

Combining resistance and aerobic training intensities: a brief review

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ABSTRACT

BACKGROUND. Concurrent training (CT), which involves a combination of resistance and aerobic regimens, has attracted strong attention from the scientific community in recent years due to its potential to simultaneously induce cardiorespiratory and neuromuscular gains^[1]. While some researchers have shown that CT affects the development of muscle strength and power (i.e., interference effect^[2], others have indicated that CT has no inhibitory effect on strength and aerobic development^[3,4]. The interference between strength and aerobic training (AT) can be explained by several factors related to the training program, such as the volume, intensity, and training frequency^[5]. Researchers focused on CT have recently tried to understand its effects by studying the detraining (DT) period after a CT program. A better understanding of the DT experience is essential for the maintenance of training-induced improvements. **OBJECTIVES.** Synthesize and analyze the scientific evidence regarding aerobic and resistance exercise intensities during CT and their effect on performance variables. Furthermore, the effects of exercise intensity on a subsequent DT were assessed to better understand the impact of CT intensity. **METHODS.** A search was conducted using five databases for original articles published between January 1980-July 2018. The included studies focused on experimental interventions related to CT and DT in young adults (between 18 and 35 years old) with performance-related outcomes (i.e. time, velocity, strength, aerobic capacity and power). Studies written in English, published in a peer-reviewed journal were included, however, the review articles (qualitative review, systematic review, and meta-analysis), theses and dissertations were not considered. The information extracted from the selected studies was based on research design, aim,

subjects, procedures and findings. A total of eight studies met the inclusion criteria. The results were recalculated to determine changes and effect sizes. **RESULTS.** CT improved performance regardless of the exercise intensity used (4-47%). When higher aerobic intensities were used, aerobic gains were increased (5-9%). Greater neuromuscular adaptations were found when higher resistance loads were combined with low to moderate AT (10-14%). The polarized training intensities distribution throughout the season showed to maximize aerobic gains (4-7%) and strength (24-47%). In addition, a training cessation for 2-4 weeks reversed the training-induced gains. **CONCLUSION.** Higher intensities of AT or resistance training induce greater aerobic or neuromuscular gains, respectively. Nevertheless, one should be aware of an interference effect on strength for higher aerobic intensities and performance reductions with DT. The information shown in this review could provide useful tools for coaches to develop efficient training programs.

Keywords: Performance, Resistance Training, Aerobic Training, Intensity

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