Postural responses to noisy support surface translations in stroke survivors

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INTRODUCTION

Healthy standing posture is characterized by the ability to interact with a dynamically changing environment [1].

Being adaptable to changing environments allows flexibility in posture and the ability to encounter novel environments without losing balance [2].

Support surface translations with temporal structures that range from complete periodicity (sine wave) to complete randomness (white noise) can be used to produce a novel environment with known temporal characteristics [3].

Statistical Analysis

Repeated measures ANOVA with Tukey post-hoc was used to compare the means between each group.

METHODS

Neurocom® Balance Manager was used with the researcher module which allows control of the force platforms.

Temporal structure of variability had reduced complexity for two conditions with the other two conditions trending towards significance (significant without adjusting for multiple comparisons).

Magnitude of variability was increased in all conditions with translations.

DISCUSSION

Previous work has demonstrated that healthy standing posture is able to adapt to the temporal structure of support surface translations [3].

This adaptability was not seen in the stroke survivors.

Lack of adaptability makes it difficult to interact with environmental perturbations and impacts functionality.

Rehab may be benfitted by attempting to regain control of the temporal structure of movement patterns in stroke survivors.

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REFERENCES