

Developmental Changes of Muscle Synergies in an Infant's Walking

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● 06 – Neural and Rehabilitation Engineering

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Neural Processing – Human Performance, Disorders and Rehabilitation

This study investigated the development of muscle synergies (spatiotemporal coordination patterns of muscle activities) of an infant's walking. We analyzed electromyography (EMG) measured in one infant during growth (4-18 weeks of age).

Background

My grandfather, Dr. Tsutomu Okamoto had researched electromyographical gait development studies for fifty years. His studies analyzed the muscle activity patterns recorded with surface electrodes qualitatively.

The results have been cited in the famous book “Muscles Alive” by J.V. Basmajian and globally translated texts such as “Motor Control” and “Research Methods in Biomechanics”. They are relevant not only to the explanation of upright bipedal walking, but also to a variety of research fields pertaining to infant locomotion and walking.

Since then, he had undertaken additional longitudinal/cross-sectional experiments on the stepping motion from the neonatal to the infancy period, and had presented the results of his research on infant walking acquisition internationally.

“Walking acquisition is both a milestone of early locomotor development and a launching point for subsequent locomotor development.” Okamoto Ph.D. & Okamoto Ph.D.



Please check here for more details!



EMG experiment of infant walking