A Sensor-Integrated Wearable Device for Support During Autism Spectrum Disorder Meltdowns by Applying the Deep Pressure Stimulation

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The project addresses the challenge of managing meltdowns in children with Autism Spectrum Disorder (ASD), a condition marked by difficulties in communication and social interaction. Globally, ASD affects approximately 1 in 100 children, with Jordan reporting a notably high prevalence of 92.1%. Meltdowns, characterized by overwhelming reactions to stimuli, are common among individuals with ASD, often leading to behaviors such as stimming and crying. To combat this issue, the project introduces an innovative vest equipped with sensor technology and deep pressure application. These sensors, including those for heart rate, skin temperature, vibrations, and GSR(Galvanic Skin Response), accurately detect early signs of meltdowns. Upon detection, the vest applies gentle pressure similar to a massage, aiming to calm the child and reduce the risk of self-harm. Testing conducted on 33 children with varying severity levels of ASD yielded promising results. These included decreased heart rate, increased skin temperature ,reduced vibrations and increased GSR. In summary, the device effectively manages meltdowns, mitigates the risk of injury, and alleviates anxiety through the application of deep pressure stimulation theory.