



## Title

The Impact of a Core Stabilization Training Program on Low Back Pain Perception in Brazilian Air Force Helicopter Pilots

## Abstract

**Introduction:** Helicopter pilots present a high prevalence of low back pain, which can decrease operational human performance, health and quality of life in this population. Also, due to the heterogeneity of causes and risk factors, is difficult to diagnose and classify such pathology. Thus, the objective of this quasi-experimental study was to evaluate the influence of a core stabilization training program on low back pain intensity in Brazilian Air Force helicopter pilots. **Methods:** Sixteen male, EC 725 Caracal pilots, agreed to participate in the study and were submitted to core stabilization and hip mobility training program, during two months - 2 sessions *per week*. Visual Analogue Scale (VAS) and two domains – pain and functional capacity - of Short Form-36 (SF-36) were used to assess acute (immediately after flight) and chronic pain intensity, respectively, pre- and post-training. Additionally, four core resistance tests were applied for all individuals - flexor, extensor and lateral trunk groups – also in pre- and post-training. **Results:** The  $\Delta$ VAS (1.87 [0 – 5.20] vs. 1.00 [0 – 4.40] points; pre vs. post-training) showed a decrease in the intensity of acute low back pain perception ( $p < 0.05$ ), which was not observed on SF-36 domains for chronic pain results, before and after the training period - functional capacity ( $p = 0.347$ ); pain measurement ( $p = 0.766$ ). All resistance tests demonstrated an improvement of core muscles' strength after training: flexor ( $p = 0.001$ ); extensor ( $p < 0.05$ ), left lateral ( $p < 0.001$ ) and right lateral ( $p = 0.001$ ). **Discussion and Conclusion:** This study evidenced that the adoption of the specific core training program for helicopter pilots can decrease low back pain perception immediately after flight, suggesting that its long-term application could prevent this pathology as well improve operational capacity in this specific population.

## Practical Implications

The core stabilization training booklet applied to Brazilian Air Force helicopter pilots can be shared with the entire CISM family, with the aim of improving the acute low back pain perception in this population. This training can be applied and tested for other military personnel and athletes' groups, thus forming a large research field into operational human performance.

## References

IZZO, R. et al. Biomechanics of the spine. Part I: spinal stability. Eur J Radiol, v. 82, n. 1, p. 118-26, Jan 2013.

LIMA, V. P. et al. Pain perception and low back pain functional disability after a 10-week core and mobility training program: A pilot study. J Back Musculoskeletal Rehabil, Mar 2 2018.

OXLAND, T. R. Fundamental biomechanics of the spine - what we have learned in the past 25 years and future directions. Journal of biomechanics, v. 49, n. 6, p. 817-832, 2016.

### **Figures and tables**

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### **Conflict of interest**

The authors declare that they have no conflicts of interest.

### **CV**

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