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Lumbosacral zone features in individuals with nonspecific low back pain are unique compared to controls and correlate with pain and dysfunction

Abstract: The study aimed to compare the lumbosacral nerve distances (LNDs) and sacroiliac joint (SIJ) morphology in individuals with nonspecific chronic low back pain (NSCLBP) and controls and examine their correlations with pain and dysfunction. The sample included 200 young adult patients (ranging from 20-50 years old) referred for abdominal computerized tomography (CT):100 individuals with NSCLBP (50 males and 50 females) and 100 individuals without NSCLBP (50 males and 50 females). CT scans were assessed for LNDs, degenerative sacroiliac changes, and joint bridging. Those factors were correlated to the outcomes of three self-reported questionnaires about pain and function (Oswestry, Fear avoidance and Numerical Pain Rating Scale). The results indicated that Individuals with NSCLBP tend to have reduced LNDs from the sacral part of the SIJ compared to controls (Males: right - Δ = 5.8 mm, left - Δ =6.03mm; Females: right – Δ = 7.9 mm, left - Δ = 7.73mm, ANOVA- $p<0.01$), with moderate significant negative correlations with all three questionnaires ($-0.38<$Pearson's $r<-0.57$, $p<0.02$, i.e., reduced LNDs with greater disability and pain). The NSCLBP group had more significant SIJ degeneration severity that moderately correlated with two questionnaires ($0.39<$Pearson's $r<0.66$, $p<0.04$, i.e., greater SIJ degeneration with greater disability and pain). In males, existence of SIJ bridging strongly correlated with all three questionnaires ($0.38<$Pearson's $r<0.78$, $p<0.03$) and in females only the Fear-Avoidance questionnaire and Numerical Pain Scale ($0.29<$Pearson's $r<0.41$, $p<0.04$). In conclusion, compared to controls, individuals with NSCLBP have reduced LNDs and worse SIJ degenerative changes that correlate with function and Pain.

Biography: Professor Youssef Masharawi is an Associate Professor in the Department of Physical Therapy at Tel Aviv University. A licensed physiotherapist, he specializes in spinal disorders, integrating manual therapy, biomechanics, and rehabilitation science. He holds a Ph.D. in Anatomy and Anthropology from Tel Aviv University and completed postdoctoral research in Denmark. He leads the Spinal Research Laboratory, focusing on clinical, functional, and epidemiological aspects of spinal health. Professor Masharawi has published extensively, teaches undergraduate and graduate courses, and mentors research students. He also promotes diversity as head of the Arab Integration Committee at Tel Aviv University and is active in international spine research societies.

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