



# Using the Scratch Collapse Test to detect clinical or subclinical peroneal palsy in the hospitalized patient in order to prevent falls: a pilot study

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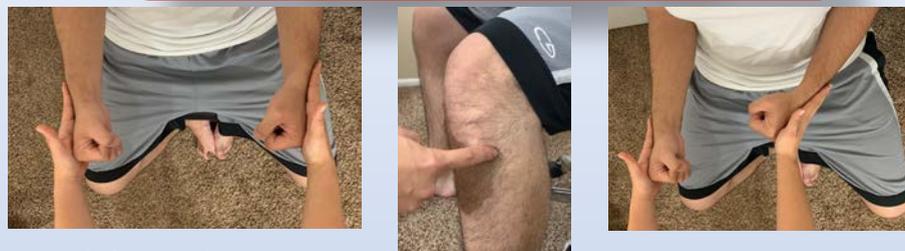
## Introduction

- The Scratch Collapse Test (SCT), an exam that is used to evaluate localized nerve compression after a superficial region of the affected nerve is grazed
- The use of this test in identifying nerve palsies in the lower extremity has not been extensively studied
- Patients who are interned in a hospital for several days and who do not routinely present as a fall risk may present with insidious peroneal nerve palsy (PNP) and related foot drop(FD).
- Therefore, the purpose of our study is to evaluate the use of SCT in a subset of hospitalized patients in order to identify the presence of subclinical PNP and thereby prevent falls.

## Methods

- IRB approved, prospective study of 13 of the required 87 patients
- Results of the SCT will be compared against the results of a detailed neuromuscular exam, including MRC grading of muscle strength and presence/absence of sensation in the peroneal nerve distribution
  - MRC  $\leq$  1 for ankle dorsiflexion, and lack of sensation between the first and second toe will be categorized as positive standards for “clinical foot drop”
- **Inclusion:** Male or female, 18-85 years old, hospitalized for 5 days or more, are cognizant, are able to ambulate
- **Exclusion:** Patients with an inability to maintain foot eversion
- **Primary outcome:** Positive or negative SCT
- **Secondary outcomes:** MRC strength, sensory deficits, clinical peroneal palsy, Morse Fall Scale

## Scratch Collapse Test



From left to right:

- First, test bilateral external rotation strength in the upper extremities with the patients elbows against their sides to ensure equal strength
- Scratch the skin overlying the peroneal nerve distribution
- Once again test for bilateral external rotation strength in the upper extremities. If the ipsilateral side collapses, then there is the possibility of peroneal nerve palsy.

## Figures & Tables

	Positive SCT	Negative SCT	p-value
Number (%)	8 (61.5)	5 (38.5)	-
Age (years)	57.6	57.6	0.998
Gender (% Male)	50	90	0.319
Position (% Supine)	62.5	90	0.546
Length of stay (days)	12.6	5	<b>0.043</b>
Laterality (% Right)	62.5	40	0.471

	Positive SCT	Negative SCT	p-value
Strength			
MRC Foot Dorsiflexion	4.8	5	0.260
MRC Toe Dorsiflexion	4.8	5	0.260
MRC Foot eversion	4.8	5	0.260
Sensory Deficits	0	0	N/A
Clinical Peroneal Palsy	0	0	N/A
Morse Fall Score	52.9	32.5	0.132

## Study Summary

- In the 13 patients on bedrest for more than 5 days and with no clinical peroneal palsy, 61.5% had a positive SCT.
- Patients with a positive SCT had a significantly ( $p=0.04$ ) longer hospital length of stay (12.6 vs. 5 days).
- Patients with a positive SCT had a statistically non-significant decrease in muscle strength in foot dorsiflexion, toe dorsiflexion, and foot eversion.
- Patients with a positive SCT had a statistically non-significant increase in Morse Fall Score (52.9 vs. 32.5)
- There were no reported falls in either group

## Conclusions and Future Direction

- Patients with positive SCT had a normal lower extremity clinical neurological exam
- Patients with a positive SCT were more likely to stay in the hospital longer, possibly predisposing them to:
  - continued risk for falls
  - Peroneal nerve palsy from prolonged bed rest
  - Hospital acquired illnesses, decubitus ulcers
- Fall scores do not typically weigh the results of neurological exams into their risk calculation. If proven to be
- Sensitivity/Specificity analyses study comparing SCT to a gold standard, EMG, are needed to really determine the clinical utility of the SCT in diagnosing peroneal nerve palsy