Reference

Portnoy S, Frechtel A, Raveh E, Schwartz I.

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Prevention of Genu Recurvatum in Poststroke Patients Using a Hinged Soft Knee Orthosis

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Products

Genu Neurexa

Major Findings

With Genu Neurexa compared to wearing no orthosis:

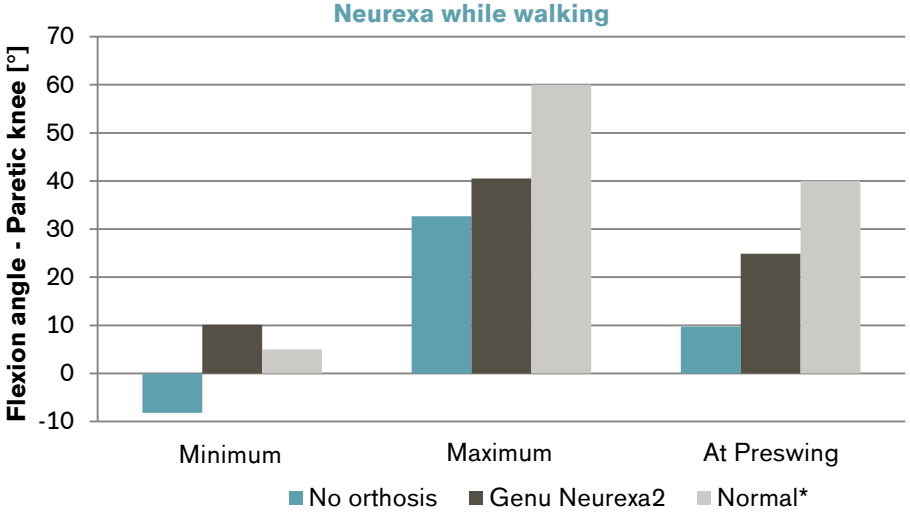
→ Prevention of hyperextension and higher knee flexion angle while walking.

→ Significant improvement in all Functional Tests when using Genu Neurexa:

- Berg Balance Scale (BBS): + 7.0%
- 6-Minute Walk Test (6MWT): +16.5%
- 10-Meter Walk Test (10MWT): + 6.9%
- Timed Up and Go Test (TUG): +10.6%

→ High user satisfaction with an OPUS-Satisfaction with Devices score of 13.8 ± 3.9 (9=very satisfied, 36=very dissatisfied)
(Average score of the 9 questions is 1.5 ± 0.4, where 1 reflects very satisfied and 4 very dissatisfied)

Improved knee flexion angle of the paretic knee with Genu Neurexa while walking



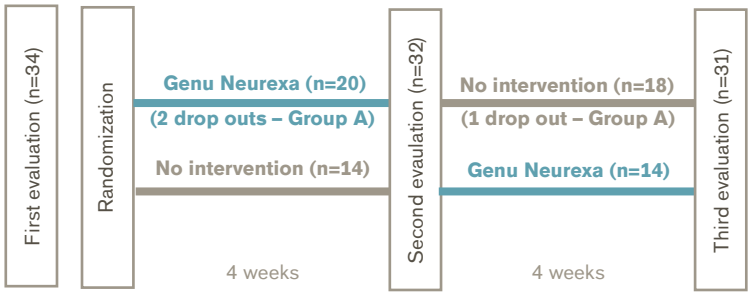
*Perry, J. (2010). Gait analysis. *Normal and Pathological Function*, *2nd edition*.

Population

Subjects:	31 (23 men, 8 women)
Mean age:	59.9 ± 15.1 years
Mean body mass:	76.1 ± 11.7 kg
Time after stroke:	6.1 ± 6.7 years
NIHSS:	7.5 ± 2.1
(National Institute of Health Stroke Scale)	*(Total range from 0 (normal function) to 42 (severe impairment))*

Study Design

Interventional, single crossover with randomization:



Results

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction

Category	Outcomes	Results for Genu Neurexa	Sig.*
Biomechanics – Gait analysis	Sagittal angle of paretic knee	**The flexion angle of the paretic knee was significantly higher with Genu Neurexa compared to wearing no orthosis:**	
		<u>Minimum:</u> **The hyperextension was prevented with Genu Neurexa compared to wearing no orthosis.**	**++**
		<u>Maximum:</u> **The maximum flexion angle increased by 23.9% with Genu Neurexa compared to wearing no orthosis.**	**++**
		<u>At Preswing:</u> **A significantly higher flexion angle (+156.7%) was recorded at Preswing with Genu Neurexa compared to wearing no orthosis.**	**++**
	Spatiotemporal parameters and gait symmetry	No significant differences for the recorded spatiotemporal and gait symmetry results were found.	0
EMG	Activation time and Peak RMS (root mean square)	No differences for paretic and nonparetic leg were found when comparing Genu Neurexa to wearing no orthosis.	0
Functional tests	Berg Balance Scale (BBS)	**The BBS was significantly improved by 7% with orthosis compared to wearing no orthosis.**	**++**
	6-Minute Walk Test (6MWT) [m]	**The covered distance within 6 minutes increased by 16.5% with Genu Neurexa compared to no orthosis.**	**++**
	10-Meter Walk Test (10MWT) [s]	**The users were significantly faster by 6.9% with Genu Neurexa compared to wearing no orthosis.**	**++**
	Timed Up and Go Test (TUG) [s]	**The TUG was performed significantly faster by 10.6% with Genu Neurexa compared to wearing no orthosis.**	**++**
Satisfaction	OPUS-(Orthotics and Prosthetics User's Survey) — Satisfaction with Devices	**The users rated to be very satisfied with the orthosis with an score of 13.8 ± 3.9, where 9 reflects great satisfaction and 36 great dissatisfaction.** *(Questionnaire included 9 questions about the orthosis, with an average score of 1.5 ± 0.4)*	n.a.

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

Author's Conclusion

"Using a hinged soft knee orthosis to prevent genu recurvatum after stroke may be considered a viable option to prevent falls and fall-related injuries by restoring balance and confidence in the patient and increasing foot clearance" (Portnoy et al. 2015)