory system functions</i>- Maintain regulated breathing to complete task in full • <i>Additional functions and sensations of the cardiovascular and respiratory systems</i>- Maintain endurance to complete task in full <p>Voice and speech functions; genitourinary and reproductive functions</p> <ul style="list-style-type: none"> • <i>Voice and speech functions</i>- Adjust voice volume to suit demands of environment while communicating needs, like whispering to avoid waking up a sleeping sibling • <i>Genitourinary and reproductive functions</i>- Hold bladder until in appropriate location to relieve pressure, such as commode <p>Skin and related structure functions</p> <ul style="list-style-type: none"> • <i>Skin functions/Hair and nail functions</i>- Protect against wounds while zipping in the dark
<p>Body Structures Categories</p>	<p>For optimal performance of sleeping in a tent, the following structures must be in good health and function:</p> <ul style="list-style-type: none"> • Structures of the nervous system • Eyes, ear, and related structures • Structures involved in voice and speech • Structures of the cardiovascular immunological and respiratory systems • Structures related to the digestive, metabolic and endocrine systems • Structures related to the genitourinary and reproductive systems • Structures related to movement • Skin and related structures
<p>Values, Beliefs and Spirituality</p>	<ul style="list-style-type: none"> • The Rood family values safety and independence, physical activity, and respect for all people. They will provide opportunities for Ralph to complete tasks independently, engage in physical activity, and join in every activity, even if it takes longer time and increased effort.

Performance Patterns and Contexts.

<p>Performance Patterns</p>	<p>Habits</p> <ul style="list-style-type: none"> • Ralph has a habit of placing his AFO on his bedside table once he removes it. Placing a tote or small raised surface next to Ralph’s camping sleeping spot will structure the environment so as to put this habit to good use. <p>Routines</p> <ul style="list-style-type: none"> • Ralph’s normal bedtime routine involves doing stretches before getting into bed for the night. Due to space constraints, he may have to skip this step, or do it at a different time of day. Alternatively, the family could bring a stretch mat to lay on the ground outside the tent, or over the items in the tent to use as a stretching surface. <p>Rituals</p> <ul style="list-style-type: none"> • Ralph holds a small cross given to him by his grandpa each night as he says prayers. To avoid losing the cross, he may need to tie it to a string that is fastened to the cot edge, or to a designated hook in the tent. Other than that the ritual is conducive with camping. <p>Roles</p> <ul style="list-style-type: none"> • Ralph’s role of being a 12 year old boy with cerebral palsy involves constantly questing to maintain a ‘normal’ lifestyle and do thing as close to the way his peers do as possible. He wants to go camping with his Boy Scout troop, so he is working on doing things the way his troop mates do them.
<p>Performance Contexts</p>	<p>Cultural</p> <ul style="list-style-type: none"> • Camping culture at the site the Rood family is staying involves staying up into the darkness before retiring for sleep. Ralph does not want to miss out on the fun around the campfire, so he will be performing his bedtime routine in the dark. <p>Personal</p> <ul style="list-style-type: none"> • Ralph is a male and feels more comfortable peeing in the woods than a female counterpart who is also dealing with the limitations of cerebral palsy may be dealing with. The way he typically pees is the way he will pee in the woods. <p>Temporal</p> <ul style="list-style-type: none"> • August is a popular time for camping, and each campsite near the Rood’s is full. This decreases the privacy available to the family, which may prompt them to do stretches in a tent, or pee in a tent, both of which require specific adaptations.

	<p>Virtual</p> <ul style="list-style-type: none"> • By choice, the Rood’s will not have access to technology on the trip. There will not be a virtual context to address.
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Making and Eating a S'more

The Rood family plans to have a campfire each of the three nights camping. Rupert would like the responsibility of making and tending to the fires. With the campfire, the family will roast marshmallows and make s’mores. Only Matt, Jamie, and Rupert have made or ate a s’more, and Ronnie and Ralph are excited to make and eat some. The campsite has a lowered section of earth with the fire pit located in the center, about a 1 foot step down from the ground level of the campsite. The fire pit is lined by a circle of rocks. In addition to the ledge itself, there are two log benches commonly used for sitting around the fire. The family plans to use both metal roasting forks and sharpened sticks, as well as the standard ingredients: marshmallows, chocolate bars, and graham crackers. Perceived challenges of making s’mores specific to Ralph are as follows:

