

**TITLE:** The Value of Balance Improvement in Cardiopulmonary Rehabilitation Programs

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**Background:** 30 to 40% of people over 65 fall each year. The average cost of a hospital admission for a fall is \$22,000. 10-15% of falls result in fractures. Fractures requiring surgery average \$69,000 per hospital admission. All total, falls cost the healthcare system \$19.2 billion / year. As the population ages, by 2020 these costs are projected to reach over \$50 billion / year. Many patients in cardiac and pulmonary rehab are at risk for falls.

**Methods:** We initiated a balance improvement program that identified those at risk through fall assessment screening. Over a six month period, all new cardiac and pulmonary rehab patients were evaluated with a Timed Up and Go test (20 ft in > 14 seconds = fall risk), and a 30 second Sit to Stand evaluation (< 12 stands/30 seconds = fall risk). Balance exercises were incorporated into each at-risk participant's exercise plan, with the intensity factored at the same RPE as their endurance training.

**Results:** At the completion of their programs (12 – 18 weeks, N = 24), the patients identified as at-risk were re-tested. 100% of the patients improved their T.U.G. times to less than 14 seconds (average decrease 25%). 100% of the patients improved their Sit to Stand to greater than 12 (average improvement 47.5%). Therefore, all patients completing their programs improved to a level of no longer being at-risk for falls.

**Conclusion:** Not all patients will improve as significantly as the 24 in this sample. However, these data do demonstrate that significant balance improvements can be achieved by including balance specific exercises into a rehab regime. In addition to reducing the potential for injury, adding balance improvement to cardiopulmonary rehabilitation programs can reduce hospital admissions, readmissions, and overall healthcare costs.