

P58

Effects of different exercise intensity on RMR and energy expenditure in young men

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The purpose of this study was to examine the effect of various exercise intensity on Resting Metabolic Rate (RMR), excess post exercise energy expenditure (EPEE), and thyroid hormonal changes in fit (F) and sedentary (S) people. The subject of the present study were divided into two groups and four periods: fit (F; n=6) and sedentary (S; n=6) group. And the periods were divided as follows: Resting (R), Maximal (M), High intensity (H), and Low intensity (L).

The percent body fat and RMR of all subjects were measured at every periods. The RMR was measured early in the morning following a 12-hour fast using MMX3B gas analyzer and blood sample were collected from the antecubital vein to investigate thyroid hormonal (T3, T4, Free T3, Free T4, & TSH) changes. All the RMR values were expressed as absolute value/BSA (kcal/d/m²). And We also analyzed mean energy expenditure for 30 minutes during and after different intensity exercise. There was significant difference in RMR among different

intensity of exercise. in F ($p < .05$) not in the S group. however, there was no significant different percent body fat in F and in S group.

In the energy expenditure, there was significant different between F and S in HEE (high intensity exercise energy expenditure), LEE (low intensity exercise energy expenditure), HEEPE (high intensity exercise energy expenditure post exercise) & LEEPE (low intensity exercise expenditure post exercise).

In the hormonal level, there was significant different in T4 level in the F group at H

period and in T4, Free T3, & Free T4 levels in F group at L period, however there was no significant different in the S group.

The present cross-sectional study was design to investigate the relationship between exercise intensity and RMR. The focus of this investigation was to compare RMR in aerobically trained (F) and untrained (S). The relationship among RMR, exercise intensity and percent body fat would best be investigated using MMX3B and body composition analyzer. Each subject completed measurement of percent body fat, RMR, hormone in the period of maximal oxygen uptake exercise (M), high intensity exercise (H), and low intensity exercise (L).

From the results, Low intensity of exercise (L), there was a trend for an increased RMR (kcal/day) in the trained groups (F) not for the untrained (S). This is best explained not by the reduced percent body fat but by the highly induced energy expenditure (during exercise and post exercise energy expenditure) and increased T4, Free T3, and Free T4 hormonal levels in the low intensity exercise for the F group.