# Single leg squats predict independent stair negotiation ability in older patients referred for a physiotherapy mobility assessment at a rural hospital

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**Aim:** To determine whether single leg squats predict ability to negotiate stairs in older patients at a rural hospital on the NSW South Coast.

**Methods:** This cross-sectional analytic study recruited a systematic sample of 146 older patients, who presented to the Shoalhaven Hospital emergency department or were admitted to the acute wards and were referred for a physiotherapy mobility assessment. Three participants were excluded from data analyses because they did not meet the study criteria. Participants' ability to complete up to 18 single leg squats and negotiate up to 18 steps were measured. Covariates including knee range of motion, level of mobility, demographic data and patient experience variables such as pain, were collected through direct measure, interview or from medical records. Exact logistic regression was used to evaluate the predictive ability of single leg squats to negotiate stairs.

**Results:** Data was analysed for 143 participants with a mean age of $80.0 \pm 6.8$ years (50.3% male, 49.7% female). The squat test had 86% sensitivity, 100% specificity, 100% positive predictive value, and 49% negative predictive value in correctly predicting stair negotiation ability. Participants who could complete single leg squats were 57 times more likely to be able to independently negotiate stairs than participants who could not complete squats. Multivariate regression analysis indicated that frame use at time of assessment, pain severity and whether participants lived alone were significant and independent predictors of ability to negotiate stairs independently in the model with squat test. Thirteen percent of participants were unable to complete the squat test, but could negotiate stairs. This was partially explained by pain severity, frame use and whether participants lived alone. There was perfect agreement ($K = 1.0$) between assessors on assessment of ability to complete squats and negotiate stairs.

**Conclusions:** Single leg squats are an accurate predictor of stair negotiation ability in older acute patients, though a traditional stairs assessment would be required if older patients are unable to complete the squat test and may be required if older patients have moderate to severe pain, walk with a frame or do not live alone. Different physiotherapists assessments' of older patients' ability to complete single leg squats and negotiate stairs would likely be the same. The squat test is a more efficient assessment tool than traditional stairs assessments in determining patients' ability to negotiate stairs and suitability for discharge where reduced mobility is an issue.

**Implications for practice:** The use of the squat test would deliver benefits to the patient and hospital system through streamlining of the discharge process, potentially decreasing length of stay, improving patient flow and ensuring effective use of health professionals' and patients' time.

*For the full report on this project visit our website, follow the link to the Rural Research Capacity Building Program and click on 'view completed projects'*

Rowena currently works as a Rehabilitation Physiotherapist in the Shoalhaven area on the NSW South Coast. The opportunity provided by HETI - Rural to conduct her own research project has enabled Rowena to combine her passion for research to improve rural physiotherapy clinical practices. She has completed a graduate certificate in clinical rehabilitation and is currently completing postgraduate studies in biostatistics.

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