SPORTS PRACTICE INFLUENCES THE STATE OF VIGILANCE DURING THE ADOLESCENCE

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I. Introduction

The interest on the relationship between sport practice, cardiovascular fitness, and cognitive processing is increasing in recent years[1]. Here, we focus on sports practice as a key factor involved in fitness level, speed processing and vigilance (i.e., the ability to maintain focused attention) in male and female adolescents.

II. Method

Two groups of participants (n=75) aged from 13 to 14 years old (13.7+0.6) were selected on the basis of their sports training habits and experience. Participants were evaluated in two separate occasions. In one session participants completed the Psychomotor Vigilance Task. In the other session participants performed the Leger Multi-stage fitness test. In addition, a brief anthropometric assessment was conducted to obtain their body mass index. Two-tailed t-tests for independent samples were used to compare the two groups (athletes vs. non-athletes).

III. Results:

Physical fitness: The analysis on the Time-to-exhaustion (TTE) data revealed a main effect of sports practice, $F(1,73)=10.73$, $p<.001$, and a main effect of Sex, $F(1,71)=27.65$, $p<.001$, with larger VO^2_{max} values for the trained than for the non-athletes group and for males than for females participants.

Cognitive processing: The analysis of the mean reaction time (RT) data showed a main effect of sports practice, $F(1,73)=17.27$, $p<.001$, with athletes responding faster than non-athletes, and a main effect of Time

on task, F(2,146)=5.84, p<.01, with athletes responding slower as the time on task increased.

The analysis on the number of lapses (RT>500ms) revealed a main effect of Time on task, F(2,146)=7.41, p<.001, with the number of lapses increasing as time on task went by, a significant main effect of sports practice, F(1,73)=15.08, p<.001, with athletes committing fewer lapses than their untrained counterparts and a significant interaction between Time on task and sports practice, F(2,146)=3.20, p=.04, with the vigilance decrement being more pronounced in athletes than in non-athletes.

IV. Conclusion

The results confirmed our predictions, with athletes showing better cardiovascular fitness than non-athletes. Sports practice also resulted in improved performance in the PVT. Athletes responded faster, committed fewer lapses and seemed to be less prone to vigilance decrement over time than non-athletes.

The present study revealed the impact of sports practice on cardiovascular fitness and vigilance performance. Accordingly to previous studies, we suggest that cardiorespiratory fitness[2] and sports practice[3] may be important factors to explain the differences in cognitive performance. We also acknowledge that other mediator variables might be also involved on the relationship between sport practice and cognitive performance in adolescents.

V. References

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