Oral Presentation
Track 3: Musculoskeletal systems and Performance - Joint ISB/ESB Track
3.6. Gait Variability

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Gait kinematics in CP children participating in three year rehabilitation program

T. Bober, A. Dziuba

Biomechanics Laboratory, University School of Physical Education Wroclaw, Poland

The paper is focused on the foot-knee mechanism and changes in the foot rocker in gait cycle. Three CP children were selected from a group participating in a three year individual physiotherapy program supplemented with exercises on the active balance saddle as a substitute of hippotherapy. Each kind of session was administered 2-3 times a week. Gait of these children was videotaped after every period of 6 months of rehabilitation. SIMI Motion system was used for data collection.
The children presented in the paper are: No. 1, 10.5 years old (at the last session) with spastic diplegia classified on level 3 with GMFCS who underwent tendo-Achilles lengthening (TAL), No. 8, 4.6 years old, with spastic hemiplegia classified on level 4 with GMFCS who walked with anterior walker, No. 10, 10.7 years old, with spastic hemiplegia classified on level 1 with GMFCS.
Step frequency, knee-foot angle relationship and especially the foot mechanism were analyzed.
Subject 10 walked with a frequency of 120 step/min and his velocity of the 1st and 3rd foot rocker was 3-5 and 5-8 rad/s, respectively. His walking ability didn't change much over the entire period.
Subject 1 began the program after TAL. There was no dorsal flexion at IC, however a very slight improvement of the 1st foot rocker was noticed at the two last video sessions. The velocity of 3rd rocker was 3-5 rad/s.
The youngest subject (8) at the first video session could walk with assistance, stepping on flat foot, and showed 3rd rocker with velocity 3 rad/s. Thereafter he walked with walker, stepping on forefoot almost through the entire MSt and TSt. The 3rd rocker was weak with velocity about 1 rad/s. At the last (6th) session a slight improvement was recorded.

Reference: *Dziuba A., Sutherland A, Bober T. Hippotherapy: Comparison of the BABS simulator with five walking horses. Proceedings of the 6th Annual Conference, Southampton 2000; 107-108.*