The influence of strength training in Brazilian Army Military Pentathlon Team during the specific preparatory training period

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Introduction

The sport military pentathlon was created from military training after the II World War. The first CISM World Championship held in 1950 had only 3 nations and now it's practiced in more than 30 countries. Despite that, there are a lack of knowledge about the sports preparation for competitions at all levels.

Objective

The aim of this study was to analyze the body composition and strength of military pentathlon athletes submitted into a specific preparatory training period.

Methods

- Descriptive research
- Sample: 08 male athletes' volunteers of the Brazilian Army Military Pentathlon team.
- Data collection: The body composition was measured using the Inbody270® bio impedance equipment and the strength was assessed by 1RM protocol in bench press (BP) and back squat (BS). It was measured pre and post a specific preparatory training period that consisted in 8 weeks of sport specific conditional training (running, swimming, throwing, shooting, obstacle course) and power training.
- Power training description: 3 sessions per week, 2 sets of 6 repetitions with maximum speed, squat jump (50% of 1 RM), counter movement jump (50% of 1 RM), bench press (55% of 1RM) and bench press with counter movement (55% of 1RM).
- Data analysis: Descriptive statistics and Student paired test t were applied. Data was analyzed by SPSS® at significant level of p< 0.05.

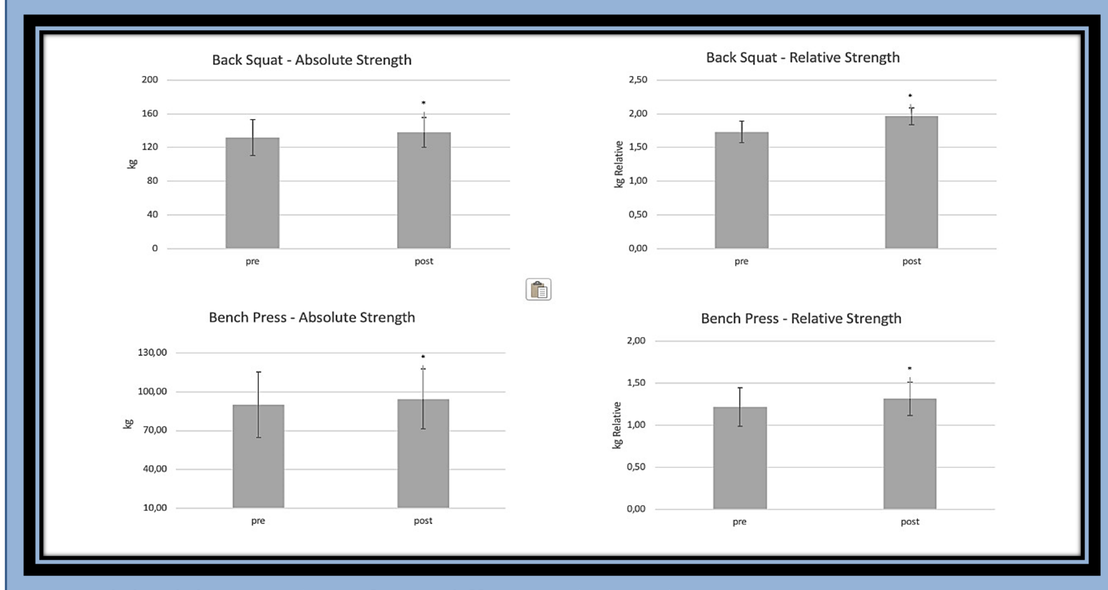
Results

Table 1. Sample body composition data

variables	PRE	POST	D%	p-value
Total Mass (kg)	73.37±8.02	73.75±6.96	00.52	0.264
Lean Mass (kg)	37.75±5.00	38.75±4.83	02.65	0.016*
Fat Mass (kg)	6.50±1.19	5.65±1.68	-13.08	0.010*
%G	9.37±1.84	7.87±2.64	-16.01	0.007*

Legend: %G: fat mass percentage; *significant difference (p<0.05)

Figure 1. Strength analysis pre and post specific preparatory training period.



Legend: kg: kilogram; *significant difference (p<0.05).

Body Composition: ↑ lean mass (Δ=2.65%, p=0.016) and ↓ fat mass (Δ=13.06%, p=0.010).
Absolute strength: ↑BP (Δ=4.46%, p=0.016) and ↑BS (Δ=8.14%, p=0.008).
Relative strength: ↑BP (Δ=4.15%, p=0.017) and ↑BS (Δ=7.57%, p=0.008).

Discussion and Conclusion

A significant improvement in body composition and strength gain after 10 weeks of combined training was also observed by Taipale et al. (2020), suggesting that 8 weeks training may result in significant performance improvements for men military pentathlon athletes.

Practical Implications for CISM

The authors recommend the insertion of strength and power training in the specific preparatory training period to the improvement of military pentathletes' performance.

References

Jacobs RA, Rasmussen P, Siebenmann C, Díaz V, Gassmann M, Pesta D, et al. Determinants of time trial performance and maximal incremental exercise in highly trained endurance athletes. J Appl Physiol. novembro de 2011;111(5):1422–30.

Loturco I, Pereira LA, Kobal R, McGuigan MR. Power output in traditional and ballistic bench press in elite athletes: Influence of training background. J Sports Sci [Internet]. 2019;37(3):277–84. Available at: https://doi.org/10.1080/02640414.2018.1496517.

Taipale RS, Forssell J, Ihalainen JK, Kyröläinen H and Häkkinen K (2020) A 10-Week Block of Combined High-Intensity Endurance and Strength Training Produced Similar Changes in Dynamic Strength, Body Composition, and Serum Hormones in Women and Men. Front. Sports Act. Living 2:581305. doi: 10.3389/fspor.2020.581305.