

The background features abstract, overlapping green geometric shapes in various shades, creating a modern and dynamic visual effect. The shapes are primarily triangles and polygons, some semi-transparent, layered to create depth. The colors range from light lime green to dark forest green.

OT and People Living with Scoliosis and Undermineralized Bones

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OCC 616

Occupational Therapy Defined

- ▶ What are occupations?
 - ▶ Occupations refer to all valued activities that occupy time (Schell, Scaffa, Gillen, & Cohn, 2014).
- ▶ What is occupational therapy?
 - ▶ Healthcare profession that assists clients to optimally perform the daily activities that are purposeful and meaningful to them and includes all of those activities that the client wants and/or needs to accomplish (American Occupational Therapy Association, 2017).
- ▶ Goals of occupational therapy:
 - ▶ To help the client maintain an active lifestyle, despite their disability, in activities they enjoy that maximize their health and quality of life across the lifespan
 - ▶ To assist the client in finding meaning through performing and engaging in occupations that provide a sense of identity and purpose
 - ▶ To gain, restore, or sustain skills and abilities that promote self-efficacy and independence as well as societal involvement and social engagement (Schell et al., 2014).

Our Client Educator



- This is Brendan.
- 7 year old boy
- Second grader
- Resides with his mother, father, sister, and dog
- Favorite occupations: Reading, writing short stories, drawing, & playing piano
- Desires to be as physically active as his peers in sports and Boy Scouts
- Diagnosis: Congenital scoliosis secondary to undermineralized bones

Scoliosis and Undermineralized Bones

- ▶ Bone mineralization
 - ▶ Provides us with a strong and resilient skeletal infrastructure (“Scientists gain new clues,” 2006)
- ▶ Congenital scoliosis
 - ▶ Musculoskeletal disorder demarcated by abnormal sideways curvature of the spine present at birth (“Questions and answers,” 2015; “Congenital scoliosis,” 2010)
 - ▶ ”S” shape or “C” shape curve of spine (Shah, 2016)
 - ▶ Detection:
 - ▶ Cobb Angle > 10 degrees
 - ▶ X-rays, MRIs and CT scans
 - ▶ Physical exam with forward bending test (“Congenital scoliosis,” 2010)
 - ▶ Rare type found in 1 of every 10,000 newborns (“Congenital scoliosis,” 2010)
 - ▶ Common signs:
 - ▶ Visible curvature of the spine (Shah, 2016)
 - ▶ Uneven shoulders, waistline and hips
 - ▶ Protruding ribs
 - ▶ Noticeable leaning to one side
 - ▶ One shoulder blade higher than the other (“Congenital scoliosis,” 2010)

Managing Scoliosis and Undermineralized Bones

▶ Observation

- ▶ In mild cases if Cobb Angle is between 10 and 15 degrees (Shah, 2016)
- ▶ Child assessed every 6-12 months with x-rays until fully grown (“Congenital scoliosis,” 2010)

▶ Bracing

- ▶ Does not assist in straightening, but prevents the curvature from worsening
- ▶ Used if Cobb Angle is between 20-40 degrees
- ▶ Prevents need for surgical procedures 60-70% of time (Shah, 2016)

▶ Surgery

- ▶ Required in severe cases if Cobb Angle is greater than 40-50 degrees (“Congenital scoliosis,” 2010)
- ▶ Without recommended surgical treatment, lung function could be greatly impacted (“Idiopathic scoliosis,” 2015).

▶ Exercise

- ▶ Encouraged to maintain functional ability, increase bone density and to prevent osteoporosis (“Questions and answers,” 2015)

Impact of Scoliosis and Undermineralized Bones on Brendan's Daily Life

- ▶ Bones not like that of a typical second grader
 - ▶ Foot shorter than peers
 - ▶ Cannot reach objects in the classroom and at home without step stool or assistance
 - ▶ Sports helmet to protect his skull and oversized fontanelle
 - ▶ Wears trunk brace for postural support and ankle braces for gait
 - ▶ Wide base of support due to poor balance
 - ▶ Requires pediatric wheelchair for postural support at dinner table in home and in cafeteria and classroom at school
- ▶ Ascending/descending stairs
 - ▶ Bedroom is on second floor
 - ▶ Parents frequently carry him up & down steps
- ▶ Play
 - ▶ Removed from Boy Scouts because activities have potential for injury
 - ▶ Removed from baseball because sport is becoming more competitive and client cannot keep up with running involved
 - ▶ Not permitted to pursue contact sports such as football, wrestling, and soccer due to fear of head or bodily injury

Impact of Scoliosis and Undermineralized Bones on Brendan's Daily Life

- ▶ **Playing Piano**
 - ▶ Cannot reach pedals due to short stature
 - ▶ Lacks fine motor coordination due to slight fingers
 - ▶ Sometimes stands for better posture
- ▶ **Reading/Writing/Drawing**
 - ▶ Experiences discomfort and postural fatigue quickly and often prefers to sit on floor in awkward position
- ▶ **Eating/Feeding**
 - ▶ Lacks proper teeth to chew, so parents cut up meals into smaller bites to avoid choking hazards
- ▶ **Social participation with peers/friends**
 - ▶ Feels excluded from academic and physical activities because of disability
- ▶ **Toilet Hygiene**
 - ▶ Cannot reach to wipe
- ▶ **Dressing**
 - ▶ Requires assistance with ankle and trunk braces and tying shoes due to difficulty bending, reaching and some fine motor coordination
- ▶ **Bathing**
 - ▶ Parents wash his hair because of oversized soft spots and reaching overhead is difficult

OT Interventions with Scoliosis and Undermineralized Bones

- ▶ Managing physical symptoms such as back pain and spinal movement limitations with exercise and stretching routines
- ▶ Educating clients regarding different braces, their function and how to care for them
- ▶ Energy conservation techniques - routine breaks during activities, adapting activities, or exploring activities that match client's abilities and interests
- ▶ Assistive devices designed to improve performance in everyday activities (e.g. specialized cushions and customized seating to improve postural control and stability and to decrease fatigue)
- ▶ Modifying home environments that promote both independence and safety (e.g. grab bars installed in the bath area, relocating bedroom to the first floor)
- ▶ Encouraging social participation in scoliosis support groups and foundations that empower, educate, and provide emotional support for clients and their families
- ▶ Advocating for the development of a community sports league for children with disabilities

References

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