

The Effects of Balanced-Based Torso Weighting (BBTW) on Mobility in People with Huntington's Disease: A Case Series Experience.



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Objectives

To evaluate the potential effect of BBTW in people with HD (PwHD).

Background

Huntington's Disease (HD), a progressive neuro-degenerative disorder, impacts cognition, behavior, and gait resulting in mobility limitations and increased fall-risk. Balanced-Based Torso Weighting (BBTW), an orthotic device, improves postural control by strategically placed weights on the individual's torso. BBTW use has improved gait and balance in select people with multiple sclerosis and cerebellar ataxia with mobility limitations.

Subject 1

5XSTS improved from 18 sec pre-test to 15 sec post-test. GV increased from 60 cm/sec pre-test to 69cm/sec post-test, with left and right SL increasing 34cm pre-test to 44cm post-test and 45cm pre-test to 53cm post-test, respectively. FGA scores improved from 11/30 pre-test to 20/30 post-test.

Subject 2

SOT demonstrated an improvement from 52 pre-test to 62 post-test. GV with cognitive dual task (serial 3's) increased from 101cm/sec pre-test to 113 cm/sec post-test. FGA improved from 20/30 pre-test to 25/30 post-test.

Image 1: *BalanceWear* vest, obtained with permissions from Motion Therapeutics

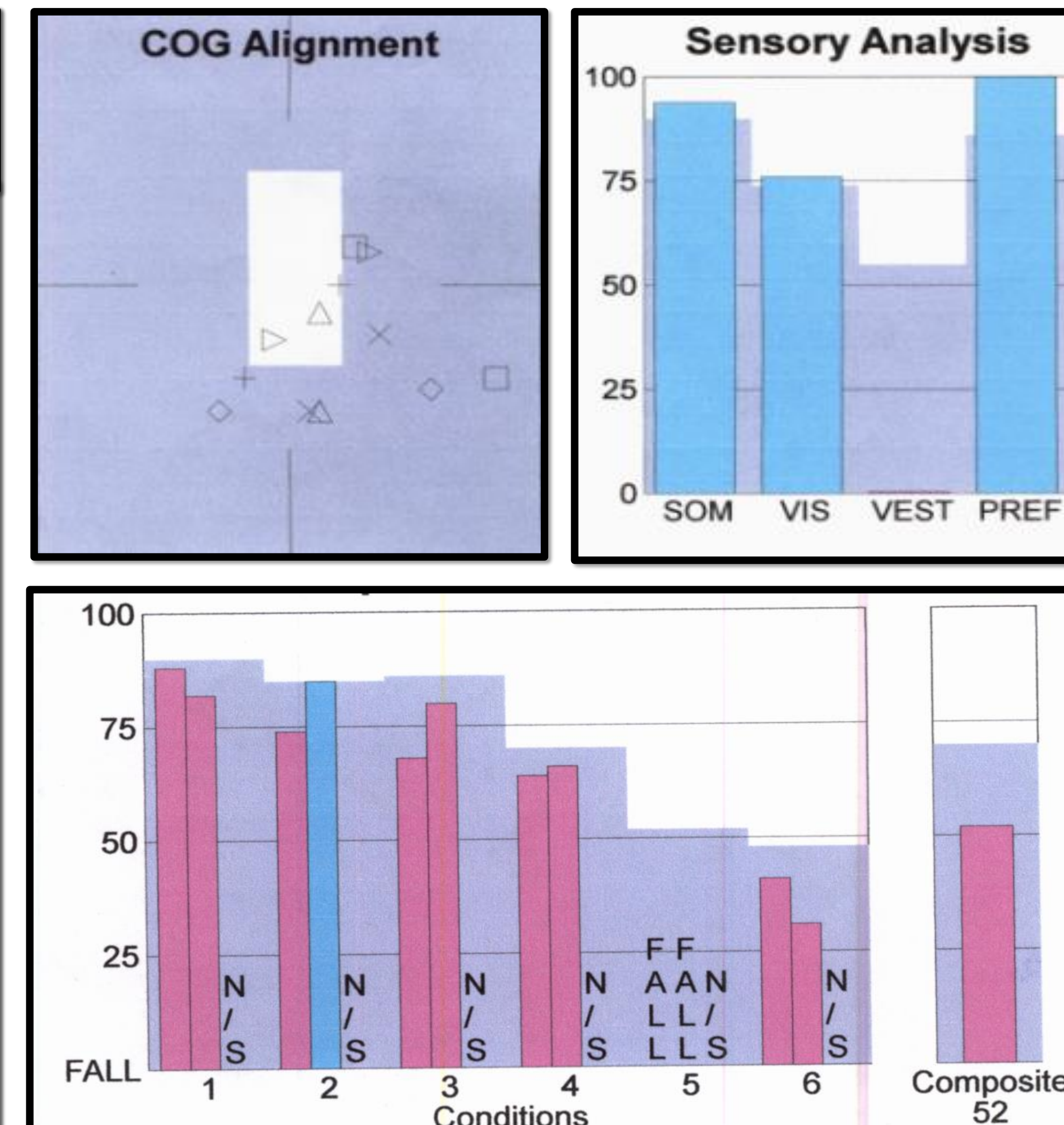


Figure 2: COG, Sensory analysis and SOT Equilibrium Pre-Test Scores for Subject 2

