

Functional balance performance in aging: evidence of moderated prediction by strength and power

R. Forte^{1,2}, C.A.G. Boreham², G. De Vito², M. Ditroilo³ and C. Pesce¹

¹ University College Dublin, Institute for Sport and Health, Dublin, Ireland

² University of Rome "Foro Italico", Italy, Department of Human Movement and Sport, Rome, Italy

³ University of Hull, Department of Sport, Health and Exercise Science, Hull, Great Britain

Age-related reductions in strength and power are considered to negatively impact balance control, but the existence of a direct association is still an issue of debate (Orr, 2010). This is possibly due to the complexity of its assessment which may involve quantitative measurements of postural sway or functional balance tasks (Granacher et al., 2012). The present work questions whether postural balance interacts with strength and power in determining functional balance performance. Fifty-seven healthy 65 to 75 year old individuals performed tests of dynamic functional balance (chair rise, walking speed under different conditions) and of strength, power and static postural balance.

Results showed that functional balance performances were generally predicted by strength and power and, additionally, by postural balance when conditions required postural adjustments. Interactive effects of postural balance and strength were found, indicating that good postural balance facilitates the utilisation of strength to better perform complex functional balance tasks.

References

- [1] Granacher U., Muehlbauer T., Gruber M. (2012) A Qualitative Review of Balance and Strength Performance in Healthy Older Adults: Impact for Testing and Training. *Aging Research Volume 2012*, Article ID 708905.
- [2] Orr (2010) Contribution of muscle weakness to postural instability in the elderly. A systematic review. *Eur J Phys Rehabil Med* 46: 183-220.

Key words

Strength, power, postural balance, functional balance, aging.