

DYNAMICAL DIFFERENCES BETWEEN NORMAL AND STEREOTYPICAL BODY ROCKING

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INTRODUCTION

Stereotypical body rocking has been noted as one of the most common repetitive behaviors exhibited by patients diagnosed with mental developmental disorders [1]. It has been argued that such behaviors should not be classed as being independent of the instrumental activities of daily living [2]. The aim of this experiment was to compare differences and similarities between the dynamics of sitting and body rocking in adults with profound mental retardation and healthy adult controls.

METHODS

7 adults (aged between 31 and 45 years) diagnosed with severe or profound mental retardation (Vineland Adaptive Scales), residents of a state developmental center, were selected due to their regular engagement in body rocking stereotypies (MR group). These participants were not on any regimens of medications. 3 adult males and 3 adult females from the University community served as the controls, matched to be within 10% of the age, weight and height of the disordered patients. The Institutional Review Board of the Pennsylvania State University and the Western Carolina Center provided approval for the informed consent and experimental procedures involved.

A force platform (AMTI Model S6-4) placed beneath a wooden block (length 46.4 cm x width 50.8 cm x height 48 cm) served as the data collection device, while the participants were seated upon this block, which had no back, thus preventing the participants from leaning against it. The motion of the centre of pressure (CoP) of generated by the participants force outputs served as the dependent variable.

MR group participants were measured while exhibiting stereotypical body rocking behavior and during a protocol in which they were sitting still. Matched control participants were asked to simulate body rocking by oscillating at a preferred frequency and amplitude and were then asked to sit as still as possible. 3 trials lasting 10 s were recorded for each participant in the still and body rocking conditions.

RESULTS AND DISCUSSION

For the controls, similar modal CoP oscillation frequencies were noted during both sitting still and voluntary rocking (Figure 1). However, the complexity of the CoP time series was higher during quiet sitting, marked by increased approximate entropy (values). The MR group however, demonstrated an opposite direction of change. While the modal frequency of CoP oscillations was lower during sitting still, no differences were noted between the complexity of the CoP time series during quiet sitting and body rocking.

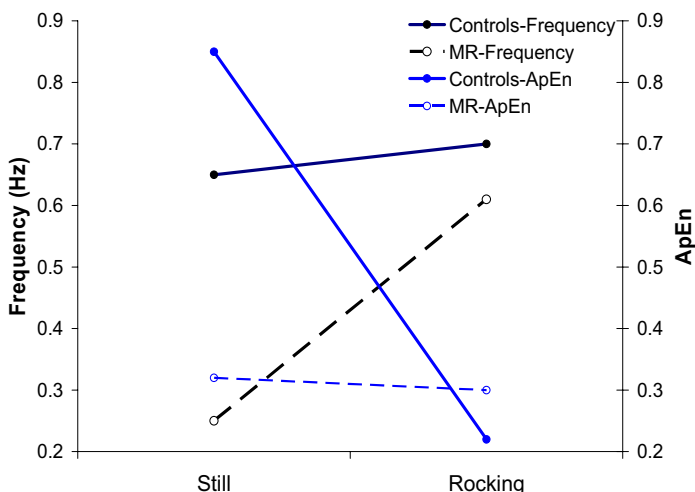


Figure 1. Mean ApEn and modal frequency values during both sitting still and body rocking in both the MR group and matched controls.

CONCLUSIONS

The results are supportive of the idea that sitting and body rocking possess similar dynamics in healthy adults. Similarities in the dynamics of body rocking in controls and MR group suggest that both behaviors possess similar modes of organization, though with different scaling values. Greater dynamical stability afforded by body rocking as opposed to sitting still could be a contributing explanation for the regular occurrence of such stereotypical behaviors in MR patients.

REFERENCES

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