



## Title

The Effect of Specific Physical Training on Musculoskeletal Symptoms and Fatigue Among Brazilian T-27 Flight Instructors

## Abstract

**INTRODUCTION** Flight instructors are subjected to a high number of flying hours and frequent exposure to high G loads, which can lead to musculoskeletal symptoms and excessive fatigue. Physical training is considered an effective alternative against to these effects in fighter pilots. However, little is known about such effectiveness in T-27 aircraft instructors, questioning whether specific physical training (SPT) would be superior to traditional physical training (TPT). Therefore, the aim of this study was to verify the effect of SPT on physical fitness, musculoskeletal symptoms, and fatigue in T-27 instructors.

**METHODS** Fifty instructors were initially divided into three groups: experimental group (EG; n=10) who underwent SPT; active control (AC; n=21) who practiced TPT; and inactive control (IC; n=11) who did not undergo any training. Since there were eight dropouts in the EG, the final sample comprised forty-two instructors. The SPT was held twice a week for sixteen weeks. To assess the effect of the SPT, pre-training and post-training differences were compared among the three groups for the fitness assessment test (FAT—push-up, abdominal, and Cooper), the Nordic Musculoskeletal Questionnaire (NMQ), and the Fatigue Assessment Scale (FAS). One-way ANOVA was used to test group differences in FAT, and Kruskal-Wallis was used for NMQ and FAS, for which classifications were done using Fisher's Exact test. The significance level was set at 0.05 for all the tests.

**RESULTS** The EG showed a greater post-training increase in FAT, and post-training decrease in NMQ and FAS when compared to AC and IC.

**DISCUSSION AND CONCLUSION** As expected, SPT promoted greater gains in physical fitness in the EG. However, the most prominent finding involved the reduction of musculoskeletal symptoms and fatigue. These results are consistent with other studies of specific training in military troops, reinforcing its implementation.

## Practical Implications

Non applicable.

## References

1. Relationships Between Physical Fitness, Demands of Flight Duty, and Musculoskeletal Symptoms Among Military Pilots, 2015.
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Pilots, 2016.

3. Aircrew Conditioning Programme Impact on +Gz Tolerance, 2019.

### **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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