

**PICO Question:** *For community-dwelling adults over the age of 65, is a multifactorial weekly, group fall prevention program more beneficial than weekly conventional PT for improving scores on the Berg Balance Scale (BBS)?*

As our “baby boomers” age and life expectancies increase falls among our aging population will continue to create a huge public health problem.<sup>1-3</sup> In fact, one out of three community-dwelling older adults will sustain a fall each year while 20-30% of those who fall will suffer serious injuries.<sup>2,4</sup> Falls are typically due to a multitude of factors including decreased strength, impaired balance and coordination, dizziness, environmental obstacles, and impulsive behavior.<sup>2,5</sup> Therefore, evidence has proven that multifactorial assessments and intervention programs involving group exercise and education may be beneficial for improving fall related outcomes in geriatric patients.<sup>1,2,4-6</sup> Ten articles were reviewed on multifactorial group fall prevention programs targeted at increasing scores on the BBS and reducing falls rates in older adults. The results will help determine if this intervention is more effective than single-factorial interventions or conventional PT involving one-on-one balance and strength training once a week.

Nine of the ten articles reviewed utilized a randomized controlled design.<sup>1,3-10</sup> Although, inclusion criteria, outcome measures, and intervention components were significantly varied throughout the studies, there were also several commonalities. The majority of studies included only community-dwelling participants. Yet, Lui et al implemented their program with geriatric patients in an independent living facility while nursing home residents were the subjects of Donat and Ozcan’s program.<sup>3,5</sup> Nine of the programs reviewed also choose to exclude those with cognitive impairments.<sup>1,3-10</sup> The most common outcome measure was rate of falls with the BBS used consistently in five of the ten studies.<sup>3-5,8,10</sup> In regards to intervention, all programs utilized some form of group exercise, but the additional components of the programs and total hours of intervention differed significantly. Some programs focused heavily on physical exercise while others fixated more on counseling, environmental hazard assessments, and the psychosocial aspects of aging.<sup>7,10</sup>

The multifactorial programs that concentrated heavily on exercise and strength training and provided their participants with the greatest amount of total intervention hours yielded the most optimal results. Faes et al found their program to be ineffective.<sup>6</sup> Group sessions consisted mainly of psychological teaching and training components.<sup>6</sup> Although, there was a physical exercise component of this program, it involved ADL training as opposed to strength and balance exercises.<sup>6</sup> Salminen et al also found their multifactorial program to be unsuccessful at decreasing overall incidence of falls in their subjects who had only sustained one fall in the past.<sup>10</sup> Participants in the intervention group only exercised in a group setting for 45-50 minutes every other week.<sup>10</sup> Despite this infrequent exercise, the program was effective at reducing fall rates in elderly patients who had fallen three or more times.<sup>10</sup> Salminen’s study demonstrates the bimonthly exercise program was not intense enough for the higher functioning older adults, but may be optimal for the more frail elderly patients.<sup>10</sup>

Overall, eight of the ten articles reviewed found positive results for their multifactorial falls prevention program.<sup>1-5,7-9</sup> When effectively integrated, group exercise, fall education, behavioral and environmental risk factor modification, and medication review have the potential to reduce falls rates and improve BBS scores in elderly participants. None of the articles reviewed directly compared multifactorial fall prevention programs with conventional PT, but the positive findings in these studies are still clinically applicable. However, the most beneficial components and optimal delivery of the various interventions among the programs are still unclear. Future research needs to concentrate on standardizing samples of participants and outcome measures while determining the most advantageous components of the multifactorial programs.

## References

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