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

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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.

Image

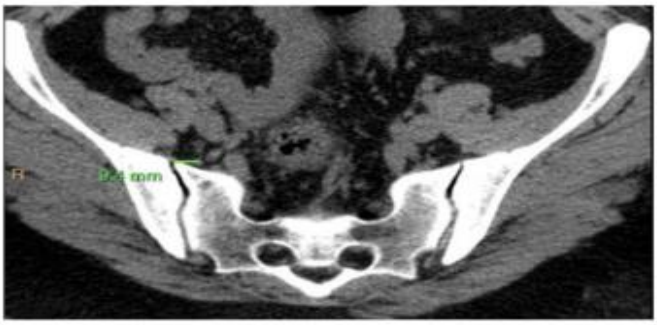


Fig. 1 Measurements of the lumbosacral nerve distances

Recent Publications

1. Masharawi Y, Mansour AM, Peled N, Weisman A. A comparative shape analysis of the cervical spine between individuals with cervicogenic headaches and asymptomatic controls. Scientific Reports. 2021;11(1):19413.

2. Masharawi Y, Haj A, Weisman A. Lumbar Axial Rotation Kinematics in an Upright Sitting and With Forward Bending Positions in Men with Nonspecific Chronic Low Back Pain. Spine. 2020;45(5): E244-E251.

3. Haj A, Weisman A, Masharawi Y. Lumbar axial rotation kinematics in men with non-specific chronic low back pain. Clinical biomechanics. 2019; 61:192-198.

4. Abu-Leil S, Weisman A, Floman Y, Galbusera F, Masharawi Y. A morphological characterization of the lumbar neural arch in females and males with degenerative spondylolisthesis. BMC Musculoskeletal Disorders. 2021;22(1):1026.

5. Eisenberg VH, Sela L, Weisman A, Masharawi Y. The relationship between diastasis rectus abdominus, pelvic floor trauma and function in primiparous women postpartum. International Urogynecology Journal. 2021.

Photograph



Biography

Youssef Masharawi is an associate Professor and Head of the Master Program in the Physical Therapy Department at Tel Aviv University. Prof. Masharawi established the Spinal Research Lab for clinical and functional research projects concerning the spine and related conditions. He published more than 90 studies in leading peer-reviewed international Journals related to the Spine and musculoskeletal disorders. He teaches undergraduate and postgraduate physical therapy students about the clinical reasoning process and physiotherapy in the movement system and spinal form and function. He has supervised more than 30 Masters and PhD students.

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Notes/Comments: