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Training effects on endurance capacity in maximal intermittent exercise: comparison between continuous and interval training.

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Abstract

The purpose of this study was to examine the effects of 2 different training regimens, continuous (CT) and interval (IT), on endurance capacity in maximal intermittent exercise. Eighteen lacrosse players were divided into CT (n = 6), IT (n = 6), and nontraining (n = 6) groups. Both training groups trained for 3 days per week for 15 weeks using bicycle ergometers. Continuous training performed continuous aerobic training for 20-25 minutes, and IT performed high-intensity pedaling comprising 10 sets of 10-second maximal pedaling with 20-second recovery periods. Maximal anaerobic power, maximal oxygen uptake (V(O2max)), and intermittent power output were measured before and after the training period. The intermittent exercise test consisted of a set of ten 10-second maximal sprints with 40-second intervals. Maximal anaerobic power significantly increased in IT ($p <or= 0.05$), whereas V(O2max) increased in both training groups ($p <or= 0.05$). In the intermittent exercise test, the average of the total mean power output (1-10 sets) increased in both training groups ($p <or= 0.05$); however, the mean power output in the last stage (8-10 sets) and fatigability improved only in IT. Consequently, continuous aerobic training reduced lactate production and increased the mean power output, but there was little effect on high-power endurance capacity in maximal intermittent exercise. In contrast, although lactate production did not decrease, IT improved fatigability and mean power output in the last stage. These results indicated that the endurance capacities for maximal intermittent and continuous exercises were not identical. Ball game players should therefore improve their endurance capacity with high-intensity intermittent exercise, and it is insufficient to assess their capacity with only V(O2max) or continuous exercise tests.

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