- Difficulty accessing fire area / foot drag and limited proprioception with step down
- Difficulty holding roasting stick / limited endurance and strength
- Difficulty putting marshmallow on roasting stick and tending to it / limited use of RUE
- Difficulty assembling s’more supplies (breaking graham cracker in half, breaking chocolate bar piece) / limited use of RUE and limited visibility and proprioception
- Difficulty pinching roasted marshmallow into graham crackers / limited bilateral coordination and use of RUE, limited visibility and proprioception
- Difficulty eating s’more due to stickiness and tendency to break / limited bilateral coordination and limited use of RUE

Activity Summary. Ralph and his family will make and eat s’mores around the campfire at their campsite three nights in a row.

Sequence of Major Steps Typically Performed	Step Modifications
Gather individual supplies	<ul style="list-style-type: none"> • Put all supplies in a basket for ease of carrying • Utilize preparatory strategies implemented by Jamie
Enter fire area	<ul style="list-style-type: none"> • Position bench next to ledge and use as a handrail/support while stepping down or lowering supplies
Put supplies on flat surface	<ul style="list-style-type: none"> • Use basket

Break graham cracker in half	<ul style="list-style-type: none"> • Use family assistance • Use leg or base of basket as pressure point for breaking
Split off a piece of chocolate bar	<ul style="list-style-type: none"> • Use family assistance • Use leg or base of basket as pressure point for breaking
Put chocolate piece between graham cracker pieces	<ul style="list-style-type: none"> • Rest supplies on basket as substitute for second hand
Put marshmallow on end of roasting stick	<ul style="list-style-type: none"> • Pinch roasting stick between legs • Use a stick holder in the ground to secure and support roasting stick • Lean roasting stick against leverage bar
Sit down around fire	<ul style="list-style-type: none"> • Sit in manual wheelchair for optimal support and safety
Hold stick toward fire to roast marshmallow	<ul style="list-style-type: none"> • Use a roasting stick leverage bar to carry the weight and allow for movement
Monitor and check marshmallow progress	<ul style="list-style-type: none"> • Use a stick leverage bar to carry the weight and allow for movement
Remove marshmallow from fire area	<ul style="list-style-type: none"> • Use a stick leverage bar to carry the weight and allow for movement
Pinch marshmallow between graham cracker and chocolate, removing marshmallow from roasting stick	<ul style="list-style-type: none"> • Use the standard two person method with Ralph holding roasting stick • Use a strategy to pinch the marshmallow using only one hand by resting bottom graham cracker on a plate and angling far end of top graham cracker toward plate
Eat s'more	<ul style="list-style-type: none"> • Put plate on lap to catch any pieces that fall
Clean hands	<ul style="list-style-type: none"> • Use a wipe with one hand, or spread it flat then wipe

Precautions.

- Fall risk- decreased vision and proprioception when stepping down
- Fire safety- falling into fire, or burning hand on hot roasting stick or rock
- Temperature safety- eating the marshmallow when it is too hot

Activity Demands.

Objects and their properties:

- Basket- appropriate size to carry supplies, edges tall enough to keep items in basket during movement, including stepping down to fire area
- Roasting stick- longer wooden handle or additional wood piece for increased options of grip location, round stick body works best with leverage bar, can use tree branch or metal branch
- Bench- sturdy and reliable for support
- Manual Wheelchair- functioning breaks intact, easily wiped down after use at campfire

- Roasting stick leverage bar- y-shaped piece of metal, pointed end to put into ground, sturdy and strong
- Stick holder- metal tube that can be secured in the ground, hole of tube must be slightly wider than the size of the roasting stick handle
- Headlight- button that is easily pressed on and off, need gripping materials on back of light and on inside of strap, consider necklace light in place of headlight
- Plate



Space demands:

- Lowered campfire area, 1 foot step
- Smoke in the air
- Dark, only lighting from fire and headlights
- Bench placement
- Consistency of ground

Social demands:

- Manage this process while engaging in conversations and storytelling
- Perform task independently to avoid needing assistance, because a 12 year old boy does not want assistance making a s'more

Performance Skills.

