LOWER EXTREMITY POSITION INFLUENCE ON THE POSTURAL STABILITY INDEX REGISTERED BY THE BIODEX STABILITY SYSTEM

Hugo Maxwell Pereira*, Tarcísio Folly de Campos, Jefferson Rosa Cardoso***,
Marcelo Bannwart Santos**, Maurício Garcia**, Moisés Cohen****

***Universidade do Oeste de Santa Catarina. Joaçaba SC, Brazil
**Universidade Federal de São Paulo (UNIFESP). São Paulo, Brazil
***Universidade Estadual de Londrina. Londrina PR, Brazil**

INTRODUCTION: The Biodex Balance System is a multiaxial device that objectively measures and records an individual's ability to stabilize the determined joint under dynamic stress. Some authors describe the importance of knee position strategy for stabilizing balance in this situation; however, the reliability of each knee position is underestimated. With this the objective of this study is to compare intrarater reliability of two knee position situations in the Biodex Balance System test.

METHOD: 21 healthy female subjects (22.8 ± 1.0 years; 58.0 ± 5.7 Kg, 158,3 ± 33,0 cm) were evaluated in one leg stance by Biodex Balance System in 2 different situations (30 degrees of knee flexion or complete knee extension) for a 30 sec protocol that decreased gradually and automatically with no visual feedback. All the instructions and tests in the Biodex Balance System were realized by one trained physical therapist. The analysis of variance with repeated measures was used to verify the difference of means in degrees of extended or flexed knee position. For the intra-observer reliability test were used intraclass correlation coefficient (ICC) (random effect with one factor) (McGraw and Wong,1996), the Bland and Altman method for assessing agreement ($\bar{d}$ = mean difference between measures), following by the 95% confidence interval (95% CI) respectively (Rankin and Stokes, 1998).

RESULTS: Reproducibility was excellent for all indices regarding both knee positions: Overall Stability Index (OSI) (intraclass correlation coefficient [ICC] = 0.93; 95% confidence interval [CI], [lower limit 0.83; upper limit 0.97] for flexed knee and ICC = 0.88; 95% CI [0.72;0.95] for extended knee; Anterior Posterior Stability Index (APSI) ICC = 0.90; 95% CI [0.77; 0.96] for flexed knee and ICC = 0.87; 95% CI [0.69; 0.94] for extended knee. To Medium Lateral Stability Index (MLSI) ICC = 0.89; 95% CI [0.75; 0.95] for flexed and ICC = 0.79; 95% CI [0.50; 0.91] for extended knee. The Bland and Altman test agreed with these values.

DISCUSSION: Knee position during testing on the Biodex Balance System seems to elicit different strategies to control balance, since the joint position sense performed in these two knee positions is different. It is possible that the complete knee extension position may test a balance strategy that involves more ankle than knee movement. Therefore, the reliability of both forms of knee positions is necessary.

CONCLUSION: Both knee positions present good intrarater reliability in the Biodex Balance System test. However we suggest using the flexed position to evaluate MLSI, APSI and OSI if more reliable data were desired. This may be important when a balance evaluation and training is being performed.

REFERENCES:
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