

## Publication

### An intergenerational approach in the promotion of balance and strength for fall prevention: a mini-review

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The risk of sustaining a fall is particularly high in children and seniors. Deficits in postural control and muscle strength either due to maturation, secular declines or biologic aging are two important intrinsic risk factors for falls. During life span, performance in variables of static postural control follows a U-shaped curve with children and seniors showing larger postural sway than healthy adults. Measures of dynamic postural control (i.e. gait speed) as well as isometric (i.e. maximal strength) and dynamic muscle strength (i.e. muscular power) follow an inverted U-shaped curve during life span, again with children and seniors showing deficits compared to adults. There is evidence that particularly balance and resistance training are effective in counteracting these neuromuscular constraints in both children and seniors. Further, these training regimens are able to reduce the rate of sustaining injuries and falls in these age groups. An intergenerational intervention approach is suggested to enhance the effectiveness of these training programs by improving compliance and increasing motivation of children and seniors exercising together. Thus, the objectives of this mini-review are: (1) to describe the epidemiology and etiology of falls in children and seniors; (2) to discuss training programs that counteract intrinsic fall risk factors by reducing the rate of falling, and (3) to present an intergenerational approach that has the potential to make training programs even more effective by including children and seniors together in one exercise group.

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