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Functional hallux limitus: A predisposing factor of flat foot deformities

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Functional hallux limitus (Fhl) is a loss of metatarsophalangeal joint extension during the second half of the single-support phase, when the weight bearing foot is in maximal dorsiflexion. Functionally, it constitutes a “sagittal plane blockade” attributed to a tendon glide limitation, namely the Flexor Hallucis Longus (FHL) at the level of its retrotalar pulley (tenodesis effect). The foot stability mechanisms are disrupted, leading to an asynchronous mistimed gait that alters the biomechanics of the lower limb. During the last 15 years it has been prospectively studied matched patient cohorts with various pathologies related to the existence of Fhl in 3 referential planes by the use of 2D and 3D gait analysis with the implementation of treadmills, inertial and plantar pressure sensors, and surface electromyography analysis. More than 500 uncomplicated surgical interventions have been performed by use of newly developed endoscopic technique comprising of the Fhl tenolysis at the level of its retrotalar pulley. In the patients it has been documented substantial favorable changes regarding the duration and the area distribution of forces applied under the 1st MTTP joint and the Hallux, thus highlighting the biomechanical importance of the Fhl in the etiology of foot pathologies and also the safety and efficacy of our endoscopic technique pertaining to its treatment. In experience, forefoot, mid and hindfoot degenerative changes and flatfoot deformities are closely related to the Fhl. A high index of suspicion ensures the timely conservative or surgical treatment, thus preventing Fhl's manifestations regarding the lower extremity and the lower back.

Biography

Jacques Valloton received his Medical Degree from the University of Lausanne Medical School and concluded his residency at the Lausanne University Hospital (CHUV) where he was appointed Chief of Sports Department. Subsequently, he was fellowship-trained in Sports Medicine and Reconstructive Surgery in various US and French Centers. His research interests include the Biomechanics of Human Locomotion and the development and design of new implants for reconstructive surgery. He is the founder of Medicol, an Orthopedic Center of Excellence promoting the collaboration between different disciplines of both private and University sectors. He has presented his work in numerous International Congresses and is a member of the most prestigious Orthopedic Organizations.

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