

Effect of Neurobics-based Task Training on Cognition and Balance in Older Adults

BHAVYA KAKKAR¹, MEENA GUPTA², VIDHU VARSHNEY³

ABSTRACT

Introduction: Aging is commonly associated with a gradual decline in both cognitive ability and postural control, which together increase dependency and fall risk in older adults. Conventional exercise programmes tend to address physical fitness without adequately targeting the cognitive processes that underpin safe mobility. Neurobics is a form of training that combines multisensory stimulation with novel cognitive-motor tasks that has shown promise in improving brain function. Incorporating these principles into structured task training may better preserve cognition, balance, and real-world functional mobility in older adults.

Aim: To evaluate the effect of neurobics-based task training on cognitive function and balance in older adults, and to compare it against a supervised walking program.

Materials and Methods: Seventy-two older adults aged 60-80 years with cognitive impairment (MoCA 18-25) and balance deficits were randomly assigned to either a neurobics-based task training group or a supervised walking group. Both groups attended three

sessions per week for four weeks. Outcomes were assessed at baseline and post-intervention using the Montreal Cognitive Assessment (MoCA), Four-Stage Balance Test (4SBT), and Dual-Task Timed Up and Go (DT-TUG).

Results: The neurobic group showed significantly greater improvements across all outcomes. MoCA scores increased by a mean of 2.89 points in the neurobic group versus 0.66 points in controls ($p<0.001$). 4SBT scores improved by 1.39 points compared to 0.31 points in controls ($p<0.001$). DT-TUG completion time reduced by 2.39 seconds in the neurobic group versus 0.42 seconds in controls ($p<0.001$).

Conclusion: A four-week neurobics-based task training program produced significantly greater gains in cognitive function, static balance, and dual-task mobility compared to supervised walking in older adults with mild cognitive impairment. The intervention is practical, low-cost, and achievable within a short timeframe, supporting its use in geriatric physiotherapy practice.

Keywords: Cognitive dysfunction, Dual-task performance, Postural balance, Task performance.

PARTICULARS OF CONTRIBUTORS:

1. MPT Student, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Noida, Uttar Pradesh, India.
2. Associate Professor, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Noida, Uttar Pradesh, India.
3. Physiotherapist, NeuroActiv Physiotherapy Clinic, Krishna Nagar, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Meena Gupta,
Associate Professor, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Sector-125, Noida-201313, Uttar Pradesh, India.
Email: mgupta9@amity.edu