

EVIDENCE



EVIDENCE WITHIN THE FIELD WEIGHTED PRODUCTS

Working with cognitive aids, we find it important to be updated on the research findings that are made within the field. For ten years, we have continuously worked with development of products and performed trainings in the use of weighted products as part of sensory based interventions.

We have compiled some of the scientific studies that have been carried out by professionals upon weighted blankets and weighted vests. The publications cover children and adults as well as groups where the sensory disorders are disease-related or due to general anxiety and angst.

Positive effects of a weighted blanket on insomnia

Ackerley R, Badre G, Olausson H (2015). *J Sleep Med Disord* 2(3): 1022.

The study was presented at The World Sleep Congress of the World Sleep Federation, in Istanbul in 2015 and looks at the effects of the Somna Chain Weighted Blanket™ in 31 subjects who suffer from insomnia. The level of insomnia and any daytime tiredness and sleepiness in the participants were assessed using two well-known assessment scales: the Insomnia Severity Index (ISI) and the Epworth Sleepiness Scale (ESS).

The participants were monitored over four weeks. For the first week they slept as usual, while during week two and three they slept with a Somna Chain Weighted Blanket™ weighing 6, 8 or 10 kg. During the final week they once again slept as usual without a Somna Chain Weighted Blanket™.

The study took both objective and subjective measurements. Objective measurements were taken throughout the period (four weeks), partly by asking participants to wear an actigraphy watch, which continuously measured their activity and sleep quality both day and night. Objective measurements also included polysomnography (PSG). In the first week (sleeping without the Somna Chain Weighted Blanket™) and at the end of the third week (sleeping with the Somna Chain Weighted Blanket™), the subjects' night's sleep was registered using PSG.

PSG entailed the participants sleeping as usual at home in their beds, while electrodes attached to their bodies registered and measured several variables simultaneously, such as brain and heart activity, muscle activity, breathing, blood oxygen levels and eye movements. Finally, body movements were also registered and analysed in a special way using a soft sensor pad placed under the sheets. Subjective measurements were also taken throughout the test period. Over the four-week period, all the participants kept a sleep diary, reporting their sleep quality using a Visual Analogue Scale (VAS). They also completed a questionnaire every day, in which they assessed how refreshed they felt on awakening and their perception of well-being and tiredness during daytime according to the Karolinska Sleepiness Scale (KSS). At the end of the four weeks, the participants also answered questions about their experience of sleeping with and without the Somna Chain Weighted Blanket™.

The subjective results showed that the participants liked sleeping with the Somna Chain Weighted Blanket™. They felt that it was easier to settle down to sleep, and that they slept better.

They also said they felt more refreshed in the morning. Objectively, the study found that the

sleeping period increased, and that movements during sleep decreased when participants slept with the Somna Chain Weighted Blanket™.

In summary, the researchers found (both objectively and subjectively) that the participants could sleep more calmly when they used the Somna Chain Weighted Blanket™.

Evaluating the Safety and Effectiveness of the Weighted Blanket with Adults During an Inpatient Mental Health Hospitalization

Champagne, T., Mullen, B., Dickson, D & Krishnamurty, S. (2015). *Occupational Therapy in Mental Health*, 31:3, 211-233

In 2015 an exploratory pilot study which investigates the safety and effectiveness of the standardized use of a 30-pound (14 kg) weighted blanket (WB) was presented. A total of 30 adults from an acute inpatient mental health hospitalization participated.

The WB is a therapeutic method used to self-comfort, rest, sleep and to reduce anxiety or stress. It is used to assist individuals in achieving and maintaining an optimal level of nervous system arousal to help support self-regulation and participation in meaningful roles and occupations. The WB is a class of sensory processing-related intervention that utilize deep pressure touch stimulation (DPTS). Sensory modulation interventions with DPTS involves tactile stimulation, providing the feeling of firm pressure (similar to the pressure experienced from a hug), holding, swaddling, or massage.

A heterogeneous population was used in the study. The 30 participants (8 men and 22 women) completed all portions of the study, with an age range of 18-54. 80 % of the participants had a trauma history, and 33% had a history of restraint use in previous hospitalizations.

