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## **Ultrasound Assessment of Trunk Muscles and Back Flexibility, Strength and Endurance in Off-Road Cyclists with and without Low Back Pain.**

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**Objectives:** To compare the thickness of Transabdominal muscles and cross sectional area (CSA) of Lumbar Multifidus (LM) muscles of competitive off-road cyclist with and without LBP. We also aimed to compare the maximum isometric back strength and endurance as well as flexibility of the lower back and hamstrings in cyclists with LBP with the controls.

**Methods:** In this comparative controlled Cross Sectional study, 14 competitive male off-road cyclist with LBP and 24 matched controls who met the inclusion criteria of the study were recruited. Using ultrasonography (US), the thickness of transabdominal muscles and the CSA of the LM muscles of the subjects were measured while they were lying on bed or positioned on the bicycle. In addition, all the subjects were asked to perform the back dynamometry and seat and reach tests to measure their back strength and flexibility respectively.

**Results:** Our data showed a significantly lower thickness of Transversus Abdominis (TrA) and CSA of LM muscles in cyclist with LBP comparing to controls in all positions. No significant result regarding the flexibility of the subjects in case group comparing with the controls was found ( $p=0.674$ ). In addition, it was found that there is no significant difference in isometric back strength of the subjects between the groups ( $p=0.105$ ). However we found that subjects with LBP have a lower endurance to hold the dynamometer with 50% of their maximum isometric back strength ( $p=0.016$ ).

**Conclusions:** In this study, useful information regarding possible risk factors associated with low back pain in off- road cyclists was found (lower thickness of TrA and LM muscles and decreased back endurance). These findings will be helpful in development of sport-specific clinical guidelines for approach to LBP in athletes.

Keywords:Low Back Pain Cyclists