

Preliminary reference data on balance and associated influencing factors in healthy young adults

A.P. Martínez Riera; N. Pérez Mallada; M.J. Martínez Beltrán

Abstract-

Aim: This study aims to provide preliminary reference balance values for young adults and examine factors influencing balance, addressing the lack of research in this age group, using the Zebris FDM-S pressure platform. **Methods:** A cross-sectional observational study was conducted with 28 healthy adults aged 18 to 30 years. Balance-related measurements and weight distribution were assessed in bipodal and single-leg stances with eyes open and closed. Preliminary reference values were obtained through descriptive analysis, and comparisons were performed using non-parametric statistical tests, considering sex, dominance, and knee alignment. **Results:** Women demonstrated greater control during single-leg balance, lower-limb dominance does not affect balance performance during single-leg stance, whether with eyes open or closed. A non-neutral knee alignment (varus or valgus) appears to alter anterior-posterior weight distribution during bipodal stance with eyes closed. Knee alignment, whether varus or valgus, influenced the anterior-posterior weight distribution during bipodal stance. The preliminary reference data obtained may serve as an initial benchmark for injury prevention and post-injury evaluation, diagnosis. However, these findings should be interpreted with caution until they are confirmed in larger samples. **Conclusion:** Women demonstrate greater stability during single-leg stance with eyes open. Lower-limb dominance does not appear to affect balance performance in single-leg stance. Varus and valgus alignment seem to alter anterior-posterior weight distribution during bipodal stance with eyes closed.

Index Terms- balance; force platform; reference values; postural control

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