



Saskatchewan Society of Occupational Therapists

POSITION STATEMENT

Use of Weighted Items

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Over the past few years, weighted items have been marketed to the general public suggesting many reported health benefits. Limited research has been cited to provide scientific evidence that weighted items are either effective or ineffective, or that their use is free of harmful effects. This position statement from the Saskatchewan Society of Occupational Therapists (SSOT) outlines guidelines for the appropriate use of weighted items. These guidelines were developed in consultation with Occupational Therapists in Saskatchewan and evidenced through a critical review of relevant research literature.

The theory behind using weighted items is to provide deep pressure tactile input, which may act as a calming or focusing agent. This increases activity in the parasympathetic nervous system and lowers activity in the sympathetic nervous system of the autonomic nervous system in the human body (Reynolds et al, 2015). Use of weighted items on a user's body have been categorized generally in the literature as having an unestablished level of evidence for therapeutic benefits in line with this theory. This does not suggest that weighted items or deep pressure are not potentially effective; rather, they are an emerging intervention that requires the clinical reasoning of a trained health care professional to guide use. This is particularly important when potential users have underlying health and/or wellness issues.

The theory outlined above can be generalized to all demographics. This document has been developed to identify

what are the appropriate guidelines to follow when using weighted items based on a critical review of the literature. It is not intended to target users who present with specific diagnoses or disabilities impacting their health and wellness. It is important to note that this position statement, review of the current evidence and trained health care professionals' clinical reasoning is essential when the individual presents with health and wellness issues.

Review of Weighted Items Literature

In preparation of this position statement, a critical search of literature pertaining to the use of weighted items was performed, to present the current state of evidence in this area, and to support the safe use guidelines presented here. In general, the literature available and reviewed was concentrated in the areas of established interventions for Autism Spectrum Disorder (ASD), sleep, anxiety, focus and attention, and ergonomics, within the last 12 years.

The *Findings and Conclusions: National Standards Project, Phase 2* (2015) reviewed studies published between 2007 and 2012 to provide up-to-date information on the effectiveness of interventions for ASD. This document suggested the data available regarding sensory intervention strategies, such as using weighted items to provide deep-touch pressure, could be categorized as an "unestablished intervention", suggesting there is not sufficient evidence to conclude whether the

“intervention is effective, ineffective, or harmful” for individuals with ASD (p.35).

A 2014 randomized controlled trial published by Gingras et al. used a crossover, placebo-controlled design to measure the effectiveness of a weighted blanket for sleep problems in children with ASD. This study used two sizes of blankets, five-pound and ten-pound. Blankets were used “according to the size of child” and “consistent with recommendations by manufacturers and therapists” (p.299), though the recommendations are not outlined in the article. The weighted blanket intervention was found to be “no more effective than a control (usual weight) blanket” on total sleep time (TST), but both parents and children preferred the weighted blanket to the control blanket (p.303).

Gee, Peterson, Buck, and Lloyd (2016) measured sleep quality in a small sample of participants using parent report measures. The weighted blankets used were approximately ten percent of the child’s body weight and caregivers were provided with education regarding safe and effective use of the weighted blanket for the purposes of the study, including: to use the blanket only at night; to use the blanket only if the child is able to remove it on his or her own; to cover the child’s body, arms, and feet, but not the head or face; to check on the child occasionally while using the blanket; to adjust other bedding while using the weighted blanket to ensure the child is not too hot; and to monitor the weighted blanket for wear or damage (p.176). According to parent report, the participants in this study fell asleep faster and stayed asleep longer when using a weighted blanket than when using the control blanket (p.180).

Gee, McOmber, Sutton, Romriell, Vandenburg, and Lloyd (2017) published additional findings on the effect of weighted blankets on the quality of sleep of a small sample of children with ASD. The blanket used was ten percent of the child’s body

weight and was used for 14 consecutive days. Recommendations for practice outlined included adjusting the dosage of the blanket as needed to elicit a beneficial effect, creating a sensory profile for the user, educating parents on the principles of sensory interventions, informing parents that weighted blankets are still considered experimental, and ruling out medical or behavioural possibilities for sleep disturbances (p.71). Caregiver report and objective sleep measures indicated weighted blanket use had a positive impact on hours of sleep, morning mood, and number of night wakings (p.71).

Champagne (2007) first presented preliminary results of a study of weighted blanket use in adult inpatient mental health populations to the American Occupational Therapy Association (AOTA). The pilot study examined both the safety and efficacy of the weighted blanket by measuring both vital signs, including pulse rate, blood pressure, oxygen saturation and galvanic skin response, and anxiety levels using the State Trait Anxiety Index – 10 (STAI-10). Preliminary weighted blanket use guidelines for adult inpatient environments were also presented, including: to never use the blanket as a restraint; to review each person’s medical and trauma history; to explore weight and fabric preferences with the person; to customize the blanket to the person’s needs; to ensure the blanket is never placed over the person’s head; and to obtain medical clearance or a physician’s order when there are any safety concerns. The results indicated that a 30-pound weighted blanket was both safe for general adult use, and effective in reducing the anxiety symptoms of 63% of participants.

