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Effects of long-term exercise on executive function for young people

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Objective Executive function is a cognitive control process that monitors, adjusts and plans task activities. Relevant studies have shown that exercise have positive impacts on executive function of human body, but previous studies mostly focus on children or elderly, the study of young people is not in-depth. This study explores whether exercise affects the executive control function of young people
by comparing who have the habit of exercising all the year round with who have been sedentary.
Methods 12 graduate students from the Graduate School of Capital University of Physical Education and sports were taken as participants. According to the exercise habits, 6 participants with long-term exercise habits were divided into exercise group and 6 participants with sedentary and low-activity habits were divided into control group. The E-prime software was used to program classic arrows Flanker task to measure the execution control function of participants. The formal experimental procedure was divided into four blocks. The first and third blocks were consistent tasks, the second and fourth blocks were inconsistent tasks. The SPSS23.0 was used to analyze the experimental data.
Results The behavior data were analyzed with 2 (exercise habit group)*2 (task type) repeated measurement ANOVA to investigate the responsiveness of different exercise habits to flanker task. The results showed that for accuracy, the main effect of task type was significant F (1,10) = 21.729, P =.001, 2 =.685, and the interaction effect between task type and group was significant F (1,10) = 7.519, P =.021, 2 =.429, indicating that the participants with long-term exercise habits had higher accuracy than those who with sedentary. The accuracy of consistent tasks is higher than inconsistent tasks. For response time, the main effect of task type was significant F (1,10) = 5.277, P =. 044, 2 =. 345; the interaction effect of task type and group was not significant F (1,10) =. 107, P =. 751, 2 =. 011, indicating that there were differences in response time between participants in the process of accomplishing consistent and inconsistent tasks, but there was no significant difference in the reaction time between participants with long-term exercise habits and sedentary.
Conclusions Long-term exercise may has positive effects on executive function of young people, especially on accuracy of completing cognitive process, and the related brain mechanisms need to be further studied.