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Design and Clinical Evaluation of Textured Tactile Wall Board for Sensorimotor Rehabilitation

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Abstract

Sensory processing plays an important role in a child's ability to interact with the environment and perform daily activities. Children with sensory processing issues often experience difficulties in attention, learning, behavior, and social interaction. Tactile perception is one of the major sensory systems involved in sensory integration and occupational performance. Tactile-based interventions are commonly used in occupational therapy to enhance sensory processing and functional performance in children. The tactile wall board is designed to provide controlled tactile stimulation using different textures to promote sensory exploration, attention, and learning.

Objective: Allows children's to help them touch, explore. Learn about different textures and help them to explore a range of sensations.

Materials and Methods: This study is a project-based descriptive study conducted to observe the role of a tactile wall board as a sensory-based intervention in pediatric population. The target population included pediatric children in the age group of 0–5 years. The materials used for the project included: Textured tactile wall board different tactile materials such as rough, smooth, soft, hard, and varied textured surfaces commonly available materials like fabric, sponge, buttons, beads, zippers, Velcro, and other sensory components.

Results: The use of a tactile wall board is expected to increase concentration, focus, and motivation in children, improve problem-solving skills, and enhance sensory stimulation. Tactile-based intervention is also found to be effective in creating stimulation for children rather than only promoting relaxation.

Conclusion: The tactile wall board may help maintain and improve sensorimotor performance in children. It provides opportunities for children to engage with different textures and supports the development of attention, memory, communication, social interaction, and overall well-being. Hence, tactile wall board therapy directly contributes to improving occupational performance in children.

Keywords: *Tactile wall board, Sensory processing, Tactile perception, Pediatric population, Occupational therapy.*

Introduction

The Textured Tactile Wall Board is a therapeutic tool designed to stimulate the tactile sensory system through a variety of textures and materials. It can be used in clinical, educational, and home settings to support sensory integration, improve attention and focus, and develop fine motor and exploratory skills[1].

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Tactile wall boards also called 'touch' boards, are designed to refine the sense of touch. Such materials create a child with a conscious awareness of the texture of the surface. The tactile sense is the sense of touch. For example, fingertips and skin, lips, and mouth are especially sensitive in children who use them to explore and classify their world that stimulates the tactile sense teaches a child to distinguish between smooth to rough and everything in-between[2].

The tactile sensory system is one of the first sensory systems to develop in utero and plays a fundamental role in a child's early development. It provides essential feedback from the environment and contributes to the formation of body awareness, emotional security, and motor planning. The tactile system helps children interpret touch sensations and respond appropriately, forming the basis for skills such as grasping, manipulating objects, writing, and even social bonding through physical contact[3].

Learning through touch, children will love feeling all the textures on this tactile board. Engaging their senses, they will learn about texture. Use to play a game, blind fold a child and get them to run their hands over the board and see if they can guess the texture, let each child have a turn. Talk to the children about what they feel, is it soft, hard, rough, long or short fur. Discuss each texture as they go[4].

Through texture play, children get to know what feels sticky, prickly, silky and fluffy and experience how this feels against their skin. Well before they're able to verbally communicate it, children learn about and develop preferences around different textures and tactile sensations[5].

Sensory Processing

As a child grows and begins to explore their surroundings they learn to firstly notice/register information from their senses, then process it and then respond appropriately. This is called Sensory Processing. These children frequently present to Occupational Therapy when the difficulties begin to have a negative impact on their participation in everyday tasks[6].

Sensory Processing Disorder

Kids with sensory processing issues behave in ways that look confusing. They might react strongly to loud noises or bright lights or complain that their clothes are uncomfortable. Sensory processing problems are now considered a symptom of autism because the majority of children and adults on the autism spectrum also have significant sensory issues. However, many children with sensory issues are not on the spectrum. They can also be found in those with ADHD, OCD and other developmental delays[7].