Champagne, Mullen, Dickson, and Krishnamurty (2015) published additional research regarding the use of weighted blankets in adult mental health inpatient populations. The authors stressed the importance of client-centred use for weighted blankets, indicating that should be “individualized to provide the amount of

weight, weight distribution and timeframe that is most preferred by the client, safe, and effective. For example, the amount of weight, fabric type used against the body, time of day it is used, and the amount of time it is used for, is determined collaboratively in practice” (p.229). Again, no adverse effects on vital signs were found with the use of a 30-pound weighted blanket, and the weighted blanket was effective in anxiety reduction for 60% of the participants (p.229).

A 2011 study by Buckle, Franzsen, and Bester examined the effect of weighted vests on the in-seat behavior, task completion speed, and attention-to-task of grade one to three students diagnosed with ADHD. The weighted vests were calibrated to ten percent of the students’ body weight. The vests were worn for 45 minutes (i.e., one school period) each day for 15 school days. The students demonstrated significant improvement of in-seat behavior, task completion speed, and attention to task while they wore the weighted vests. Teachers also reported learners were calmer and more alert while wearing the vests. The protocol for use of weighted vests recommended by the researcher included wearing the weighted vests for approximately 45 minutes (i.e., one school period) at a time, having a therapist calibrate the weight of the vest to ten percent of the child’s body weight and monitor the wearing time, and allowing for the weight of the vest to be increased or decreased by one percent depending on the child’s preference.

Lin, Lee, Chang, and Hong (2014) studied the effects of wearing a weighted vest on the attention, impulse control and on-task behaviour of 110 children with ADHD. Participants wore weighted vests weighing ten percent of their body weight, with weight evenly distributed around the vest, while completing a task requiring sustained attention. While wearing the weighted vests, students showed significant improvements in off-task, out-of-seat and fidgeting behaviours; however,

there was no improvement in vocalizations or impulse control when wearing the weighted vests as compared to the control vest (p.153).

In September 2018, the American Occupational Therapy Association (AOTA) issued a press release on the importance of monitoring the weight of children’s backpacks and the influence on their musculoskeletal system. The AOTA recommends that backpacks weigh no more than ten percent of a student’s body weight, and that carrying more than ten percent of their body weight can cause discomfort (AOTA, 2018). It is also recommended that weight be distributed evenly around the backpack (AOTA, 2018). The press release was intended to inform the public on safe use of weights on the maturing musculoskeletal system.

Guidelines for Appropriate Use of Weighted Items

Based on the above critical review of the literature, the use of weighted items for a client/user must be carefully considered and closely monitored when the user demonstrates:

- breathing problems
- cardiac and circulatory precautions
- fluctuations in vital signs
- epilepsy
- compromised posture including decreased postural endurance and low muscle tone
- inability to remove the weighted item independently (due to diminished state of arousal and/or physical ability)
- orthopedic considerations such as broken or fractured bones
- skin integrity precautions such as open wounds, fragile skin or allergies
- lifting precautions
- history of trauma
- tendency to feel claustrophobic
- pregnancy

When choosing the most appropriate weight of the item for the user, begin with ten percent of the user's body weight. Adjust the weight to be heavier or lighter based on the preferences of the user and the advice of a trained health care professional. The weighted item should be as light as possible for comfort, while still achieving the desired outcomes. Make adjustments to the weighted item if, during use, the item covers the head and neck.

The following are recommended guidelines for appropriate and safe use of weighted items:

1. The user must be supervised when using the weighted item by an educated/informed supervisor. The advice from a trained health care professional is advised when considering use during sleep.
2. Use is never forced and the weighted item is never to be used as a restraint. Any sign of refusal, verbal or non-verbal with the application of a weighted item, must be respected.
3. Use of the weighted item should be self-controlled. Only use the weighted item if the user is able to remove it on their own.
4. The weighted item should be monitored and assessed regularly for signs of wear. Discontinue use if the weighted item becomes worn or damaged.
5. The weighted item should be part of a documented therapeutic treatment plan that is reviewed periodically.
6. Considerations for weighted item use listed above should be monitored on a regular basis.
7. Discontinue weighted item use if the user experiences:
 - difficulty breathing
 - nausea
 - increase in body temperature
 - muscle fatigue
 - skin irritation
 - discomfort
8. The user's informed consent must be given for appropriate and safe use of weighted items.
9. If a user initiates the application of a weighted item independently, it should be respected as an act of self-advocacy and self-monitoring. Appropriate supervision and education in the use of the item continues to be required to support informed self-advocacy and monitoring.

When the user lacks the capacity to make their own informed decision, the parent(s) and/or legal guardian(s) of the user must consent to the treatment plan, including the use of a weighted item.

Conclusion

In conclusion, it is the intent of the Saskatchewan Society of Occupational Therapists (SSOT) to support the creation of documented guidelines for safe use and application when using weighted items as a treatment option, and not to comment on the therapeutic value of weighted items. A trained health care professional's clinical reasoning is essential when application of weighted items is outside of these specified guidelines. Though specific diagnoses, such as ADHD and ASD, are referenced throughout the literature presented, it is not the intent of the SSOT to specify any specific diagnoses for which the use of weighted items is appropriate, but rather to present general guidelines for use with a variety of clientele, diagnosis aside.

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Disclaimer: The recommendations in this position statement do not indicate an exclusive practice approach to be followed. Variations, taking into account individual circumstances, may be appropriate.