

2D-01 Effect of resistance training under restricted blood flow on blood properties

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To examine the effects of resistance training under restricted blood flow (Kaatu Training) on blood properties, we imposed 2 types of training on 9 male volunteers. The subjects performed bulk up training (80% 1RM \times 10 rep \times 3 sets) and Kaatu Training (40% 1RM \times all out \times 3 sets). They performed leg extensions and leg curls using an isokinetic machine. They pressed at the basilar of both thighs using an elastic rubber belt, with a strength of 180 mmHg during Kaatu Training. Blood samples of growth hormone, serum testosterone and blood lactate were obtained before exercise, and 0, 5, 15, 30, 60, 120 min and 24 hours after exercise. CPK and CRP were obtained before exercise, and 0 min, 1, 2, 3, 6, 10 days after exercise.

Significant group effects were observed in growth hormone levels. The responses for Kaatu Training were significantly greater than bulk up training at 5 and 15 min after exercise.

Kaatu Training was significantly lower than bulk up training 30 min after exercise with regard to serum testosterone.

Significant group effects were observed in blood lactate levels. Kaatu Training is significant lower than bulk up training 0 min after exercise.

Concerning CPK, Kaatu Training was significantly lower than bulk up training 1 day after exercise. No differences were observed in CRP between the groups.

These findings indicate that Kaatu Training induced significant secretion of growth hormone, and resulted in reduce mechanical stress to the muscles because the value of CPK was lower than that of bulk up training.

Keywords : restricted blood flow, Kaatu Training, growth hormone

2D-02 Effects of LT Level Training on Baroreflex Sensitivity in Young Male

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Objective The purpose of this study was to investigate whether endurance exercise training at blood lactate threshold (LT) level effects on baroreflex sensitivity in young male.

Methods Six young male subjects (23.1 ± 0.8 yr) underwent maximal exercise performance testing and lower body negative pressure (LBNP) challenge to -10 and -40 mmHg (at each stage 3 min) before and after endurance exercise training. The Blood pressure (BP), Heart Rate (HR), Q (Cardiac output) and FBF (Forearm blood flow) were measured at each stage of progressive increases in LBNP to -40 mmHg. The training regimen consisted of sitting cycle ergometer exercise for 60 min/day, 5 days/week, for 6 weeks.

Results Δ %FVR at -10 mmHg, which is related to cardiopulmonary baroreflex, showed a significantly increased after endurance exercise training (40.73 ± 35.9 vs $56.73 \pm 39.66\%$, $p < 0.05$). Δ HR / Δ SBP at -40 mmHg, which is related to arterial baroreflex, did not significantly differ before and after exercise training (1.83 ± 0.67 vs 3.93 ± 2.62). Maximal oxygen uptake ($\dot{V}O_{2\max}$) was higher after exercise training than before (43.51 ± 5.6 vs 46.83 ± 3.59 ml/kg/min).

Conclusions These results suggest that 6 weeks endurance exercise training program at LT levels significantly increased cardiopulmonary baroreflex sensitivity in young male.

Keywords LBNP, LT, Training, Baroreflex