

# Case Study: Impact of Balance Training on Fall Risk in Older Adults

Clinics utilizing Aspire Motion have witnessed numerous success stories in helping elderly patients enhance their strength, balance, and stability. Many seniors struggle with a sense of helplessness as they age, believing their physical condition can only deteriorate. This mindset often requires physical therapists to double as motivators, instilling hope and encouraging their patients to believe in their potential for improvement.

Aspire Motion has become an invaluable tool in this process, empowering therapists to provide not just encouragement but also measurable proof of progress. One therapist, in particular, was delighted to observe significant improvements in three of his patients after just four weeks of balance training. While these patients reported feeling stronger and steadier, Aspire Motion's objective measurements provided concrete evidence of their progress. The before-and-after data eliminated any lingering doubts, boosting the patients' confidence and motivating them to continue their health journey with renewed energy.

## The Study

### Participants

The study involved three generally healthy elderly individuals free from serious medical conditions. While they experienced the typical age-related declines in strength, none had underlying health issues. All three participants were initially classified as high-risk fallers using the Aspire Motion Fall Risk Assessment. While all three performed well on the postural stability balance tests, two patients were flagged for the sit-to-stand test, and one was flagged for the gait test.

Patient	Gender	Age
A	F	72
B	F	86
C	M	77

### Assessment Metrics

In addition to Aspire Motion's assessments which included a 6x2-meter walk, eyes-open balance, eyes-closed balance, and sit-to-stands, several supplementary measurements were conducted. These included tandem stance hold time, single-leg stance hold time, Timed Up and Go (TUG), and forward reach.

## Intervention

The patients were prescribed a six-week balance and strengthening training regimen. The program consisted of half hour sessions three times a week focusing on exercises to enhance stability, improve muscle strength, and increase coordination. By the end of the program, all three demonstrated measurable improvements across all assessments.

## Results

### TUG

The TUG assessment measures functional mobility and balance during a task requiring standing, walking, and sitting. All participants showed improvements in TUG time, reflecting increased agility and better control in dynamic movements.

Patient	TUG (s)		
	Pre	Post	Change (s)
A	17	15.5	<b>-1.5</b>
B	19.46	14.19	<b>-5.27</b>
C	14.42	14.22	<b>-0.2</b>

### Aspire Motion Fall Risk Scores

Before the program, all three participants scored in the high-risk category on the AM Fall Risk Assessment. After 6 weeks, their scores improved by several points shifting each participant out of the high-risk category and into the upper-moderate range. This marked a meaningful reduction in fall risk.

Patient	Aspire Motion Fall Risk Score (1-10)		
	Pre	Post	Change
A	3	6	<b>3</b>
B	3	6	<b>3</b>
C	3	7	<b>4</b>

## Tandem Stance Hold Time

Tandem stance hold time measures balance stability with a narrow base of support. The maximum time duration was capped at 90 seconds. Patient C was able to maintain the tandem stance for over 90 seconds pre and post program, demonstrating strong balance capability. Patient B exhibited significant improvement after the training program. Similar gains were observed in single leg hold times.

Patient	Tandem - Left (s)			Tandem - Right (s)		
	Pre	Post	Change	Pre	Post	Change
A	4.5	9.76	-5.26	12.45	17.83	-5.38
B	13.6	90	-76.4	24.4	90	-65.6
C	90	90	0	90	90	0

## Forward Reach

The forward reach test evaluates a person's limits of stability by having a person stand shoulder width apart and reaching forward as far as they can. It requires good lower limb strength and core balance. Post program, all three participants showed increased forward reach distances, highlighting better control over their center of gravity and core strength.

Patient	Forward Reach (cm)		
	Pre	Post	Change
A	28	35	+7
B	20	34	+14
C	43	46	+3

## Conclusion

This case study underscores the effectiveness of Aspire Motion as an assessment tool for identifying fall risk and as a motivational resource for elderly patients. The objective measurements validated by other functional assessments such as tandem stance, forward reach, and TUG, provide clear evidence of progress. By offering objective and tangible proof of improvement, Aspire Motion empowers elderly individuals who may feel hopeless, inspiring them to regain confidence and actively engage in their journey toward better health.