

Resource Summary Report

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Evaluation of stability of balance recovery from unpredictable perturbations through the compensatory arm and leg movements (CALM) scale

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Protocol Information

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Authors: Marina Torres Betelli, Patrícia Sayuri Takazono, Caroline Ribeiro de Souza, Julia Ávila de Oliveira, Daniel Boari Coelho, Luis Augusto Teixeira

Summary: The scale for evaluation of compensatory arm and leg movements (CALM) was developed to evaluate balance stability recovery after unpredictable displacements of the support base in the mediolateral direction. The mediolateral perturbations are applied in three modes: rotation, translation or combined rotation-translation, to either side, in three platform peak velocities: 20°-20 cm/s (low), 30°-30cm/s (intermediate) or 0°-40 cm/s (high), keeping peak acceleration of 500o/s2(cm/s2) and displacement amplitude of 7o (cm) constant across perturbations. The factors perturbation mode (3), direction (2) and velocity (3) of platform displacement are combined to generate 18 distinct stance perturbations. To create the context of unpredictability, perturbations are pseudorandomly sequenced. To become aware of the stance perturbations, participants watch a video demonstrating a person responding to the different platform perturbations included in the protocol. After video watching, subjects are warmed up for 5 min. with global movements. Initial feet positions are marked on the support base with adhesive tapes (5-cm width). Other adhesive tape marks are fixed 15 cm away from the outer border of the feet to either side, in parallel to the feet orientation. The initial participant's posture on the platform is keeping the Romberg's stance, with the feet oriented forward, touching each other, maintaining both arms relaxed hanging beside the trunk, and palms of the hands lightly touching the upper legs. Participants wear a safety harness supported by two ropes tied at the shoulders height with the other end attached overhead. The participant's aim across

perturbations is to recover balance after support base displacements trying to maintain the initial body posture. Participants' responses are filmed from behind using a commercial digital camera (Sony), for off-line analysis based on the CALM scale.

Associated Publications: Souza CRd, Betelli MT, Takazono PS, Oliveira J

Affiliations: 1 Human Motor Systems Laboratory, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil , Human Motor Systems Laboratory, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil, Human Motor Systems Laboratory, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil , Human Motor Systems Laboratory, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil , Centre for Engineering, Modeling and Applied Social Sciences (CECS), Federal University of ABC, São Paulo, Brazil, Human Motor Systems Laboratory, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil

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