

Protac MyFit - a sensory stimulating weight and pressure vest.

The Protac vest has channels on the front and back, filled with heavy plastic balls. The special design of the vest produces distributed pressure deep under the skin - stimulating the sense of touch and hence muscle and joint sensation. It is reported to give a greater body awareness, which has a soothing effect and improves concentration and impulse control.

Aim of assessment

To examine the Protac vests influence in a school context and with children with PMLD (profound and multiple learning disabilities) and to monitor the benefits in relation to considered typical behaviors of that child.

Children with profound and multiple learning disabilities have more than one disability, the most significant of which is a profound learning disability. All people who have PMLD will have great difficulty communicating. Many people will have additional sensory or physical disabilities, complex health needs or mental health difficulties. The combination of these needs and/or the lack of the right support may also affect behaviour.

Assessment group

Six children were selected, five primary and one secondary child. The group of children had a variety of diagnosis. All have PMLD with a diagnosis of either Autism, Genetic disorders, Mild Cerebral Palsy, hearing impairment.

From Occupational Therapy assessment and class reports all these children have problems with focus and concentration that heavily impacted on their ability to engage fully in any classroom activity. They also often displayed extreme behavior such as self harming, complete disengagement to tasks, anger and aggression.

From sensory assessment from home school and respite it was ascertained that this group of children all displayed poor proprioception, and or hypersensitive tactile system.

As the vest has integral weights we were clear not to use the vest on children who displayed any hypotonic symptoms. **Hypotonia** is a state of low muscle tone (the amount of tension or resistance to movement in a muscle), often involving reduced muscle strength. For this reason children were excluded from the trial if their condition has hypotonia, which they displayed. Such as Down's syndrome. If you placed a constant weight on this type of child it could impede their movement, and cause excessive exhaustion.

Sensory Systems

Proprioceptive sense refers to the sensory input and feedback that tells us about movement and body position. Its "receptors" are located within our muscles, joints, ligaments, tendons, and connective tissues. It is one of the "deep senses" and could be considered the "position sense". Without proper messages regarding whether muscles are being stretched, whether joints are bending or straightening, and how much of each of these is happening, children will have the following "clinical" signs of proprioceptive dysfunction.

- ✓ **difficulty "motor planning"**; i.e. conceptualising and figuring out what each part of your body needs to do in order to move a certain way or complete a task
- ✓ **difficulty executing those planned movements: i.e. "motor control"** (the brain may know what to do, but they can't figure out how to make their body do it)
- ✓ **difficulty "grading movement"**; knowing how much pressure is needed to complete a task (i.e. hold a cup of water, hold and write with a pencil, turn the page of a book, hit a golf ball into the hole, etc.)

Tactile Hyper sensitivity Children who have tactile defensiveness are sensitive to touch sensations and can be easily overwhelmed by, and fearful of, ordinary daily experiences and activities.

Sensory defensiveness can prevent a child from play and interactions critical to learning and social interactions. Many children with tactile defensiveness will only use their fingertips when playing with sand, glue, paint, play-doh, food, glitter etc. Consequently, their play is limited and so is their ability to engage in learning experiences.

The root cause is neurological disorganization in the midbrain region of the brain, which is largely responsible for filtering incoming stimuli, and, may not adequately screen out all extraneous tactile stimulation causing the child to perceive the input as extreme and uncomfortable.

The central nervous system ability to process tactile sensory input is distorted causing the child great discomfort. Their brain may register even the most subtle sensations as extreme irritation or even painful and he may respond in an abnormally reactive way such as grimacing or pulling away from the stimulus. The anxiety caused by this type of sensation can result in behavior outburst and anger.

Using a weighted garment is thought to release neurotransmitters like serotonin, dopamine, among others. These neurotransmitters released by the brain have naturally calming effects, which have proven to be beneficial for people experiencing sensory integration disorder.

