

Portions of Sparrow's OT assessment and Developmental Coordination Disorder (DCD) diagnosis March 2024

- Please See chart attachments

Attention- Sparrow had difficulty listening to instructions as he was often looking away and/or moving around the room. It was important to call his name and get his full attention prior to giving any verbal instruction. For some motor tasks, he required hand over hand cueing in order to achieve the correct movement pattern. He showed impulsivity, often leaving mid-task without notice, and occasionally starting into tasks before being given the go ahead. At transition times between assessment tasks, Sparrow often walked away without warning -crawling onto his mom's lap or taking a few bites of a snack. He was easily distracted by a service person working outside, leaving the assessment tasks on a couple of occasions to go talk to the service person(who was unknown to Sparrow).

Fluidity of motion and effort- As noted, Sparrow liked to be on the move, and did not stand still very often. When moving, he did not always seem aware of his body positioning, and would sometimes bump into things or people. He was observed to fall on a few occasions. He appeared to crave deep pressure input, and would often seek out his mom during the assessment, asking for hugs and wanting to climb on top of her. Rose had to remind him on several occasions to be gentler. Sparrow was also noted to switch from using one hand/foot to the other when completing various motor tasks which led to a somewhat jerky uncoordinated movement pattern during some activities.

Physical Observations:

- **Posture-** Sparrow maintained his upright spinal position. He kept his knees mostly locked (extended) and held his feet in a narrow base of support. Sparrow did not maintain static positions for long in either sitting or standing; preferring instead to be on the move.
- **Gait-** Sparrow walked with a neutral foot progression (feet not overly in or out turned), atypical base of support (feet under shoulders), and kept his trunk and head over his lower body. He walked with a short step length and sometimes did not place his heel down (minimal heel strike). When running, Sparrow kept his trunk and head vertical and increased his step length and cadence (speed of stepping). He moved his arms in an atypical, uncoordinated pattern (bending elbows, straightening them, bending hands etc.)
- **Foot Position-** Sparrow has wide feet and flexed toes (bends toes down). He presents with minimal medial (inside) arch development in both feet with his right being more collapsed than his left. He demonstrates calcaneal valgus on his right (out flaring of his heel bone). When he rises up on his toes, his arch is still not well defined, indicating minimal muscular arch development.

- **Proprioception-** Proprioception is a word to describe the ability to know where your body is in space at any given time. It is typical for children under 8 years of age to rely predominantly on their vision to sense where they are in space. Older children and adults use receptors in their joints and soft tissue structures to sense their body position. Sparrow was able to balance with his eyes closed in a variety of positions for several seconds at a time with minimal postural sway which is not common for his age. This skill illustrates that Sparrow presents with some well-developed joint receptors in his lower body which assist him with position sense. Conversely, when asked to point to his nose with his index finger when his eyes were closed, Sparrow was not able to accurately complete this task. This indicates that Sparrow still needs his vision to accurately complete certain movements. Additionally, Sparrow found placing his feet in a heel to toe pattern on a line while using his vision very challenging. He would take a big step, slide his front foot back but still leave a gap between his feet. Overall, Sparrow's proprioceptive skills appear mixed: he is demonstrating some mature skills (good lower body position sense with eyes closed) and some immature skills (unable to walk heel to toe or place finger to nose accurately).

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Motor Planning- Motor planning refers to the ability to conceive, plan and carry out movements of a task in a sequenced pattern from beginning to end. Sparrow found it difficult to follow the directions to first place and then move his body in a specific fashion. He was not able to move his legs and arms together to complete a jumping jack motion (pencil to star). He also struggled to move the opposite sides of his body in a synchronized fashion such as when completing a jump in place (right arm and left leg jump forward together) or tapping his foot and opposite hand together. He required several attempts to start some of the agility tasks and benefitted from verbal instruction in addition to visual demonstration and hand over hand cueing. Of note was that Sparrow was not amenable to receiving feedback and did not seem overly interested in trying to accurately perform the task.

- **Muscle Tone-** Muscle tone is defined as the inherent tension in our muscles when they are at rest. There is a continuum of normal muscle tone, some people have higher tone, others have lower tone. When muscle tone interferes with daily functioning, it may be considered atypical. Sparrow presents with muscle tone on the lower end of normal, specifically in his core (central) musculature.

- **Muscle Strength-** Sparrow presents with decreased muscle strength in his core as well as extremity musculature. He could not complete a sit up without the use of his hands, and found it difficult to hold his arms and legs up against gravity when on his stomach (V-up). These exercises provide an indication of core strength. Sparrow was unable to assume the position of a push up and could not complete the push up movement on his knees without his abdomen collapsing on the ground. He held a wall sit, which is a measure of quadriceps strength, for 6 seconds before falling to the ground. Please see below under the strengths section of the Bruininks-Oseretsky Test of Motor Proficiency for more details.

Endurance- Although not officially tested during this assessment, it appears that Sparrow presents with somewhat decreased endurance. He was noted to be out of breath after the repetitive hopping and jumping activities and needed many short breaks between test items, especially those requiring aerobic output.

..In the **fine motor precision subtest**, Sparrow gave his best effort to colour in two small shapes (circle and star), showing very good focus for these first two tasks. He was able to fill in most of the white space but traveled outside of the lines frequently. He also tried very hard when asked to trace through narrow pathways (5mm), but he had difficulty staying within the lines. He was unwilling to try folding along lines, or to even watch a demonstration.