The pilot study was employed within a controlled environment in order to assess safety and effectiveness of the use of the WB. Safety measured data included blood pressure, pulse rate, and pulse oximetry monitoring, with and without the 30-pound WB. The effectiveness measures, for anxiety reduction, include the State Trait Anxiety Inventory-10 (STAI-10), a self-rating 0-10 anxiety scale, and Electrodermal Activity (EDA). Measurements regarding the safety concluded that the use of the 30-pound WB did not cause any adverse influence on physiological safety in terms of blood circulation, as evidenced by the three vital signs data collected, for all the 30 participants.

The effectiveness of the weighted blankets measured that the STAI-10 results showed that 60% of the participants had a positive effect while using the WB. The 0-10 self-rating showed that 66.7% had a significant reduction in anxiety using the WB. The EDA readings were inconclusive.

The study indicates that the use of a WB was 100% safe and effective for 60% of the adult participants.

Effects of Weighted Vests on Attention, Impulse Control, and On-Task Behaviour in Children with Attention Deficit Hyperactivity Disorder

Lin H-Y, Lee P, Chang W-D, Hong, F-Y (2014) American Journal of Occupational Therapy, 68, 149-158.

The study examines the effectiveness of using weighted vests for improving attention, impulse control, and on-task behaviour in children with attention deficit hyperactivity disorder (ADHD). In a randomized, two-period crossover design, 110 children with ADHD were measured using the Conners' Continuous Performance Test-II (CPT-II) task. The results showed that in the weighted vest condition, the participants did show significant improvement in all three attentional variables of the CPT-II task, including inattention; speed of processing and responding; consistency of executive management; and three of four on-task behaviours, including off task, out of seat, and fidgets. No significant improvements in impulse control and automatic vocalizations were found.

Although wearing a weighted vest is not a cure-all strategy, the findings support the use of the weighted vest to remedy attentional and on-task behavioural problems of children with ADHD.

Pilot study of a sensory room in an acute inpatient psychiatric unit

Theresa Novak, Justin Scanlan, Damien McCaul, Nathan MacDonald, Timothy Clarke (2012) The Royal Australian and New Zealand College of Psychiatrists

The use of sensory rooms (also known as comfort rooms) to reduce seclusion rates has generated a great deal of interest. This study examined the outcomes associated with the introduction of a sensory room in an acute inpatient psychiatric unit.

Consumers rated distress and staff rated a variety of disturbed behaviours before and after each use of the room. Items used during each episode were recorded.

Use of the room was associated with significant reductions in distress and improvements in a range of disturbed behaviours. Those individuals who used the weighted blanket reported significantly greater reductions in distress and clinician-rated anxiety than those who did not. No changes were noted in rates of seclusion or aggression.

The sensory room was an effective intervention to ameliorate distress and disturbed behaviour, although this did not translate into reductions in overall rates of seclusion or aggression. Weighted blankets appear to be particularly useful.

The Use of a Weighted Vest To Increase On-Task Behavior in Children With Attention Difficulties

VandenBerg, N. L. (2001). American Journal of Occupational Therapy, 55, 621-628.

Children described as having attention deficit hyperactivity disorder often demonstrate inability to sustain visual attention during classroom fine motor wearing a weighted vest (deep-pressure sensory input) on children's on-task behavior in the classroom.

Four students with documented attention difficulties and hyperactivity were timed with a stopwatch to measure their on-task behavior during fine motor activities in the classroom. All 4 students were timed for six 15-min observations without wearing a weighted vest and for six 15-min observations while wearing a weighted vest.

On-task behavior increased by 18% to 25% in all 4 students while wearing the weighted vest. Additionally, 3 of the 4 students frequently asked to wear the vest other than during the observation times.

These preliminary findings support the hypothesis that wearing a weighted vest to apply deep pressure increases on-task behavior during fine motor activities.

Effects of a weighted vest on attention to task and self-stimulatory behaviors in preschoolers with pervasive developmental disorders

Fertel-Daly D, Bedell G, Hinojosa J (2001)

This study examined the effectiveness of using a weighted vest for increasing attention to a fine motor task and decreasing self-stimulatory behaviors in 5 preschool children with pervasive developmental disorders (PDD).

