



Low occlusion pressure during resistance exercise with blood flow restriction promotes lower pain, perception of exercise and session compared with high occlusion pressure when the total volume training is equalized

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Low-intensity resistance exercise associated with partial blood-flow restriction (BFR; 30% of one-repetition maximum [1RM]) has been proposed as an effective alternative to high-intensity resistance exercise (HI-RE; 80% of 1RM) to increase muscle mass. Interestingly, muscle adaptations related to BFR seem to be independent of the occlusion pressure magnitude, suggesting that muscle mass accrual can be achieved even with low loads. However, the occlusion pressure magnitude is thought to alter the psychophysiological stress related to BFR as measure by rating of perceived exertion scales (RPE). Despite of that, the effects of different occlusion pressures on the RPE response warrants further investigation. Additionally, session RPE (RPE-S) and pain levels can help gain insights as to whether manipulations in occlusion pressure can alter the stress related to BFR. The present study aimed to compared the RPE, RPE-S and pain levels across different magnitudes of occlusion pressures. Furthermore, all BFRs protocols were compared with a HI-RE. Twelve male subjects (age: 24.5 ± 1.5 years, height: 1.78 ± 0.04 m, body mass: 83.4 ± 11.2 kg) not engaged in lower limbs RE for the last six months participated in the present study. Subjects performed all RE protocols in a randomized and cross-over way with 72 hours apart: 1) RE with 40% of total occlusion restriction (BFR40); 2) RE with 50% of total occlusion restriction (BFR50); 3) RE with 60% of total occlusion restriction (BFR60); 4) RE with 70% of total occlusion restriction (BFR70); 5) RE with 80% of total occlusion restriction (BFR80) and; 6) RE without occlusion pressure restriction (HI-RE). BFR protocols and HI-RE were performed with 30% and 80% of 1RM, respectively. RPE and pain levels were measured before exercise and immediately after each set. RPE-S was measure 30 minutes after the end of exercise session. The main results showed that lower-pressure BFR protocols (i.e., BFR40 and BFR50) presented overall lower RPE response as compared with higher-pressure BFR (i.e., BFR70 and BFR80) and HI-RE protocols. In respect of RPE-S, BFR60, BFR70 and BFR80 protocols showed higher values than BFR40 and BFR50 protocols. The BFR80 protocol showed greater RPE-S when compared to all others conditions. Regarding pain levels, BFR40, BFR50 and HI-RE protocols, showed lower values than BFR60, BFR70 and BFR80 protocols. In conclusion, higher BFR protocols (BFR70 and BFR80) promote higher RPE, sRPE and pain compared with lower BFR protocols.

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