## 28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

Gender-specific characteristics of physical performance during speed and strength exercises

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## INTRODUCTION:

Performing specific speed and strength exercises, such as a squat with a barbell, requires the athlete to have an impeccable technique of performing a motor action from a biomechanical point of view and high indicators of the athletes balance function coefficient. That is why, the purpose of this study was to identify elite athletes` gender-specific characteristics of physical performance during speed and strength exercises. METHODS:

The method of expert evaluations was used to determine the modern problems of female elite sports (n=20). To determine the model characteristics of the optimal psychophysiological state and balance function of elite male versus female athletes during physical exercises, two independent groups, including 17 women (age 20,11 $\pm$ 3,12) and 24 men (age 19,83 $\pm$ 3,06), were compared.

The participants were elite athletes from different sport games, including: basketball (women, n=10 and men, n=14), handball (women, n=3 and men, n=5) and volleyball (women, n=4 and men, n=5). Mathematical and statistical processing and data analysis were carried out using the computing and graphic capabilities of the computer programs "Statistica".

**RESULTS:** 

The analysis of the literature in modern sports science and the results of the interviews with 20 experts made it possible to highlight the main gender problem in sports that is: transferring male athletes` training models and loads to the female preparedness. The statistical analysis of the psychophysiological tests` results showed that, for men, it is an attention predominance, and for women, is mobility and strength of nervous processes, respectively. The female athletes in the group were 5,88 cm shorter in height and 19,08 kg lighter in weight. Statistically significant differences with p < 0.01 were observed in male athletes' dynamometry of the dominant (53,54±4,75 kg) and non-dominant (50,67±5,26 kg) hands compared to female athletes who presented with a dominant hand strength of 30,59±3,54 kg and a non-dominant hand strength of 29,06±3,42 kg. Based on the comparison of stabilograms of two samples, we determined the degree of visual stability in standing using the Romberg coefficient, with significant differences in the results for men (173% ± 2,62) versus women (216% ± 2,32). The higher the percentage, the better the athlete was coordinated and/or trained. As for the ratio of the quality of the equilibrium function of elite athletes without and with visual control, significantly higher indicators were observed for women (0,98 ± 0,02) compared to the group of men (0,78 ± 0,06). CONCLUSION:

The present research results provide new information and scientific insights into the need to build different approaches in planning special physical loads for female compared to male athletes. The outcome of the expert evaluation is expected to affect recommendations on efficient speed and strength training design (e.g. exercise "squat with a barbell") for women versus men to be further investigated in ongoing research.

Topic:

Biomechanics

Poster

Presentation

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