<p>Motor</p>	<ul style="list-style-type: none"> • Transport supplies in basket • Calibrate force to properly break graham cracker and chocolate bar • Stabilize, lift, and move roasting stick • Align roasting stick with leverage bar • Position body relative to fire in safe fashion • Endure holding roasting stick the length of time it takes to roast marshmallow to desired degree • Manipulate the graham cracker and chocolate pieces to pinch the marshmallow
<p>Process</p>	<ul style="list-style-type: none"> • Attend to every step of process, demonstrate awareness of fire safety • Initiate every step of the process • Locate and gather all supplies • Notice and respond to fire's interaction with marshmallow • Adjusts supplies to best accommodate needs
<p>Social Interaction</p>	<ul style="list-style-type: none"> • Produce speech to voice need for help and engage in conversations • Thank parents for gathering supplies, and friends for help • Clarify points in conversation or stories • Match language to the campfire setting

Client Factors.

<p>Body Function Categories</p>	<p>Specific Mental Functions</p> <ul style="list-style-type: none"> • <i>Higher-level cognitive</i>- Demonstrate cognitive flexibility if an item is not in designated location • <i>Attention</i>- Concentrate to maintain safety around fire • <i>Perception</i>- Stay regulated in an environment where limited lighting and uneven ground may make proprioception even more difficult • <i>Mental functions of sequencing complex movement</i>- Regulate the speed and quality of movements around campfire • <i>Emotional</i>- Regulate emotions when frustrated or tired by endurance required to roast marshmallow • <i>Experience of self and time</i>- Maintain sense of position and awareness of others around the fire <p>Global Mental Functions</p> <ul style="list-style-type: none"> • <i>Consciousness</i>- Stay alert while performing task, especially while in a sleepy state • <i>Temperament and personality</i>- Demonstrate impulse control when performing tasks in an environment that requires maintenance of a relatively controlled environment • <i>Energy and drive</i>- Stay motivated to complete tasks in full, despite difficulties <p>Sensory Functions</p> <ul style="list-style-type: none"> • <i>Visual functions</i>- Demonstrate visual awareness of surroundings, even in dark • <i>Hearing functions</i>- Distinguish verbalizations of others at campfire, and sounds of fire itself • <i>Vestibular functions</i>- Keep balance while stepping into fire area • <i>Proprioceptive functions</i>- Demonstrate body awareness to safely move roasting stick through the air • <i>Touch functions</i>- Determine the relative temperature of the marshmallow and roasting stick • <i>Pain</i>- Demonstrate awareness of pain, especially dealing with potential burning <p>Neuromusculoskeletal and movement-related functions</p> <ul style="list-style-type: none"> • <i>Joint mobility</i>- Exhibit ROM in LUE for maneuvering roasting stick • <i>Joint stability</i>- Exhibit structural integrity for weight bearing for all joints, like when stepping down to fire area <p>Muscle functions</p> <ul style="list-style-type: none"> • <i>Muscle power</i>- Exhibit muscle strength to carry supplies to fire area
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	<ul style="list-style-type: none"> • <i>Muscle tone</i>- Be aware that muscle tone may increase difficulty of task • <i>Muscle endurance</i>- Demonstrate sustained muscle engagement for holding and maneuvering roasting stick in fire <p>Movement functions</p> <ul style="list-style-type: none"> • <i>Involuntary movement reactions</i>- Demonstrate body adjustment to safely get down step to fire area • <i>Control of voluntary movement</i>- Demonstrate hand-eye coordination to pinch marshmallow in graham crackers • <i>Gait patterns</i>- Demonstrate gait to step into fire area <p>Cardiovascular, hematological, immunological, and respiratory systems functions</p> <ul style="list-style-type: none"> • <i>Respiratory system functions</i>- Maintain regulated breathing to complete task in full • <i>Additional functions and sensations of the cardiovascular and respiratory systems</i>- Maintain endurance to complete task in full <p>Voice and speech functions; digestive, metabolic, and endocrine system functions</p> <ul style="list-style-type: none"> • <i>Voice and speech functions</i>- Adjust voice volume to suit demands of environment while communicating needs, like speaking louder to be heard above guitar music • <i>Digestive, metabolic, and endocrine system functions</i>- Safely digest s'more <p>Skin and related structure functions</p> <ul style="list-style-type: none"> • <i>Skin functions/Hair and nail functions</i>- Protect against wounds while breaking graham cracker and chocolate bar
<p>Body Structures Categories</p>	<p>For optimal performance of making and eating a s'more, the following structures must be in good health and function:</p> <ul style="list-style-type: none"> • Structures of the nervous system • Eyes, ear, and related structures • Structures involved in voice and speech • Structures of the cardiovascular immunological and respiratory systems • Structures related to the digestive, metabolic and endocrine systems • Structures related to the genitourinary and reproductive systems • Structures related to movement • Skin and related structures
<p>Values, Beliefs and Spirituality</p>	<ul style="list-style-type: none"> • The Rood family values safety and independence, physical activity, and respect for all people. They will provide opportunities for Ralph to complete tasks independently,

	engage in physical activity, and join in every activity, even if it takes longer time and increased effort.
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Performance Patterns and Contexts.

