



Title

Inspiratory Muscle Training improves Military Shooting Efficiency in Brazilian Air Force Soldiers.

Abstract

Introduction: Among the shooting fundamentals, breathing stands out for being trainable, with inspiratory muscle training (IMT) as the main method used for this purpose. Therefore, this study objective was to verify the influence of the IMT associated with cardiorespiratory training (CT) on military shooting efficiency in Brazilian Air Force (FAB) soldiers. **Methods:** Fifty-four individuals, male, untrained and healthy, agreed to participate in the study and were randomly assigned to the groups - intervention (GPint; n=27) and control (GPcon; n=27). Resting heart rate (HRrest), maximum inspiratory pressure (MIP), maximum oxygen consumption (VO_{2max}), shot factor after resting (SFrest) and shot factor after physical effort (SFex), were measured in pre- and post-training moments, in both groups. All subjects underwent the same CT for 10 weeks, associated with different loads of IMT - GPint trained at 70% vs. GPcon at 15% of MIP (placebo). **Results:** The SFrest and SFex values presented by GPint, after the experimental protocol, showed a significant improvement of approximately 47% ($p<0.001$) and 38.5% ($p<0.001$), respectively. Such results were not evidenced in GPcon, which only showed a borderline decrease of 16% ($p=0.052$) in SFex post intervention. In intra-group comparisons, a significant difference was verified in SFrest (GPint vs. GPcont: $p<0.001$) and SFex (GPint vs. GPcont: $p<0.001$). The same response pattern was observed in relation to MIP, which showed a significant improvement in GPint over the weeks, both intergroup [Initial vs. final MIP: 36% ($p<0.001$)]; as intragroup [GPint vs. GPcont: 36% ($p<0.001$)]. **Discussion and Conclusion:** An IMT program, associated with CT, is able to induce an improvement on pistol shooting efficiency in FAB military personnel, both at rest and after physical exhaustion, due probably to a delay on respiratory fatigue perception, as a consequent metaboreflex decrease.

Practical Implications

The MIT, associated with CT, applied to Brazilian Air Force soldiers can be shared with the entire CISM family, with the aim of improving military shot efficiency in this population. This training can be applied and tested for other military personnel and athletes (Biathlon and Pentathlon) groups, thus forming a large research field into operational human performance.

References

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Figures and tables

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Conflict of interest

There is no conflict of interests.

CV

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