Assessment Process

The class selected three lessons /activities that they repeated frequently and the same teaching assistant was assigned to score the child on areas of concentration, participation, composure and activity length. The staff monitored three sessions **without** the vest scoring them in the criteria, and then the **same three** sessions **wearing** the vest. The vest were only worn for the session and removed after, working on an approximation of 20 mins on. **High was a score of 4 and low a score of 1. The results below are an accumulative score of the three sessions. Max score for each area could have been 12.**

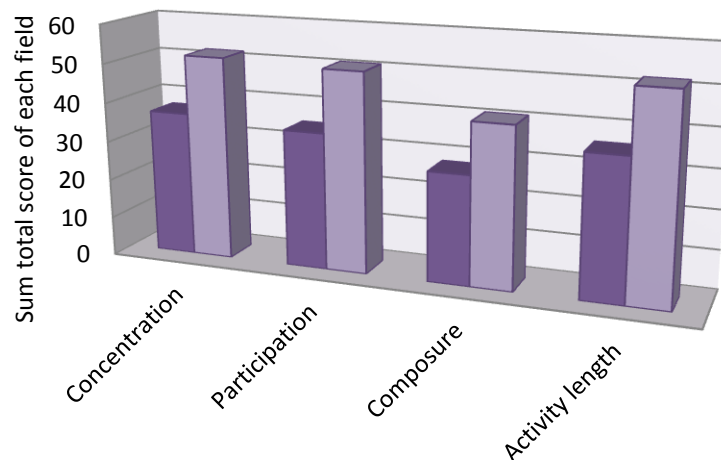
Results from class scoring

Identification	Concentration	Participation	Composure	Activity Length	Total
A pre	5	5	3	4	17
A vest	6	6	5	6	23
B Pre	5	5	6	6	22
B Vest	10	10	8	9	37
C Pre	8	7	8	5	28
C Vest	12	10	9	11	42
D Pre	8	7	3	9	27
D Vest	11	11	9	12	33
E Pre	6	6	4	7	23
E Vest	6	6	4	8	24
F Pre	5	5	4	5	19
F Post	7	8	6	7	28

Summary chart :

Below is a chart which summaries the assessment fields and the scores of the group of children, without using the vest, then using the vest.

Summary of assement area,
without vest and with vest during class activites.



	Concentration	Participation	Composure	Activity length
Without	37	35	28	36
With Vest	52	51	41	52

From the scores it is noticeable that the vest improved each child abilities in all four areas, but due to the assessment relying on observational scoring in an objective format from the staff, the results can only be subjective.

Comments from classes....

She sat in a music session for the first time, usually she's up and 'seeking' within seconds, she even made singing noises to join in.

She would only sit for between 1-5 minutes usually, but she managed a whole assembly of 25 minutes!

Wow, what an improvement, normally she will only pick at her food, but wearing the vest was able to eat a small portion..

She sat through assembly and went up to collect a sticker..normally she cries and paces around the outside.

Normally she is very anxious and tearful, but with the vest she was smiling and joined in.

In cookery he would swipe everything off the table, and last week he kicked the table over, with the vest he didn't grab items but sat a focused on the task, he actually engaged and enjoyed himself. He painted egg white on the biscuits!!

He was thumping and banging the computer we thought he would break it, once the vest was on he calmed and focused well, isolating finger movement to control the program.

With the vest on she went out and explored the play equipment for the first time, normally we struggle to get her outside, we have pictures of her smiling!!

The vest seemed to take away her need to move and fidget; she could then get involved with activities.

We knew that the vest was reducing her sensory problems and that her noises were more a behavioral response, it helped us to see the difference.

Summary

The results from the study and observational comments from the staff indicate that each child assessed showed signs of personal improvement in all areas, and was able to more effectively access the curriculum provided by the school, and therefore enhance their capacity to learn and develop.

Post initial assessment

The vest was continued with most of the children used in this study group, four families bought vests through Kingcraft, and through our work and study other school locally have bought vest to use. The vest has continued to be monitored when worn in school environments, and the results indicate that from the original scores base line there is a sustained improvement.

Overall it is the **participation in activity** that continued to improve in all cases using the vest. Children would be more focused for a longer period of time. Composure or behavior in class time where more variable, but this can also be attributed to child health issues, and as few of the pupils can express themselves verbally often it is there behavior which indicate illness or discomfort.

We found difficulties with wearing the vest in specialist seating , the vest is quiet bulky and as the child has a seat made to measure it does not leave enough room to fit the vest in . Seats were adjusted to accommodate this. However once vest was removed seats had to be readjusted. This took therapy and staff time.