When asked to cut out a circle, Sparrow placed the scissors in his right hand in a thumb-down position and moved clockwise around the circle. He had considerable difficulty staying on the line, controlling the scissors, and using his supporting hand effectively. He tended to chop through the circle rather than snipping more carefully around the perimeter. The fine motor integration subtest required Sparrow to copy a variety of geometric shapes (8 shapes in total) ranging in complexity from a circle to overlapping pencils. Sparrow was able to attempt the first 2 shapes (circle and square) but was unwilling to attempt the others (overlapping circles, wave, triangle, diamond, star, overlapping pencils). He used an atypical pencil grasp which impacted his control of the pencil

In the **running speed and agility subtest**, Sparrow completed the run test fairly quickly in bare feet. He liked the repetitive hopping and jumping tasks, but demonstrated little clearance from the floor when jumping and was not able to jump laterally over the line with accuracy. In the remaining three gross motor subtests, Sparrow scored in the below average range. The upper limb coordination subsection consists of activities designed to measure visual tracking with coordinated arm and hand movements.

He found it difficult to catch a thrown or bounced ball with one hand, and seemed uncertain which hand to use to catch or throw. He struggled to dribble a ball, and was inconsistent at hitting a target with a ball. The bilateral coordination subsection measures the motor skills involved in playing sports and many recreational games; these tasks require body control, and sequential and simultaneous coordination of the upper and lower limbs. As previously mentioned, Sparrow found the tasks requiring synchronized movements of the opposite sides of his body very challenging. He became easily discouraged with these tasks and was rarely interested in trying a second attempt. In the strength section, as noted above, Sparrow demonstrated decreased strength in his core and extremity musculature when compared to other children of his age.

Printing Skills Assessment

The Handwriting Without Tears Check Readiness assessment is intended to identify where Sparrow is at in his learning of early printing skills and to determine if he is ready to be printing

letters yet. Sparrow showed right hand dominance throughout this assessment. He used a very atypical pencil grasp with the pencil resting against the web between his index and middle fingers and his thumb wrapped over the pencil. He did not rest his forearm on the table. This grasp pattern significantly compromises Sparrow's ability to control the pencil as there is no opposition with the thumb. His grasp was also quite high on the pencil, reducing his control even further. Sparrow identified every letter and number presented without hesitation and with 100% accuracy. When printing his name, he wrote it correctly, clearly having mastered the spelling. His letter formation however was quite inefficient. Rather than keeping his pencil on the paper to form a letter, he formed most letters in parts. For example, when forming the letter P, he drew a circle, then lifted his pencil and drew a line coming down from the center of it, the result resembling a lollipop. When forming the letter R, he did the same as for his letter P, but added a second vertical line coming down from the circle.

Overall, Sparrow seems to know his letters and numbers very well, but his printing foundation skills (pencil grasp and fine motor control) are still developing which prevents him from being able to form his letters correctly and efficiently. Sparrow is able to form circles and lines of various angles but he isn't yet able to stop his pencil at a precise point and change direction with accuracy.

The results of the SPM-2 questionnaire in combination with clinical observations and Sparrow's current performance in his daily activities all suggest that Sparrow has difficulty processing most of the sensory information that he is receiving throughout the day.

Sparrow has difficulty filtering and making sense of sensory information from his environment as well as from his body. When environmental sensory messages (auditory, tactile) can't be filtered and prioritized, the individual will feel flooded with sensory information. This can be very overwhelming, and will certainly impact the ability to participate, learn, and engage with others.

Support is needed to develop a range of age-appropriate self-regulation tools. **Sparrow also has difficulty processing (receiving, interpreting, organizing, and using) sensory cues from his body.** When an individual has difficulty processing sensory cues from their body, this compromises their ability to identify how their body is positioned in space, how quickly it is moving, how close it is to other people/items around them, etc. This can make it difficult to approach new motor tasks (especially gross motor tasks and ball sports) with confidence, as these require constant judgment of force, direction, and speed. Sparrow may bump into people and objects, close drawers too forcefully, run with heavy feet, etc. because he is misinterpreting or unaware of the sensory messages that should be directing him toward how to execute these movements more smoothly.

Praxis is the ability to conceive of, plan, and organize motor actions and is reliant on adequate processing and integration of sensory information (ex. auditory, tactile, vestibular, proprioception, etc.).....Most self-care and daily living activities (ex. dressing, hygiene, bed making, backpack packing, tidying, building, creating, etc.) require body awareness and thoughtful planning and execution of motor skills. Similarly, social interactions require constant

processing of varied, often unpredictable sensations and the need for spontaneous responses (ie. praxis) and are often impacted by difficulty with processing sensory information.

*Overall, Sparrow has difficulty processing many forms of sensory information and this has an impact on his performance in his daily activities. He does have the presentation of a child with a **Sensory Processing Disorder**. Sparrow's fine motor skills are quite delayed for his age and this is having a significant impact on his confidence at school. It is unclear whether his gross motor skills are compromised by his sensory processing challenges*

KEY RECOMMENDATIONS

Sparrow would benefit from being followed by OT to support his sensory processing skill development and to help in structuring his schedule and environment