OneStep

WHITE PAPER · FALL RISK ASSESSMENT

One Walk Is Enough

A single one-minute walk gives a fall-risk score as useful as the full assessment

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RE One Walk Is Enough: A Single One-Minute Walk Gives a Fall-Risk Score as Useful as the Full Assessment

One walk. A full-strength risk score.

Fall-risk screening usually means a battery of bedside tests, which takes clinician time that care teams do not have. OneStep's Fall Risk Assessment is built around a short, guided one-minute walk, recorded with a smartphone in the resident's pocket. This paper asks a practical question: how much of the assessment's accuracy comes from that walk alone, before the functional tests and balance questionnaires are layered on?

721
Residents scored from a single one-minute walk

0.62 vs 0.63
C-index, one-minute walk vs full FRA (not significantly different)

24% / 0%
25-day fall rate in Very High vs Low tiers, from the walk alone

1 min
To screen a resident, or no session at all when the walk is captured in the background

The answer: almost all of it. Scored from the one-minute walk, residents are ranked for fall risk about as accurately as by the full assessment, and the walk sorts them into clean, actionable risk tiers on its own: within 25 days, Very High residents fell at about one in four, High at 14%, Medium at 9%, and Low not at all. The full FRA, which also weighs functional tests, balance questionnaires and everyday gait, remains the most complete picture and the one to use whenever a fuller assessment is feasible. But a strong score does not require a full workup. And because the same gait features are captured passively whenever the resident walks with the phone in a pocket, the screening walk need not be a session at all: background walking can supply the same signal continuously, without staff time.

Screen everyone

A minute per resident, administered by any trained staff member, or captured passively from everyday walking, puts objective screening within reach of a whole building.

Act on the tier

The walk alone separates residents into the same four tiers as the full assessment, so care teams know who warrants attention first.

Add depth where it counts

Functional tests, questionnaires and passive gait sharpen the score for residents who need a fuller picture.

PART OF THE VALIDATION PACKET

This paper is one of three. **Clinical Validation of the OneStep Fall Risk Assessment** shows that higher FRA tiers fall sooner and more often. **Comparing the OneStep Fall Risk Assessment With Standard Clinical Measures** shows the FRA agrees with the Berg, TUG and sit-to-stand and out-predicts them. This paper shows that a single one-minute walk already carries most of that accuracy.

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A single one-minute walk gives a fall-risk score as useful as the full assessment

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ABSTRACT

Background. The OneStep Fall Risk Assessment (FRA) integrates a guided one-minute smartphone walk with functional tests, balance questionnaires, everyday gait and clinical history. Full assessment takes clinician time that care teams often lack.

Objective. To determine how much of the FRA's predictive accuracy is carried by the one-minute walk alone, and whether the walk by itself stratifies residents into actionable risk tiers.

Methods. Residents of senior-living and post-acute communities across four partner organizations with prospectively logged fall incidents, each entered at their first one-minute walk (n = 721). Five predictors were compared against time to first fall over 25 days by concordance index with paired bootstrap: the full FRA, an FRA computed from the one-minute walk alone, an FRA computed from the Timed Up & Go (TUG) alone, and the raw TUG and sit-to-stand (STS) tests; the last three were available in a head-to-head subset of 322 residents. Tier risks from the walk-only score were estimated by Kaplan–Meier cumulative incidence.

Results. Across 721 residents the one-minute-walk FRA reached a C-index of 0.62 versus 0.63 for the full FRA ($p = 0.19$). In the 322-resident head-to-head, the full FRA (0.71) and the one-minute walk (0.66) led and did not differ significantly ($p = 0.08$); the full FRA significantly out-predicted the TUG-only FRA (0.65, $p = 0.02$), raw STS (0.60, $p = 0.006$) and raw TUG (0.59, $p = 0.001$). From the walk alone, 25-day fall incidence was 24% in the Very High tier, 14% in High, 9% in Medium and 0% in Low (log-rank $p < 0.001$).

Conclusions. A single one-minute walk yields a fall-risk score and tier about as useful as the full assessment. The full FRA remains the most complete picture, but a strong score does not require a full workup.

KEY POINTS

Question	How much of the Fall Risk Assessment's accuracy comes from the one-minute walk alone?
Findings	In 721 residents, a score from the one-minute walk predicted falls about as well as the full FRA (C-index 0.62 vs 0.63, not significantly different) and on its own sorted residents into clear tiers: 24% of Very High residents fell within 25 days, 14% of High, 9% of Medium and 0% of Low.
Meaning	A single short walk is enough to screen; the full assessment adds depth where it is feasible.

