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Static and dynamic biomechanics of the lower limbs and gait during and its importance to direct therapeutic exercise

Ana Paula Ribeiro

Sao Paulo University School of Medicine, Brazil

The purpose of this literature review was to evaluate the studies that have investigate static and dynamic biomechanics changes of the lower limbs and gait patterns during pregnancy and its importance to direct therapeutic exercise. Original articles on this subject, published between 1934 and 2012, were considered. In general, pregnant women demonstrated static postural adaptations, such as increased lumbar curvatures and pelvic inclinations, reduction of the dissociations between the movements of the pelvis and trunk, knee valgus misalignments and possible reduction in plantar arch. All these changes result in decreased postural stability, ankle plantar flexion and foot proprioception. The postural stability gradually decreases during pregnancy and remains reduced up to 6-8 weeks after childbirth, increased the risk of falls. These changes could explain the gait patterns of pregnant women characterized by greater hip flexion angles, greater extensor and abductor hip moments, which were maintained up to 4 months after delivery. In addition, decreases of the plantar flexion and the propulsion forces resulted in longer step lengths and widths and greater anterior-posterior and medial-lateral sways. This resulted in redistributions of the plantar loads with increased loads in the fore foot and decreased in the rear foot. All of these findings suggest that physiotherapists in clinical practice should observe and propose intervention programs that emphasize postural balance and the prevention of falls by the maintenance of adequate tonus and strength of the lower limb muscles, particularly in the hips, to be able to cope with the higher force demands during functional and static activities.

Biography

Ana Paula Ribeiro has completed his PhD at the age of 30 years from Sao Paulo University, School of Medicine, SP, Brazil and also is conducting postdoctoral studies at the same University. She is a researcher and professor at the School of Medicine, University of Santo Amaro, SP, Brazil and coordinator of the Laboratory of Biomechanics and Rehabilitation Musculoskeletal with emphasis on research in the areas: Women's Health, Running and Gait Biomechanics, and Corporal Posture. She has published more than 15 papers in reputed journals and serving as a reviewer for several reputed journals in the areas of knowledge.

anapaulafisioterapia@yahoo.com.br