Gait kinematics in CP children participating in three year rehabilitation program

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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.