LOW AND MODERATE PLYOMETRIC TRAINING FREQUENCY PRODUCE GREATER JUMPING AND SPRINTING GAINS COMPARED WITH HIGH FREQUENCY

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Previous strength training studies (1,2) concluded that junior experienced lifters respond with a greater improvement in performance with a moderate training volume and a moderate volume of high relative training intensity compared with low and high volumes of training. Unfortunately, the optimal jumping training volume for the development of jumping and sprinting ability within the training process have not been satisfactorily resolved. The purpose of this study was to examine the effect of three plyometric training frequencies (e.g. 1d/wk, 2d/wk, 4d/wk) during a seven week plyometric program on vertical jump performance, sprinting ability, and maximal and explosive strength performance. Forty-two physical education students were randomly assigned to 1 of 4 groups: control (n = 10), 7 sessions (7S) of drop jump (DJ) (n = 10) (1d/wk), (420 (DJ), 14 sessions (14S) DJ training (n = 12) (2d/wk) (840 DJ) and 28 sessions (28S) DJ training (n = 9) (4d/wk) (1680 DJ). The training protocols included drop-jumping from three different heights 20-40-60 cm. Maximal strength (one repetition maximum and maximal isometric strength), vertical height in countermovement and drop jump, and 20-m sprint time tests were carried out before (PRE), and following 7 weeks of plyometric training (POST). No significant differences were observed among the groups in pretraining in any of the variables tested. No significant changes were observed in the control group in any of the variables tested in any point. Short-term plyometric training using moderate training frequency and volume of jumps (2d/wk, 840 jumps) produces similar enhancements in jumping performance, but greater training efficiency (12% and 0.014%/jump) compared with high jumping (4d/wk,1680 jumps) training volume (18% and 0.011%/jump). In addition, similar enhancements in 20m-sprint time, jumping contact times and maximal strength were observed performing both a moderate and a low number of training sessions per week compared with high training volumes, despite the fact that the average number of jumps accomplished in 7S (420 jumps) and 14S (840 jumps) was 25% and 50% of that performed in 28S (1680 jumps). These results do not support the notion of ‘the more, the better’, because previously untrained subjects in the context of a short-term plyometric training 7-week cycle can optimize jumping performance training to only 50% or less of the volume performed with high training frequency and volume of jumps [i.e. 28 sessions of plyometric training (1680 DJ)]. These observations may have considerable practical relevance for the optimal design of plyometric training programs for athletes, given that performing a moderate volume is more efficient than a higher plyometric training volume.

References

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