KEYWORDS fall risk · screening · smartphone gait analysis · one-minute walk · concordance index · Kaplan–Meier · senior living · post-acute care

1 Introduction

Fall-risk screening usually means administering a battery of bedside tests, which takes clinician time that care teams do not have. The OneStep Fall Risk Assessment (FRA) is built around a short, guided one-minute walk, recorded with a smartphone in the resident's pocket, that measures how the resident actually moves; the full FRA layers functional tests, balance questionnaires, everyday gait and clinical history on top of it. The FRA has been validated against time to first fall,[1] and shown to agree with, and out-predict, the standard clinical measures.[2] This paper asks a practical question: how much of the FRA's accuracy comes from the walk alone?

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2 Methods

2.1 Cohort and outcome

Residents of senior-living and post-acute communities across four partner organizations in which fall incidents are prospectively logged as structured electronic health record data, each entered at their first in-window one-minute walk (n = 721). A head-to-head subset of 322 residents additionally had a score built from the TUG alone and raw TUG and sit-to-stand tests, the raw tests taken as the nearest measurement to baseline. The outcome was time to each resident's first fall from structured incident records, with single-spell, discharge-aware censoring.

2.2 Predictors

Five predictors were compared. Three are OneStep FRA scores, the internal algorithm applied to a subset of inputs: the full FRA; the one-minute-walk FRA, computed from the in-app guided walk (gait and turning); and a TUG-only FRA, computed from the TUG. Both reduced scores also incorporate the resident's reported fall history when on file, but neither uses the balance questionnaires (Berg, Tinetti), the fear-of-falling item, the other functional test or longer-term background gait, all of which the full FRA weighs. The remaining two predictors are raw test values: TUG time and sit-to-stand count.

2.3 Analysis

Discrimination was measured by the concordance index at a 25-day horizon, with model-versus-model differences tested by paired bootstrap on the same residents. Tier risks from the one-minute-walk score were estimated as Kaplan–Meier cumulative incidence over 25 days and compared by log-rank test.

WHAT IS THE C-INDEX?

The concordance index is a plain measure of how well a score ranks risk. Picture two residents, one who later fell and one who did not: the C-index is how often the score gave the higher risk to the one who actually fell. 0.50 is a coin toss and 1.00 is perfect. In fall-risk research, single bedside tests usually land around 0.60.

3 Results

3.1 As accurate as the full assessment

Across 721 residents, the one-minute walk reached a C-index of 0.62, against 0.63 for the full FRA, a difference that is not statistically significant (p = 0.19). Because not all assessment types were available for every resident, the comparison was repeated in the 322-resident subset with data for all five approaches (Figure 1, Table 1). There, the full FRA (0.71) and the one-minute walk (0.66) sit at the top and do not differ significantly (p = 0.08). Below them, the full FRA significantly out-predicts the TUG-only FRA (0.65, p = 0.02), raw sit-to-stand (0.60, p = 0.006) and raw TUG (0.59, p = 0.001). The two gait-based scores carry the signal; any approach resting on a single functional test lags behind. The one-minute walk is numerically above the single tests as well, but with the falls available that gap is not on its own statistically significant.

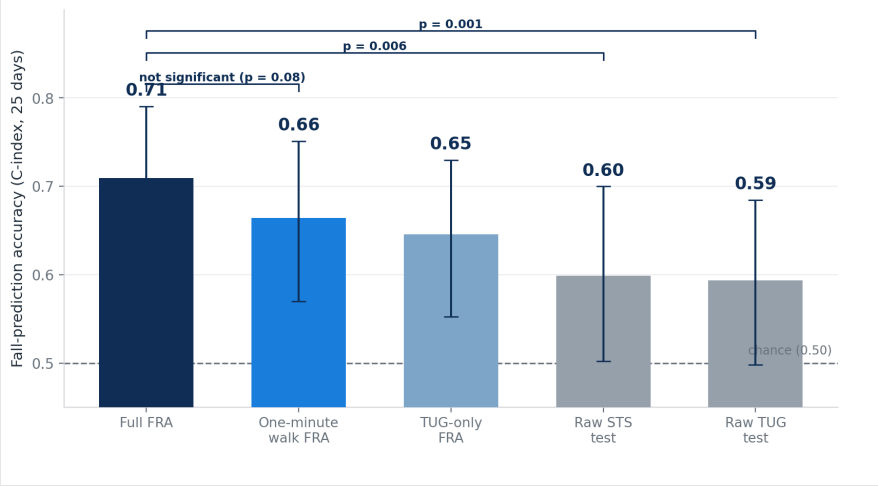


Figure 1. Fall-prediction accuracy (concordance index) in the same residents with every measure (n = 322). The full FRA and the one-minute walk lead and are statistically indistinguishable (p = 0.08); the full FRA significantly out-predicts the raw bedside tests and a score built from the TUG alone. Navy and blue bars are OneStep FRA scores; grey bars are raw bedside tests. Bars show 95% bootstrap intervals; 42 first falls within 25 days, paired bootstrap.

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Table 1. 25-day fall-prediction accuracy by predictor.