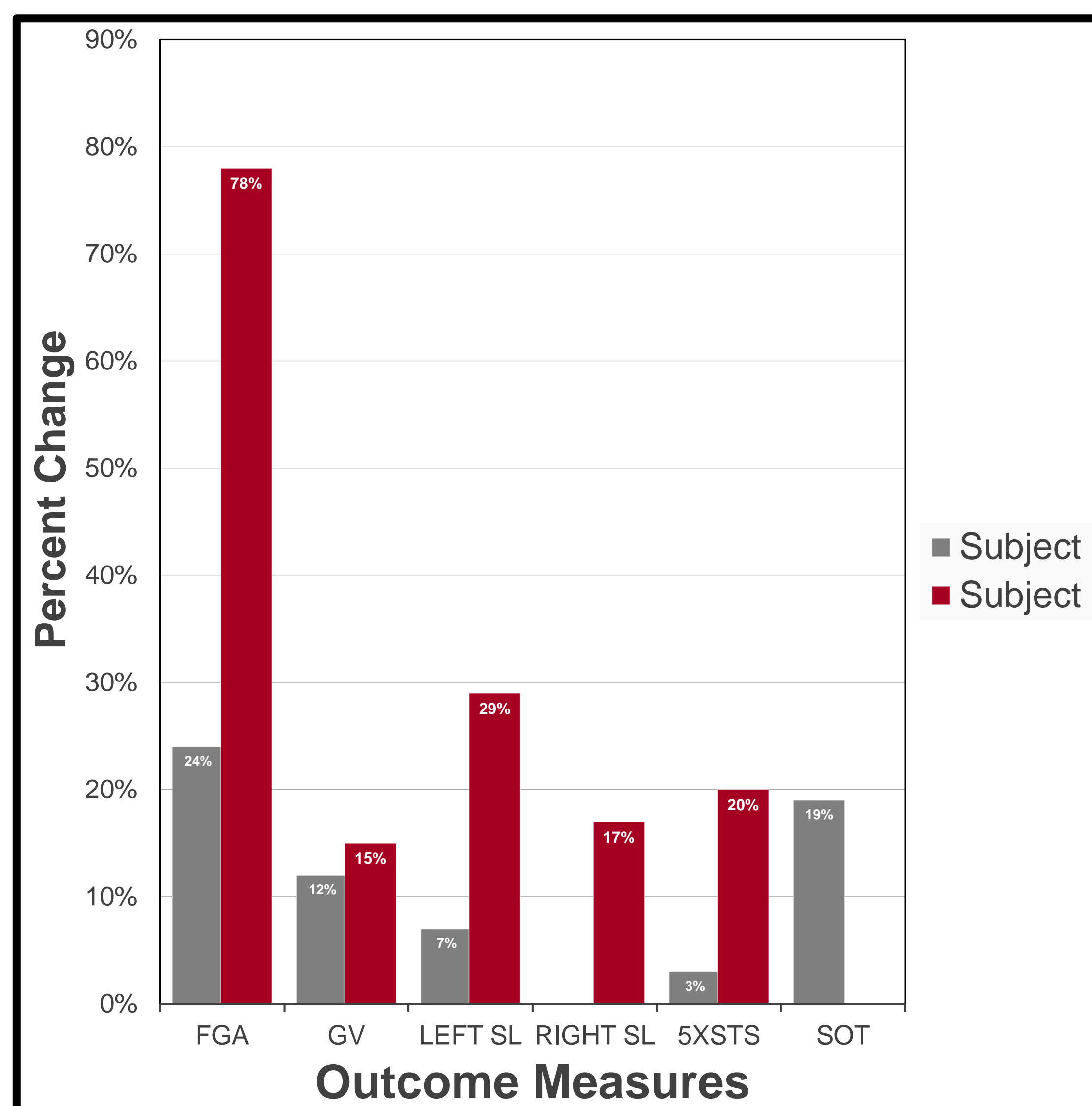


Figure 1: % Improvements for Subject 1 and 2.

