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Taekwondo Exercise Improving Cardiopulmonary Function of Female College Students after 16 Weeks Intervention

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Objective Taekwondo is one of the popular exercise styles to promote aerobic endurance for college students because of its combination of hands and feet and simple technology and interesting. This study observed the effect of Taekwondo on the cardiopulmonary function of female college students, trying to find the best heart rate in the teaching class of Taekwondo and evaluate the effect of maximal oxygen uptake and improve the basic theory of Taekwondo exercise to enhance students' aerobic endurance and provide theoretical reference for scientific methods to improve classroom practice intensity.

Methods 1) This study used heart rate telemetry to perform a time domain analysis of heart rate variability in 10 university students in the Taekwondo class. The indicators used in the time domain analysis are: average RR interval value, standard deviation of RR interval (SDNN), standard deviation of the average of every 5 minutes R-R interval (SDANN), and standard deviation of R-R interval every 5 minutes The mean value (SDNNindex), the difference between adjacent NNs> the percentage of the number of total sinus beats per 50 ms (PNN50). By analyzing the information of these indicators, the sympathetic and vagal nerves are balanced. 2) The maximum oxygen uptake and respiratory exchange rate of 10 female college students were measured by the treadmill exercise load per breath method. The cardiopulmonary function of female college students was assessed by cardiopulmonary function indicators and heart rate variability indicators.

Results 1) The R-R interval value, the mean value of the R-R interval standard deviation (SDNNindex), and the standard deviation (SDANN) of the R-R interval mean value per 5 min were increased after exercise intervention. The three indicators increased by 438.22ms, 0.87ms, and 64.67 ms, respectively; The standard deviation of the R-R interval (SDNN), the difference between adjacent NNs >50ms, the percentage of total sinus beats (PNN50) decreased. They dropped by 44.23ms and 0.06% respectively. With the increase of the sports load of Taekwondo students, the heart rate variability gradually decreases, showing a decline in the vagus nerve tension of female college students. 2) The average relative oxygen uptake of female college students before the start of the course was 30.7ml (kg*min), 35 ml (kg*min) after the intervention, and the maximum oxygen uptake increased by 14.01%. The average respiratory exchange rate of female college students before the start of the course was 1.26, 1.28 after the course intervention, and the respiratory exchange rate increased by 1.59%.

Conclusions 1) Taekwondo exercise reduces the heart rate variability of female college students, and long-term exercise can enhance the ability of the vagus nerve to control the heart. 2) Increased maximal oxygen uptake and respiratory exchange rate of female college students through Taekwondo course intervention. After a long period of Taekwondo exercise, it can effectively improve the aerobic endurance of college students and improve their cardiopulmonary function. (NSFC: 31401018 SKJX2014014).