Tactile Wall

A tactile wall is a space on a wall that provides tactile (touch) sensory input to children's fingers and hands. The wall allows kids to really explore their senses and discover the world around them. Children of all ages can benefit from this method of exploration. It helps ensure their bodies get the input they need, which can improve their attention and readiness to learn throughout the day. This wall provides developmentally appropriate play experiences to the children [8].

Sensory Function

Tactile

Tactile refers to the sense of touch and the ability to perceive and interpret different textures, shapes, through the skin. In sensory function, tactile input is an important part of sensory integration, which is the process of organizing and interpreting sensory information. Tactile senses, along with proprioception and interoception, are known as the somatosensorial senses; tactile senses are related to the skin and touch. Tactile perception is a part of a complex human sensory system consisting of 1. proprioception (body awareness) 2. mechanoreception (touch)[9]

Methodology

- Study Design - Project
- Targeting Population - Pediatric
- Age - 0–5 Years

Materials Used

The materials used in the project included a wooden board, numeric round shape tokens, colourful buttons, plastic straw pipes, a piece of wooden carpet, colourful wools, foam sheets, aluminium foil, feathers, wooden ice-cream sticks, keyboard, and egg carton tray.

Tools Used

The tools used for the project included a measuring tape, wood cutter blade, and gum.

Procedure

A wooden board was taken and divided into eleven equal boxes. The edges of the board were painted with brown colour, and black chart paper was pasted inside each box. Various tactile materials were then attached to the board using glue.

In the first box, numeric round shape tokens were pasted. In the second box, the topic was written using colourful buttons. In the third box, a foam sheet was cut into six pieces and pasted inside the box. Feathers were pasted in the fourth box.

In the fifth box, circles were made using a cardboard sheet, wrapped with aluminum foil, and then pasted inside the box. In the sixth box, the newspaper was cut and rolled into balls, wrapped with different coloured wool, and then pasted in the box. Plastic straw pipes were pasted in the seventh box.

In the eighth box, an egg carton tray was painted with red and yellow colours and then pasted in the box. In the ninth box, wooden ice-cream sticks were painted in different colours and pasted in the box. In the tenth box, two keyboards were pasted separately. In the eleventh box, a piece of wooden carpet was cut into a square shape and pasted in the box.

Findings

The results in our study are inconsistent with findings about the use of tactile based interventions in children with sensory processing issues in order to promote relaxation and rather demonstrate that tactile interventions can be used to create stimulation for children's. Findings from a correlation analysis suggest that an adaptive or maturation process of sensory processing may occur over time (Kern et al., 2007). In that case, implementing sensory-based interventions at an early age after diagnosis may be the most effective in aiding the development of sensory processing. Tactile wall boards are effective for children with sensory issues, particularly when combined with training that remediates cognitive weaknesses.

Discussion

The project holds the promise of increasing compliance in patients and motivation in school children, improving problem solving skills, and increasing concentration and focus attention. Yet for all the promises, existing research indicates that not a better understanding of the tactile board elements that foster attention and learning as well as of the strategies developed by the children's is needed. In the DSM-5 allows clinicians to account for the differentiating behaviors and symptoms across individuals (APA, 2013). Starting in infancy through adulthood, social deficits such as an inability to demonstrate joint attention and share enjoyment or interests with others, as well as difficulty interpreting and communicating about others' have been observed (Cohen & Volkmar, 1997).

Conclusion

This project works on tactile board in the context of occupational therapy sensory function. We conclude that: Textured tactile wall board may help to maintain and improve sensorimotor performance in children and adults. The goal of the textured tactile wall board is to provide opportunities for the child to make sense of the world, by engaging with different textures, people and events in meaningful ways. An important part of this process is being able to communicate and use this tactile board for children to enhance their skills. It connects performance to children's work (play) and helps to improve their overall well-being. Covers various other components like attention, memory etc. Provides communication, social interaction and feeling of competition. Hence, it emphasizes tactile board as therapy which directly connects to occupational performance of a children.

Conflict of Interest: There is no conflict of interest.

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Ethical Clearance: Not applicable.

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