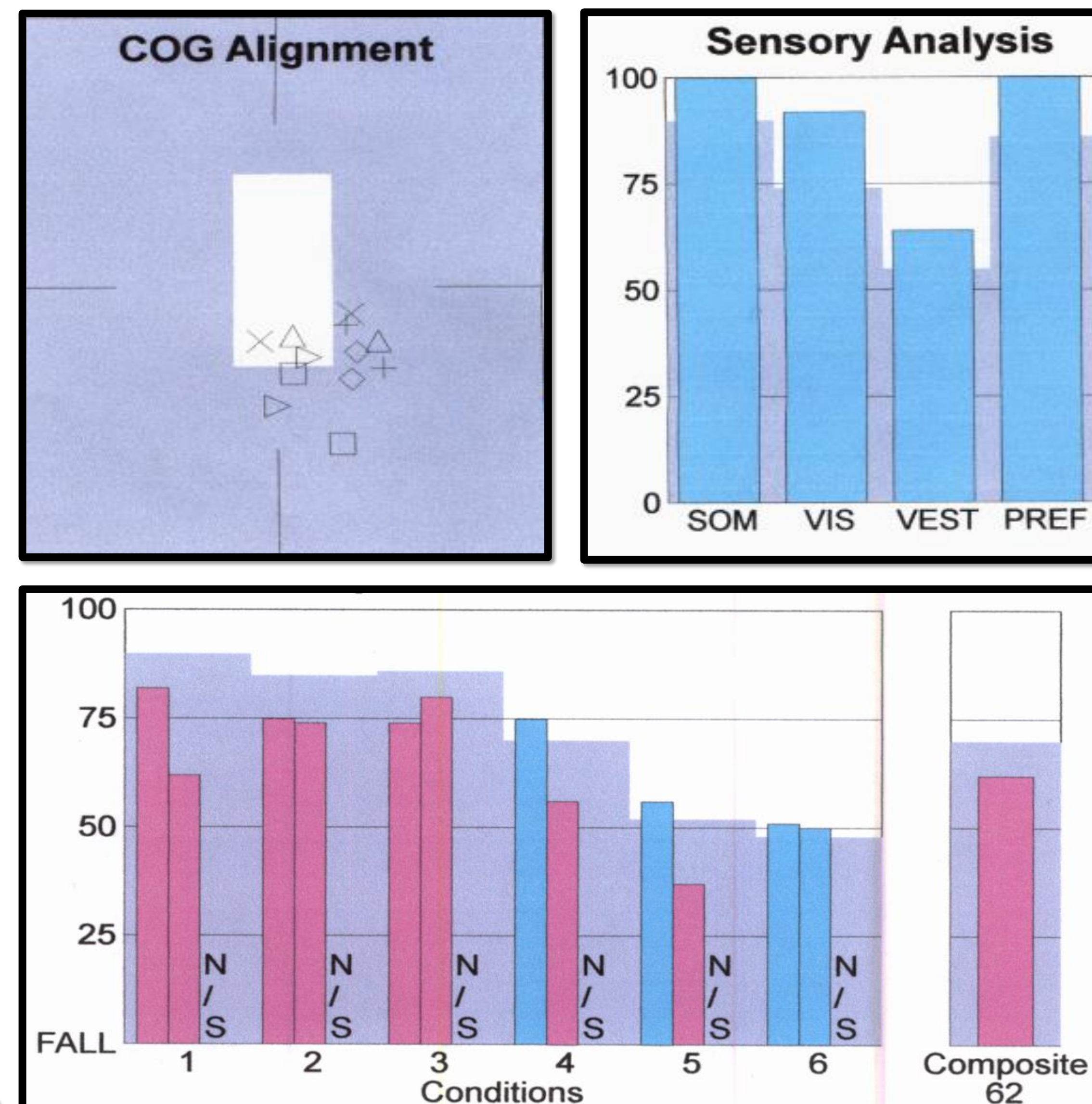


Figure 3: COG, Sensory analysis and SOT Equilibrium Post-Test Scores for Subject 2

Design

Both PwHD were assessed with *BalanceWear* vest utilizing standardized BBTW assessment protocol. Balance and gait outcome measures were performed both pre and immediately post vest application. Outcome measures included: Sensory Organization Test (SOT, (Smart Balance Master)), Gait Velocity and Step Length (GV, SL, ZenoMat), Functional Gait Assessment (FGA), 5x Sit To Stand Test (5XSTS).

Case Description

Two PwHD who experienced chorea, mobility deficits and reported a fall history were evaluated. Subject 1: 62 y/o PwHD self-reported fall history as several times/month. Subject 2: 25 y/o PwHD self-reported fall history 2-3x/day.

Discussion

BBTW application demonstrated immediate impact in improving balance and ambulation in two PwHD as documented by multiple standardized outcome measures of balance and gait. BBTW may have potential for improving PwHD postural control and fall-risk. Further research is needed to confirm these preliminary findings, identify optimal candidates, and determine the long term impact of BBTW in reducing fall risk in PwHD.