EFFECTS OF TAPERING AND DETRAINING ON STRENGTH PERFORMANCE AND HORMONAL RESPONSES

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Optimal strength training results from proper manipulation of the program variables including the intensity, frequency and volume of exercise (3). Periodized strength training typically incorporates a taper phase to reduce accumulated fatigue. It is believed that the taper enhances performance by allowing greater recovery (1). Short-term reduction of the volume of strength training, while keeping the intensity high is a well-known coaching practice used to peak performance. However, marked reductions of training intensity and volume, or complete training cessation, could lead to a partial or complete loss of recently acquired training-induced increases (2). It is critical, therefore, to determine the role of a taper phase and/or complete training cessation to optimize strength and power gains. The purpose of this study was to examine the impact of 4 weeks of either complete cessation of training (DTR); or a tapering period [(TAP); Short-term reduction of the strength training volume, while the intensity is kept high], subsequent to 16 weeks of periodized heavy resistance training (PRT) on strength/power gains, and the underlying physiological changes in basal circulating anabolic/catabolic hormones in strength-trained athletes.

Forty-six physically-active men were matched and then randomly assigned to either a tapering (TAP; n=11), detraining (DTR; n=14) or control group (C; n=21), subsequent to a 16-week PRT program. Muscular and power testing and blood draws to determine basal hormonal concentrations were conducted before the initiation of training (T0), after 16 wks of training (T1), and after 4 wks of either DTR or TAP (T2).

Short-term DTR (4 weeks) resulted in significant decreases in maximal strength (-6% to -9%) and muscle power output (-17% and -14%) of the arm and leg extensor muscles. However, DTR had a significantly (p<0.01) larger effect on muscle power output than on strength measurements of both upper and lower extremity muscles. Short-term (4 weeks) TAP led to further increases in leg (2%) and arm (2%) maximal strength, whereas, no further changes were observed in both upper and lower muscle power output. Short-term DTR resulted in a tendency for elevation in resting serum IGF-1 concentrations, while the corresponding TAP experienced elevation in resting serum IGFBP-3. These present data indicated that detraining may induce larger declines in muscle power output than in maximal strength whereas tapering may result in further strength enhancement (but not muscle power), mediated, in part, by training-related differences in IGF-1 and IGFBP-3 concentrations.

References

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