

Innovative Sensory Reward Insoles

Background

Founder and CEO: Nicki Allen, Paediatric Physiotherapist worked in a school that specialises in Autism for the last 9 years



ITW affects 2% of children by age 5 ½ rising to 45% in those with ASD. Affecting 105,000 children in the UK alone

This can lead to musculoskeletal deformities, gait and balance issues and chronic pain.



47.2% of patients continue toe walking within 2 years of casting treatment (Valagussa et al. (2022), Leyden et al 2021)

Current treatments are invasive, expensive and ineffective for autistic children.

Costing a total of **£83,400** in physiotherapy, piedro boots and splints by age 12, per child



Children with ASD require surgery **nearly 3 times as often** as their neurotypical peers.

In the UK tendon lengthening surgery for ASD related TTW exceeds **£26 million annually.**

Aim

To find effective long term solutions for tip toe walking

Method

Literature review revealed 'A disappearance of stereotyped behaviours was observed using vibrostimulation' Santamarina - Siurana et al 2022.

Focus group held with parents, SEN teachers, orthotist, physiotherapist, innovation lead, therapy assistants

Early prototype developed that delivered a reward of vibration at the heel when the heel was placed on the floor, trialled with 5 children

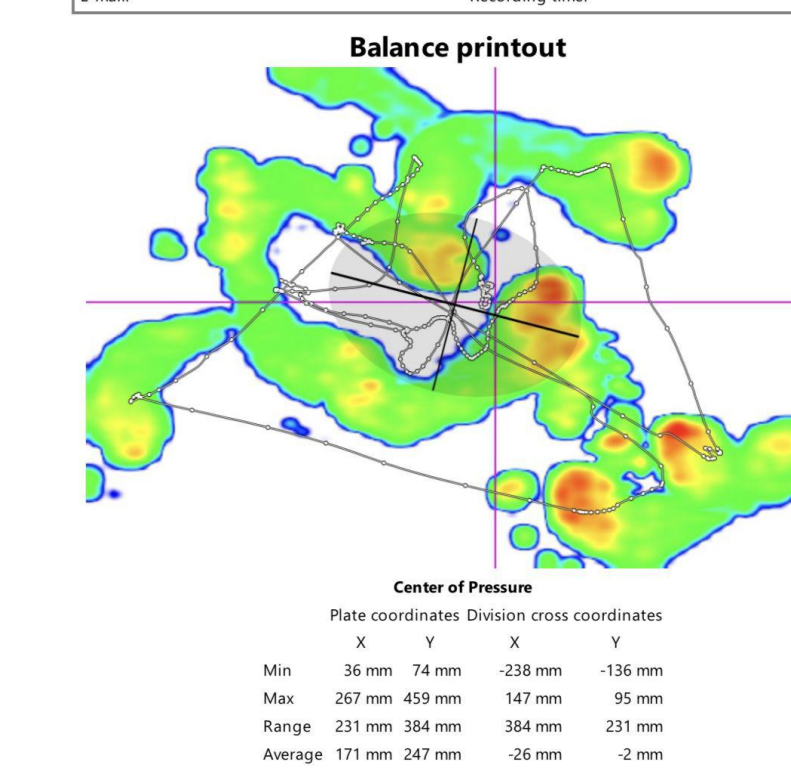
Results

Improved centre of mass and increased surface area of the foot in contact with the floor in 5/5 children

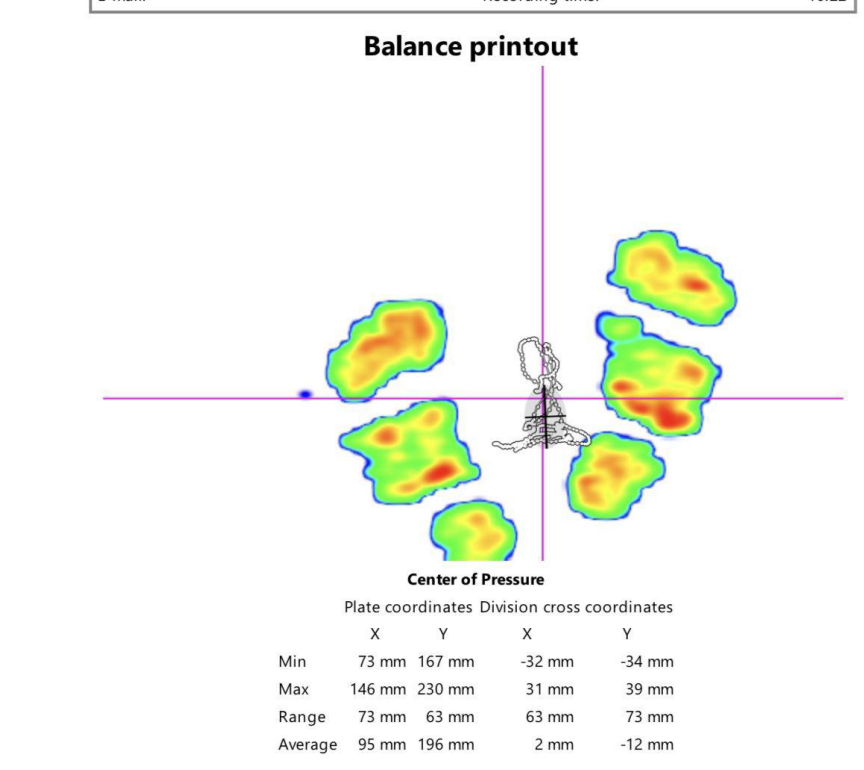


One child also displayed a reduction in sensory soothing behaviour of rocking

Person information			
Name:	282 285	Date of birth:	01/05/1980
Address:	GB	Gender:	Male
City:		Weight:	75.00 kg
Telephone:		Shoe size:	6 UK - 280.0 mm
Mobile:		Recording:	Session 1
Fax:		Recording date:	02/05/2024
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Discussion

Difficult to attach battery pack due to wires and large battery pack

Conclusion

Marcus et al 2010 found auditory feedback reduced to 28% of intervals with toe walking

Based on our own research and the literature Haptiv8 has developed a Sensory Reward Insole: Wearable device with Visual, Auditory and Vibro-tactile stimulation with a rechargeable battery housed within the insole.

Haptiv8 are going to conduct a useability study on this device and would like the involvement of the prosthetists and orthotists to ensure this is as successful as possible and help us to identify the blind spots with assumptions made about the:

Hypotheses, Sensory Reward Integration Approach, Study Objectives, Study Design, Manufacturing

If you would like to know more, to get involved or to see the references please:

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