Predictor	Type	C-index, all residents (n = 721)	C-index, head-to-head (n = 322)	Versus full FRA
Full FRA	FRA score	0.63	0.71	Reference
One-minute-walk FRA	FRA score	0.62	0.66	Not significant (p = 0.19; p = 0.08)
TUG-only FRA	FRA score	—	0.65	Lower (p = 0.02)
Sit-to-stand, raw	Raw test	—	0.60	Lower (p = 0.006)
Timed Up & Go, raw	Raw test	—	0.59	Lower (p = 0.001)

3.2 The walk alone sorts residents into clear risk tiers

Accuracy is only useful if it translates into action. Scored from the one-minute walk alone, residents fall into four tiers that separate their real fall risk cleanly and in the expected order (Figure 2). Within 25 days, residents the walk rated Very High fell at about one in four (24%); High at 14%, Medium at 9% and Low at 0% (log-rank p < 0.001). This is the same stratification the full FRA produces in the companion validation,[1] here from the walk alone. A single walk is enough to tell a care team which residents warrant attention first.

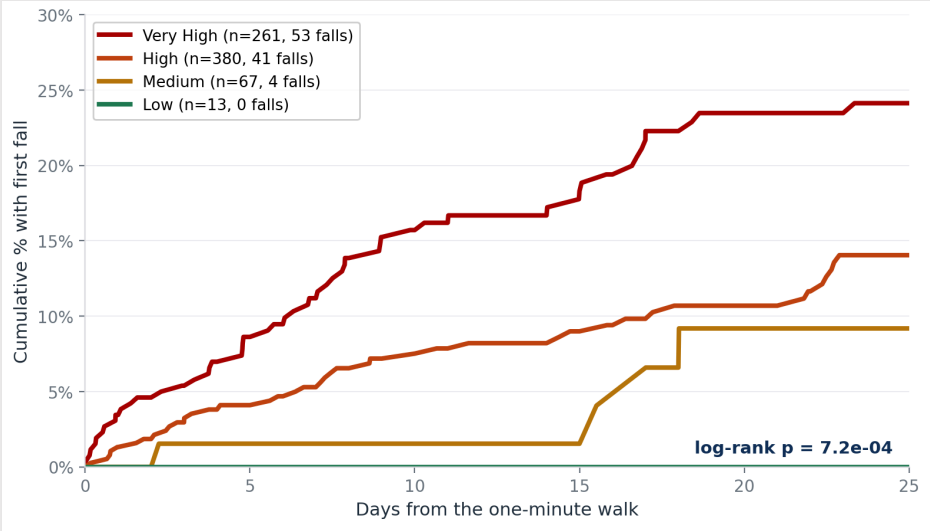


Figure 2. Time to first fall by one-minute-walk risk tier (Kaplan–Meier, n = 721). Very High (n = 261, 53 falls), High (n = 380, 41 falls), Medium (n = 67, 4 falls), Low (n = 13, 0 falls); log-rank p = 7.2×10^{-4}. The tiers separate cleanly: Very High rises fastest and Low has no events.

4 Discussion

The one-minute walk is not a stopwatch reading. Recorded with a smartphone in the pocket, it captures the spatiotemporal detail of how a resident actually moves: gait speed and cadence, the single strongest mobility signal; double-support time and left–right symmetry, markers of instability; and turning, the movement in which balance is most challenged and where many falls begin. These are the objective gait features at the core of the full FRA, which is why the walk alone already carries most of the predictive signal.

This does not argue for gathering less data. The full FRA, which also weighs functional tests, balance questionnaires and everyday gait, remains the most complete risk picture and the one to use whenever a fuller assessment is feasible. It means that a strong score does not require a full workup: a minute of walking, administered by any trained staff member, is

sufficient to screen a resident and place them in a tier that care teams can act on.

4.1 Limitations

The primary, best-powered claim is that the full FRA and the one-minute walk do not differ ($n = 721$, $p = 0.19$). In the 322-resident head-to-head, the full FRA significantly out-predicts each single-test approach, and the walk is numerically above the raw tests, but with about 42 falls that gap is not significant on its own, so this paper does not claim that the walk alone beats the bedside tests. The comparisons are best read as relative ones between input sets against real falls rather than as absolute fall rates. All data were de-identified.

5 Conclusion

A single one-minute walk, captured with a smartphone in the pocket, gives a fall-risk score and risk tier as useful as the full assessment, with no battery of tests to administer. Screen with the walk; add the fuller assessment where it is feasible.

References

1. OneStep Research Team. Clinical validation of the OneStep Fall Risk Assessment: time-to-event stratification in senior living and post-acute care. OneStep White Paper; September 2026. Available at onestep.co/resources.
2. OneStep Research Team. Comparing the OneStep Fall Risk Assessment with standard clinical measures: convergent validity and fall-prediction accuracy against the Berg Balance Scale, Timed Up & Go and sit-to-stand. OneStep White Paper; October 2026. Available at onestep.co/resources.

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