Difference in Rate of Perceived Exertion between Cluster- and Traditional-set Lower Body Resistance Training

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ABSTRACT

Training variation is an integral part of strength and conditioning programming as it stimulates recovery, various adaptations, enhances athletic performance outcomes, while avoiding overtraining. The structure of set and repetition prescription is often varied to achieve desired adaptive outcomes. Cluster-set (CL), or rest-pause set, training is a method utilized to change the traditional-set (TS) and repetition structure by interrupting the repetitions with a 10-30s rest interval. Results from previous reports describe CL training as optimal for increasing training volume, lift quality, and achieves similar hormonal responses when compared to TS training. However, no studies have examined differences in perceived exertion levels between CL and TS training. **PURPOSE**: The purpose of this study was to investigate rate of perceived exertion (RPE) differences between CL and TS training when performing lower body exercises. **METHODS**: Twenty-two (10 male, 12 female) resistance-trained athletes were divided into control (TS; n = 8) and experimental (CL; n = 13) groups and participated in a 4-weeks lower body resistance training program. Prior to the first training session, participants completed 1-repetition maximum tests for squat (SQ) and deadlift (DL). Participants completed 2 workout (SQ and DL) routines each week, 48-hours of rest was required between routines. The TS training group completed: 4 x 5 (sets x reps) at 75% intensity during week 1; 4 x 4 at 75% during week 2; 5 x 6 at 80% during week 3, 3 x 4 at 77% intensity during week 4. Between-set rest for TS training was set at 120s for each routine and across all weeks. The CL training prescribed volume and rest matching that of TS. Cluster-set routines were as follows: 4 x (1 x 3; 1 x 2) (sets [sets x reps, sets x reps]) at 75% intensity during week 1; 4 x (2 x 2) at 75% intensity during week 2; 5 x (2 x 3) at 80% intensity during week 3; 3 x (2 x 2) at 77% intensity during week 4. Intra-set rest was set at 30s, inter-set rest was set at 90s, totaling 120s rest per set. Each group was asked to report an RPE score, according to Borgs Scale of Rate of Perceived Exertion, upon the completion of each workout session. The average RPE of all sessions was calculated for each group and differences between CL and TS were analyzed using an Independent Sample T-Test ($\alpha < .05$). **RESULTS**: The analysis revealed a statistically significant difference between DL TS RPE scores (4.1 ± 0.57) and DL CL RPE scores (5.7 ± 0.85), $t(16)=-4.531$, $p < 0.001$. However, no RPE difference ($p = .52$) was expressed between TS (5.3 ± 0.77) and CL (5.7 ± 1.52) for SQ. **CONCLUSION**: These results suggest the use of CL training increases the perceived exertion level of participants when completing DL. While no statistically significant difference was yielded, RPE scores were lower for TS during SQ routines. These elevated levels of RPE during CL training assist in explaining previous findings of improved outcomes from CL training in comparison to TS training.