The findings suggest that for these 5 children with PDD, the use of a weighted vest resulted in an increase in attention to task and decrease in self-stimulatory behaviors. The most consistent improvement observed was the decreased number of distractions. Additional research is necessary to build consensus about the effectiveness of wearing a weighted vest to increase attention to task and decrease self-stimulatory behaviors for children with PDD.

Use of weighted vests in pediatric occupational therapy practice

Olson LJ, Moulton HJ (2004)

The aim of this study was to investigate pediatric occupational therapists' general experience and practice with weighted vests and their impressions about whether weighted vests are effective in

changing specific behaviors of children with whom they have used weighted vests.

Respondents who use weighted vests were more likely to have advanced degrees or certifications and more years of experience as pediatric therapists. They reported using weighted vests with preschool and young elementary school-aged children with the diagnoses of autism or attention deficit disorder. Staying on task, staying in seat and attention span were the most common behaviors that therapists reported improving when weighted vests were used.

Efficacy of Weighted Blankets for Children With Autism Spectrum Disorder, Sensory Overresponsivity, and Sleep Disturbance

Bryan Gee, Tyler McOmber, Jesse Sutton, Kimberly Lloyd (2017)

Weighted blankets are an example of a sensory-based intervention commonly used in helping children with autism spectrum disorder (ASD) attain adequate sleep participation. The purpose of this study was to explore parental perspectives related to the effectiveness of weighted blankets for sleep quality in children diagnosed with ASD, sensory overresponsivity (SOR), and sleep difficulties.

Moderate improvement of the measured constructs related to sleep quality in the four participants were observed. The participants exhibited evidence of an increase in total amount of sleep per night as well as a slight decrease in time to fall asleep. However, morning mood did not consistently improve with the use of the weighted blanket for two of the four participants. Based on the online survey and the movement tracking device, it was determined that the participants slept between 1 and 3 extra hours a night as a result of the weighted blanket.

Improving sleep quality using weighted blankets among young children with an autism spectrum disorder

Bryan M Gee, Theodore W Peterson, Annie Buck, Kimberly Lloyd (2016)

The purpose of this study was to explore the efficacy of weighted blankets with children with an autism spectrum disorder and sleep disturbances using a single case, multiple baseline design.

Using a single subject design found that there were minimal changes reported via caregivers, indicating that weighted blankets assisted in improving the overall quality of sleep for their child with an autism spectrum disorder, specifically time to fall asleep, number of wakings in the night, duration of sleep and behaviour in the morning. This study

provides a valuable springboard justifying the necessity for additional research studies related to improving the quality of sleep in children with an autism spectrum disorder and sensory over-responsivity using more robust single subject design methodology and objective measurement resources.

Physiological Effects of Deep Touch Pressure on Anxiety Alleviation: The Weighted Blanket Approach

Hsin-Yung Chen, Hsiang Yang, Huang-Ju Chi, Hsin-Ming Chen (2013)

The application of deep touch pressure (DTP) has been suggested to provide positive effects on anxiety modulation. The weighted blanket (WB) is used as a DTP intervention tool for sensory modulation. However, empirical and theoretical evidence linked to the clinical effects of DTP are relatively rare.

This study conducts a quantitative analysis of behavioral assessments and performs physiological measurements, including those of electrodermal activity and heart rate variability, to understand the modulation of the autonomic nervous system (ANS), and the orchestration of sympathetic (SNS) and parasympathetic nervous systems (PsNS). The results suggest that the activation of PsNS plays a critical role in ANS modulation. This study provides physiological evidence to support the positive clinical effects of DTP for reducing anxiety in dental environments.

The effect of the wearing of weighted vests on the sensory behaviour of learners diagnosed with attention deficit hyperactivity disorder within a school context

Fransli Buckle, Denise Franzsen, Juanita Bester (2011)

Children diagnosed with attention deficit hyperactivity disorder (ADHD) often have sensory processing difficulties. Therefore, they find it difficult to function optimally in the classroom environment. This study investigated the effect that wearing a weighted vest had on their in-seat behaviour, task completion speed and attention-to-task.

The Phase group effect for in-seat behaviour and attention-to-task indicated a statistically significant difference when learners wore weighted vests. This was not true for task completion speed.

The weighted vests improved the in-seat behaviour and attention to task of learners diagnosed with ADHD in a classroom context.

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