

Reference

Ferraro C.

# Outcomes Study of Transtibial Amputees Using Elevated Vacuum Suspension in Comparison With Pin Suspension

Journal of Prosthetics and Orthotics 2011; 23(2):78–81.

Products

## Vacuum-assisted socket system\* (VASS) vs Pin locking suspension system (PSS)

\*supplier unknown

Major Findings

With VASS compared to PSS:

→ **Decreased risk of falling**

Balance increased by 23%

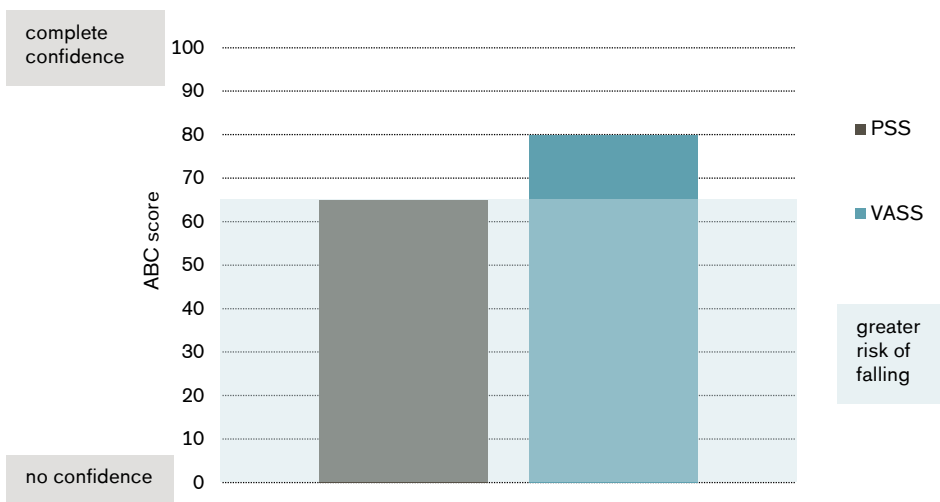
→ **86% of subjects reported an increased walking time**

→ **Trend towards increased limb health**

38% less blisters

8% less redness of the skin

### Improved balance with VASS



The Activities-specific Balance Confidence (ABC) rates the balance confidence for performing activities. The marked part (scores of 67 or lower) indicates a greater risk of falling in the elderly.

Population

Subjects:	13 transtibial and transfemoral amputees
Previous socket system:	Pin locking suspension system
Amputation causes:	not reported
Mean age:	not reported
Mean time since amputation:	≥ 6 months
MFCL:	K2, K3, K4

## Study Design

Interventional, pre- to post-test design:



## Results

Body Function				Activity			Participation	Others	
Wound Healing	Limb Volume Fluctuation	Pain	Comfort, Limb Health	Level Walking	Balance	Activity, Mobility, ADLs	Preference, Satisfaction, QoL	Pistoning	Pressure Measurement

Category	Outcomes	Results for VASS vs PSS	Sig.*
Comfort, Limb Health	Questionnaire about perception of comfort and skin breakdown	Subjects reported 46% less pistoning, 38% less blisters, 8% less redness of the skin.	+ + +
Balance	Activities-specific Balance Confidence Scale (ABC)	<b>ABC score increased by 23%.</b> (n = 9 transtibial amputees)	<b>++</b>
Activity, Mobility, Activities of daily living (ADLs)	Questionnaire about activity and falls	86% of subjects reported increased walking time. 31% of subjects reported less falls.	+ +

\* no difference (0), positive trend (+), negative trend (-), significant (++/--), not applicable (n.a.)

## Author's Conclusion

"Due to more intimate fit of the socket, more secure hold, and decrease in pistoning with the vacuum system, lower incidence of predicted future falls can be achieved. Moreover, fewer skin problems and therefore increased comfort may account for the increased walking times." (Ferraro 2011)

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