

Neuromuscular changes are to blame for lower-back pain during pregnancy

September 10 2018

New research shows that neuromuscular changes during pregnancy lead to bouts of lower-back pain and not an increase in the lumbar curvature, as has traditionally been thought

One of the most common complications during [pregnancy](#) is lower-back pain, which affects between 50 percent and 70 percent of [pregnant women](#). For the population on the whole, lower-back pain is associated to changes in the spine's biomechanics. However, these changes had not been comprehensively studied until now in the case of pregnant [women](#). CEU UCH researchers Gemma Biviá and Juan Francisco Lisón, together with Daniel Sánchez Zuriaga, of Valencia University (UV), have analysed the changes to the spine and the [muscle](#) groups of the lower back during the last three months of pregnancy, comparing results to the same women after birth and to women who were not pregnant. The results, which detail the neuromuscular mechanisms that could cause lower-back pain, have recently been published in two scientific journals: *Plos One* and *The Spine Journal*, edited by the North American Spine Society.

In the study, the CEU UCH and UV researchers assessed the curvature of the spine and muscle activation in the lower backs of 34 pregnant women entering the third trimester of pregnancy, and compared the results to another group of 34 women who had not given birth. In the case of the 34 pregnant women, the study was repeated two months after giving birth in order to compare the results. In the first phase of the study, the activation level of the erector spinae and femoral biceps

muscles were studied with electromyography techniques, as well as the lower-back curvature while standing.

The curvature is an optical illusion

UCH CEU researcher Gemma Biviá highlights that "pregnancy does not seem to modify lumbar lordosis, as traditionally thought. The common belief that pregnancy increases the lower-back curvature could be related to a simple [optical illusion](#). What we did observe was that pregnant women activate the lumbar muscles more intensely during the last three months of pregnancy when compared to those who are not pregnant."

The results of this research show that lumbar muscles develop an adaptative response to the increase in abdominal volume due to the size of the child in the last stage of pregnancy. "Until now, the origin of lower-back pain had been associated to an increase in the lumbar curvature, to the point that exercises to decrease it were recommended. However, our results show that pregnancy alters the muscular response, which is key when designing exercises that decrease lower-back pain—which is so common among pregnant women," Biviá says.

The origin of lower-back pain during pregnancy

Based on these results, and to examine the possible relation between lower-back pain during pregnancy and the alteration of muscular activation, the CEU UCH and UV researchers also studied the lumbar spine movement and the activation of the erector spinae muscle when bending over, comparing the results of the pregnant women to those of the group who had never given birth.

"We saw that pregnant women in the last three months of their pregnancy modified the lumbar movement and the way in which their

erector muscles activate when bending over. These biomechanical changes take place as a specific mechanism that pregnant women develop to protect their lower back from both the increased abdominal volume, and the increased ligament laxity caused by pregnancy hormones. Results of our research shine a light for the first time on the lumbo-pelvic movement alterations and the way in which the extensor muscles of the back activate. These findings can be of great help for health professionals, as a guide to prescribe specific exercises to decrease lower-back [pain](#) during pregnancy," Dr. Biviá says.

More information: Gemma Biviá-Roig et al. Changes in trunk posture and muscle responses in standing during pregnancy and postpartum, *PLOS ONE* (2018). [DOI: 10.1371/journal.pone.0194853](https://doi.org/10.1371/journal.pone.0194853)

Gemma Biviá-Roig et al. Effects of pregnancy on lumbar motion patterns and muscle responses, *The Spine Journal* (2018). [DOI: 10.1016/j.spinee.2018.08.009](https://doi.org/10.1016/j.spinee.2018.08.009)

Provided by Asociacion RUVID

Citation: Neuromuscular changes are to blame for lower-back pain during pregnancy (2018, September 10) retrieved 8 May 2024 from <https://medicalxpress.com/news/2018-09-neuromuscular-blame-lower-back-pain-pregnancy.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--