
Reference

Blumentritt S, Ludwigs E, Bellmann M, Boiten H.

Otto Bock HealthCare GmbH, Research, Duderstadt, Germany

The new Hip Joint Helix^{3D}

Orthopädie Technik 2008; 59(8):345-349.

Products

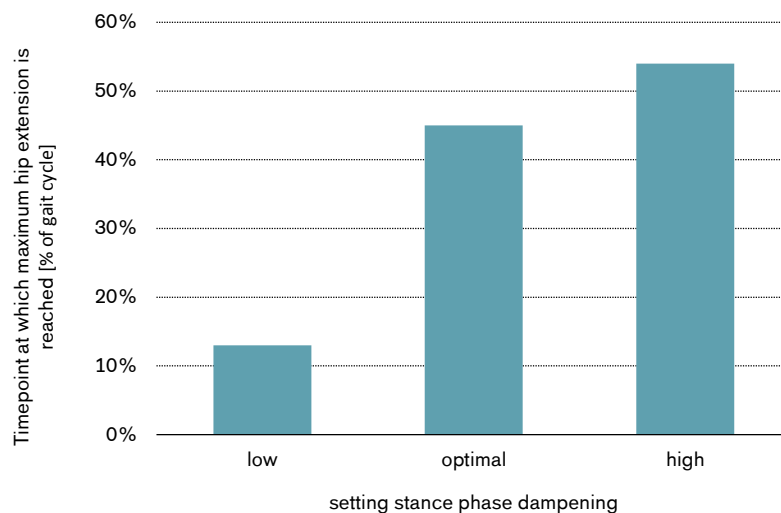
Helix^{3D} vs 7E7

Major Findings

With Helix^{3D} Hip Joint System compared to 7E7:

- **Increased toe clearance**
- **Timepoint of maximum hip extension angle in gait cycle as well as step length can be adjusted by swing phase and stance phase settings**
- **Supported swing phase initiation**
- **Pelvis tilt reduced by around 6°**

Maximum hip extension angle depends on settings of stance phase dampening



Population

Subjects:

18 disarticulation and 3 hemipelvectomy amputees for assessment of prosthetic fit
6 disarticulation amputees for biomechanical motion analysis

Study Design

Technical report and description of first experiences when subjects walked with test prosthesis

Results

Activities								Participation	Environment
Level walking	Stairs	Ramps, Hills	Uneven ground, Obstacles	Cognitive demand	Metabolic energy consumption	Safety	Activity, Mobility, ADLs	Preference, Satisfaction, QoL	Health economics

Category	Outcomes	Results for Helix ^{3D} compared to 7E7	Sig.*
Level Walking	Motion analysis	Pelvic tilt over gait cycle is reduced by around 6°. Maximum extension hip angle in stance phase is reached smoother through hydraulic dampening. Based on the settings of the stand phase dampening, the maximum extension hip angle is reached between 13% and 54% of the gait cycle. Allows for knee flexion angle in stance phase. Hip flexion movement starts right at the beginning of stance phase based on the polyurethane elements and therefore swing phase initiation is supported. Knee and hip joint flexion in swing phase occurs simultaneously and therefore toe clearance is ensured. Subjects reported that the combined movement of the hip joint, meaning flexion and rotation, is in particular useful during stance phase when walking slowly. With changing the settings of swing phase dampening, step length can be adjusted.	n.a.

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

Author's Conclusion

"First results and experience gained by biomechanical gait analysis studies as well as trial fittings conducted with a total of 21 disarticulation or hemipelvectomy patients are reported. During ambulation the pelvis position in stance phase is controlled and pelvis tilt reduced. The initiation of swing phase is supported. Interaction between hip and knee joint (C-Leg) allows enhanced shock absorption at weight acceptance, causes stance phase flexion and provides for more toe clearance during mid swing phase." (Blumentritt et al. 2008)

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