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## Weighted Devices for Somatosensory Regulation

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## Overview

**Description:** A weighted vest is a vest that typically has 10% of a person's body weight evenly distributed around the vest (Olson et al., 2004). A weighted vest can provide sensory input that is believed to alleviate dysregulation, inattentiveness, and stereotypic behaviors (Carter et al., 2009).

**Goal:** Our community group is specifically targeting children with sensory processing impairments who are attending speech therapy sessions at the RiteCare clinic. Sensory behaviors exhibited by the clients are most commonly shown through dysregulation, outbursts, inattentiveness, and hyperactivity. The goal is to limit these maladaptive behaviors and increase attention span during intervention sessions. Weighted vests have been shown to be effective with remediating these problems, and improving hyperactivity, stereotypic behaviors and clumsiness (Carter et al., 2009). This product decreases sensory modulation dysfunction and will lower arousal states (Lin et al., 2014). In turn, improving attention, increasing time for on task behavior, and decreasing distractibility while wearing the vest (Collins et al., 2011).

## Problem Statement

**Problem:** There is a mismatch between the client's neurophysiological sensory processing and integration abilities and the client's environment (Pfeiffer et al., 2018). The mismatch is a result of the brain's difficulty to receive and respond to information coming in from the senses which can result in hyper-reactivity to stimuli (Cardon, 2018). The greatest impacts to occupational performance will be seen in the domains of social/emotional functioning, speech and language development, cognition, theory of mind, and academic performance (Cardon, 2018). In turn, the client's ability to participate in their ADLs (i.e., self-feeding, dressing), communication capacity, school, play, and social participation will be impacted. In addition, the client's emotional responsivity, cognitive function, attention, and memory are impacted (Cardon, 2018). Deep-touch pressure input provided by the weighted vests can decrease sensory modulation dysfunction by changing arousal levels in the central nervous system, resulting in positive functional and behavioral outcomes (Lin et al., 2014).

**Improvement of services:** Generally, neurotypical children show significantly greater improvements with articulation from speech therapy in comparison with those that have sensory processing challenges (Wang et al., 2013). This creates a gap in receiving speech services for children who experience sensory challenges due to difficulty with regulating sensory information. Sensory processing difficulty can impact sustained attention and cognitive control which can influence functional performance (Crasta et al., 2020). Research indicates that when wearing a weighted vest, on-task behavior increased in children by 18-25% (VandenBerg, 2001). Additionally, weighted devices helped to improve overall attentiveness and on-task behavior (Lee et al., 2014). This research indicates that weighted vests have the potential to increase child attentiveness during speech therapy, thus improving the efficacy of treatment.

## Population

It is estimated that between 5% to 16% of the general population have symptoms associated with sensory processing challenges and these estimates are higher for individuals with autism spectrum disorder (ASD) or attention deficit hyperactivity disorder (ADHD) (Miller et al., 2017). Children who experience sensory challenges can have an independent diagnosis of sensory processing disorder (SPD) or can have a comorbidity with other diagnoses (Critz et al., 2015).

## Education

Education of weighted vests can be provided to SLP students. Instruction can include product implementation, demonstration of usage, and education on the benefits to behavior. Instructional material can also be distributed for the SLP to view at a later time if needing to recall relevant product information. Modification of sensory inputs and supporting self-regulation can facilitate child performance in activities and promote life function. Use of sensory integration treatments, including deep pressure therapy, results in significant improvements in behavioral responses due to decreased sympathetic arousal (Afif et al., 2022). Occupational therapists are trained in sensory integration techniques thus interprofessional collaboration and education to SLP students on the device will ensure appropriate usage.

## Solution/ Technology

**Technology:** Weighted devices have a great impact on daily skills and occupational performance because they address challenging behaviors seen in those with sensory processing disorders (Afif et al., 2022). These devices reduce excitability and arousal because they provide inhibitory control that reach higher order centers faster that provide the ability to down-regulate the previous influence of arousal. This allows for positive functional and behavioral outcomes (Lin et al., 2014).

**Solution for Development:** Weighted devices are currently used for those with sensory processing disorders, including autism, attention deficit hyperactivity disorder, or down syndrome and seen in settings such as schools, homes, and clinics. To further test these devices, a trial and error method would continue to be utilized. Many people who experience sensory processing disorders have vastly different sensory needs, and what may benefit one person may not be effective for another. The information obtained through trial and error for each client can be disseminated to other healthcare professionals within the client's care team to provide the best treatment outcomes.



<https://www.enasco.com/p/SN30847>

## Resources

### Cost Information:

Weighted vests can cost from \$30-\$120



Low Cost- \$35

High Cost- \$115

The community group will be able to utilize this tool with many different clients. Weighted vests are not a comprehensive solution for sensory processing challenges, however they are beneficial for increasing on task behavior in some children (VandenBerg, 2001). If the tool is well taken care of it can last for years and help a multitude of children in the RiteCare clinic.

A study conducted by Lin et al. (2014), found the use of weighted vests to be significantly beneficial for attention problems in children. If the children in the RiteCare speech therapy clinic are able increase focus, their sessions will be more productive. If the clients at RiteCare are able to have more productive sessions and are able to progress in their treatment, this would enable them to engage in their occupations such as school, play, and development in a more meaningful way (Houtrow et al., 2019). If patients progress through treatment more quickly and are able to be discharged, this could lead to more clients being able to be seen at the clinic.

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