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The relationship between the foot pressure pattern and spinal curve changes during first pregnancy

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Marked biomechanical changes occur during pregnancy varying from changes in spinal curve angles to changes in the center of mass (com), which, in turn, may affect on their center of feet pressures (cop). Due to the link between the foot and spinal curvature angles during a pregnancy period, the current study aimed to focus on the relationship between the foot pressure pattern and spinal curvatures throughout the pregnancy. Thirty primigravida pregnant women were recruited in this observational longitudinal study. All subjects were studied at their 10th, 21st, and 32nd weeks of pregnancy and compared with 18 non-age-sex matched non-pregnant women as the control group. A Zebris pedobarograph tool (Germany) measured the subjects' foot pressure pattern in static standing position and the lumbar and thoracic curve angles were measured with a flexible ruler. The results showed a different pattern of increasing lumbar and thoracic curve angles during the pregnancy. That is, the lumbar curve increased rapidly at trimester one and two ($p < 0.05$) and then increased very slowly till the end of the pregnancy ($p > 0.05$). However, the thoracic curve resisted to show an increased curvature at trimester one and two ($p > 0.05$), but suddenly increased hyperkyphosis at trimester three ($p < 0.05$). In terms of foot pressure pattern, the pregnant subjects shifted thier cop back and increased hindfoot pressure throughout the whole pregnancy period. In conclusion, definite postural and foot pressure pattern changes occurred during first pregnancy, which increased while pregnancy period progressed. The increased thoracic curve angle and hind-foot pressures occurred to compensate the immediately increased lumbar curve angle to achieve a balance as pregnancy period progresses. In brief, obvious relationship was shown between the spinal curve changes and foot pressure patterns in all three trimesters of the pregnancy to enable the pregnant women to keep their posture as upright as possible.

Biography

Abbas Rahimi has completed his bsc and msc degrees in Iran in Physiotherapy and phd from the University of Nottingham, Queens Medical Center in Sports Medicine in 2001. He is a university Professor at the School of Rehabilitation and teaches both undergraduate and postgraduate physiotherapy students. His main interests are sports physiotherapy, particularly ACL-deficient and ACL-reconstructed knees and motion analysis systems. He has published more than 80 papers (50 in domestic and 32 in ISI/Pubmed/Scopus journals).

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