

## Influence of Machine Resistance Training on Selected Strength Variables among Two Categories of Body Composition

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**Abstract :** Background: The machine resistance training is an exercise that uses the equipment as loads to strengthen and condition the musculoskeletal system and improving muscle tone. The machine resistance training is easy to use, allow the individual to train with heavier weights without assistance, useful for beginners and elderly populations and specific muscle groups. Purpose: The purpose of this study was to examine the impact of nine weeks of machine resistance training on maximum strength among lean and normal weight male college students. Method: Thirty-six male college students aged between 19 and 21 years from King Fahd University of petroleum & minerals participated in the study. The subjects were divided into two an equal groups called Lean Group (LG, n = 18) and Normal Weight Group (NWG, n = 18). The subjects whose body mass index (BMI) is less than 18.5 kg / m<sup>2</sup> is considered lean and who is between 18.5 to 24.9 kg / m<sup>2</sup> is normal weight. Both groups performed machine resistance training nine weeks, twice per week for 40 min per training session. The strength measurements, chest press, leg press and abdomen exercises were performed before and after the training period. 1RM test was used to determine the maximum strength of all subjects. The training program consisted of several resistance machines such as leg press, abdomen, chest press, pulldown, seated row, calf raises, leg extension, leg curls and back extension. The data were analyzed using independent t-test (to compare mean differences) and paired t-test. The level of significance was set at 0.05. Results: No change was ( $P > 0.05$ ) observed in all body composition variables between groups after training. In chest press, the NWG recorded a significantly greater mean different value than the LG ( $19.33 \pm 7.78$  vs.  $13.88 \pm 5.77$  kg, respectively,  $P < 0.023$ ). In leg press and abdomen exercises, both groups revealed similar mean different values ( $P > 0.05$ ). When the post-test was compared with the pre-test, the NWG showed significant increases in the chest press by 47% (from  $41.16 \pm 12.41$  to  $60.49 \pm 11.58$  kg,  $P < 0.001$ ), abdomen by 34% (from  $45.46 \pm 6.97$  to  $61.06 \pm 6.45$  kg,  $P < 0.001$ ) and leg press by 23.6% (from  $85.27 \pm 15.94$  to  $105.48 \pm 21.59$  kg,  $P < 0.001$ ). The LG also illustrated significant increases by 42.6% in the chest press (from  $32.58 \pm 7.36$  to  $46.47 \pm 8.93$  kg,  $P < 0.001$ ), the abdomen by 28.5% (from  $38.50 \pm 7.84$  to  $49.50 \pm 7.88$  kg,  $P < 0.001$ ) and the leg press by 30.8% (from  $70.2 \pm 20.57$  to  $92.01 \pm 22.83$  kg,  $P < 0.001$ ). Conclusion: It was concluded that the lean and the normal weight male college students can benefit from the machine resistance-training program remarkably.

**Keywords :** body composition, lean, machine resistance training, normal weight

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