Performance Patterns	<p>Habits</p> <ul style="list-style-type: none"> As long as resources are present, Ralph always puts a napkin on his lap while eating. This habit is based on good manners and catching the many food pieces he drops while eating. Regardless of whether he puts a napkin or plate on his lap, this habit will serve beneficial while eating the exceptionally sticky s'more. <p>Routines</p> <ul style="list-style-type: none"> Jamie follows a routine of preparing Ralph's food in a way that promotes his independence. No matter the location or food, she intentionally prepares it so that when it comes to eating time, Ralph can be as independent as possible. She will do this with s'mores by completing prep work that puts ingredients close to Ralph, and she may even break the graham cracker and chocolate bar pieces for him. <p>Rituals</p> <ul style="list-style-type: none"> At family gatherings, such as dinner time, the Rood family does circle sharing of roses (positive part), thorns (negative part), and buds (upcoming part) of each person's day. They will likely do circle sharing around the fire. <p>Roles</p> <ul style="list-style-type: none"> Ralph's role of being a 12 year old boy with cerebral palsy involves constantly questing to maintain a 'normal' lifestyle and do thing as close to the way his peers do as possible. He wants to go camping with his Boy Scout troop, so he is working on doing things the way his troop mates do them.
Performance Contexts	<p>Cultural</p> <ul style="list-style-type: none"> The Rood family culture involves safety and fairness among siblings. Matt and Jamie will implement fire safety rules applicable to everyone in the family. <p>Personal</p> <ul style="list-style-type: none"> Ralph is a Boy Scout, like Rupert, and wants to learn to make and tend to the fire as Rupert does. He feels making s'mores is an important aspect of that process, and he is eager to master it. <p>Temporal</p> <ul style="list-style-type: none"> August is a relatively dry time of the year, and the ground of the campsite will likely be sturdy and dry, which is good for insertion of leverage bar and stick holder.

	<p>Virtual</p> <ul style="list-style-type: none"> • By choice, the Rood's will not have access to technology on the trip. There will not be a virtual context to address.
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The analysis and modifications in this section serve as a baseboard for the Rood and other families to base decisions on. The modification suggestion list is not exhaustive, rather it should serve as a means to trigger thoughts and ideas to make an optimal camping experience. These are just two of many tasks to be analyzed, others include fishing, collecting firewood, building a fire, throwing bear bags to store food, collecting water, and setting up the tent.

Future Research

Future explorations and research of this topic could include interviews with children with cerebral palsy and their families, both with and without camping experience. Conducting a real case study would be the best way to examine the effectiveness of the suggested modifications. By constructing and using the suggested equipment, such as the roasting stick leverage bar, an assessment of each tools' effectiveness could be made.

Conclusion

Personal testimonies and research alike suggest that camping is beneficial in many ways to many people. From improved emotional health to improved physical health, and beyond, the experiences of camping can have long-lasting positive impacts. People with specific needs, such as children with cerebral palsy, often face barriers to full engagement in this beneficial activity. This is because some of the typical demands of camping do not initially fit within these children's scope of capabilities. The types and symptoms of cerebral palsy vary greatly, and in turn the needs of individuals with cerebral palsy also vary greatly. Analyzing tasks is a great first step to modifying activities to make them accessible to an increased number of people. The Rood family hypothetical case study specific information can be used to help anyone plan a camping

trip. The analysis breakdown of tasks can be a basis for individuals to see if their capabilities, skills, and resources equip them to successfully complete the required steps of a task. The modifications specific to Ralph can be generalized to improve the quality of camping for all people, especially those with cerebral palsy, or their families. Regardless of the type of cerebral palsy a person has, the safety precautions, equipment suggestions, and strategy recommendations can be helpful in addressing the core characteristics of cerebral palsy. With room to expand this study, it is exciting and helpful to know that through activity analysis, children with cerebral palsy can more fully engage in the very beneficial activity of camping.

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