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The Role of Physical Activity on Physical Fitness and Functional Ability in Community-dwelling Older People in Western Sri Lanka: A Structural Equation Model

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Background: The role of physical activity in enhancing physical fitness and functional ability of older people in upper income countries is well-researched. However, studies on interactions between physical activity (PA), strength, balance and functional status of the community-dwelling older people in low and middle-income countries are limited.

Objectives: To test the pathways in how the PA acts on improving physical fitness and functional abilities of community-dwelling older people in Sri Lanka.

Methods: A cross-sectional survey was done involving 880 community-dwelling older people (60 years and above) in Colombo, Sri Lanka. The Blair model was used to test the influence of PA on strength, anthropometrical measures, balance and functional status. Structural Equation Modelling (SEM) was evaluated using AMOS software.

Results: The final SEM model included five latent factors and 14 co-variances. Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative fit index (CFI), Tucker-Lewis Index (TLI), Normal Fit Index (NFI), Incremental fit index (IFI) and Root Mean Square Error of Approximation (RMSEA) values of the model were 0.95, 0.93, 0.93, 0.91, 0.92, 0.93 and 0.05, respectively, indicating a good model fit. Physical activity and age directly affect strength (β=0.61) and anthropometrical parameters (β=-0.41), and indirectly affect physical functions (β=-0.35) and Balance (β=0.52) ($p < 0.05$). Results suggest that strength is the direct contributor for good balance and physical functions in older people. There was a significant correlation between strength and age to the expected direction (β=-0.36, $p<0.05$).

Conclusions: Strength is the main contributor of PA. Muscle-strengthening PAs support enhancing the balance and functional performances in older people. Such physical activity programs need to be promoted among the community-dwelling older people in Sri Lanka.

Keywords: Blair model, Older people, Physical activity, Physical fitness