

INTRODUCTION

- Falls are strongly linked to impaired balance
- Tandem stance is critical but poorly assessed
- FSBT limitations:
 - Ceiling effects
 - Low sensitivity
 - Ordinal scoring

The SAS Mat standardises foot placement, and provides continuous, functional measurement.

METHODS

- 44 participants who were; age ≥ 65 , community-dwelling, independently mobile
- **Tests:**
 - SAS Measure (2 sessions)
 - FSBT (Four Stage Balance Test)
 - TUG (Timed up and Go)
- **Analysis:**
 - ICC (reliability)
 - Spearman correlations (validity)

RESULTS

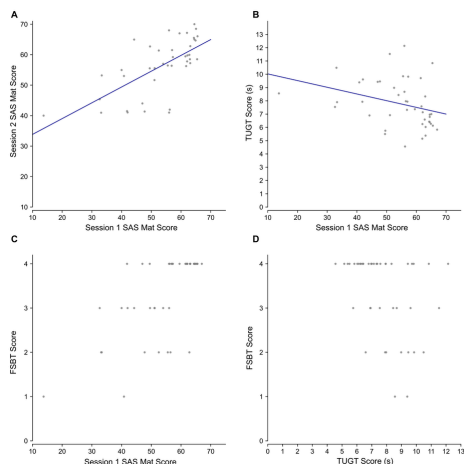


Figure 1: Plots of data used for psychometric testing of the SAS Measure. **A:** Session 1 SAS Measure score vs Session 2 SAS Measure score (n=41); **B:** Session 1 SAS Measure Score vs TUGT score (n=44); **C:** Session 1 SAS Measure Score vs FSBT Score (n=43); **D:** TUGT Score vs FSBT Score (n=44). Grey dots represent individual participant data points. Blue lines represent the Ordinary Least Squared regressions for plots of two continuous outcomes. Note that FSBT scores were ordinal and ranged from 1 to 4, but that individual scores have been vertically scattered in panels **C** and **D** to show all points.

KEY FINDING

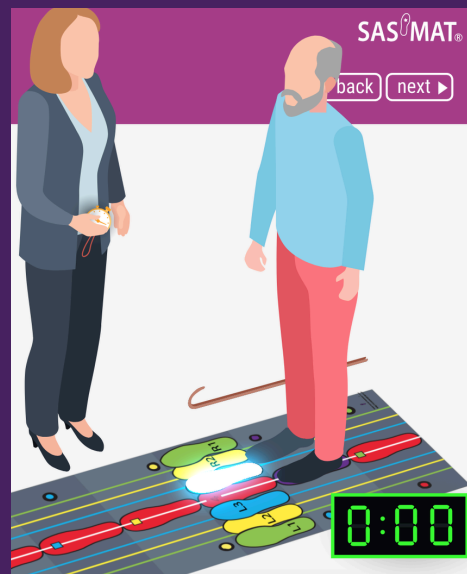
- 26 participants scored maximum on FSBT
 - 0 participants maxed SAS Measure
- ➔ **SAS identified hidden balance impairment**



A Step Forward in Balance Care: Psychometrics and Usability of the Stability, Agility, Strength (SAS) Mat as a balance assessment and training tool.

Anna Stackpool, Georgia Fisher, Tina Vickery, Alexander Bloomfield, Niclas Richter, Katharine Scrivener

The SAS Mat is a **reliable, valid** and **highly acceptable** tool for older adults

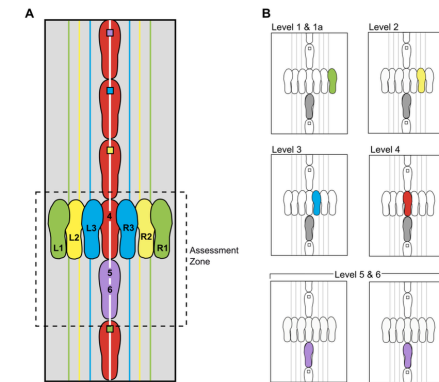


SAS Measure Training and App available.

Key Results

- **Reliability:** ICC up to 0.79
- **Validity:** Strong vs FSBT ($r = 0.67$)
- **Sensitivity:** Detected deficits in 100% of participants
- **Usability:** 98–100% confidence and comfort

The SAS Measure provides a more **sensitive** and **functional assessment** of balance, without sacrificing clinical practicality.



Level	Colour	Level Description	Score
0	Green	Did not attempt Level 1A position or could not let go of support.	0
1A	Green	Achieved Level 1 position with support, let go, and held 1s to 10s (T).	$0 + T$
1	Green	Achieved Level 1 position with no support, held 1s to 10s (T).	$10 + T$
2	Yellow	Achieved Level 2 position with no support, held 1s to 10s (T).	$20 + T$
3	Blue	Achieved Level 3 position with no support, held 1s to 10s (T).	$30 + T$
4	Red	Achieved Level 4 position with no support, held 1s to 10s (T).	$40 + T$
5	Purple	Achieved (L) SLS with no support, held 1s to 10s (L); Achieved (R) SLS with no support, held 1s to 10s (R).	$50 + \frac{T_L + T_R}{2}$
6	Purple	Achieved (L) SLS with eyes closed and no support, held 1s to 10s (L); Achieved (R) SLS with eyes closed and no support, held 1s to 10s (R).	$60 + \frac{T_L + T_R}{2}$

USABILITY

- 100% comfortable
- 98% confident
- 88% confident using at home
- 83% understood training benefits

CLINICAL IMPACT

- More sensitive than FSBT
- Suitable for:
 - Clinics
 - Home programs
- **Combines assessment + training**

LIMITATIONS

- Healthy population only
- Moderate reliability as single test
- Needs validation in clinical populations

CONCLUSION

The SAS Mat is a promising, practical and sensitive tool for:

- ✓ Balance assessment
- ✓ Early deficit detection
- ✓ Falls prevention pathways

