

Effects of a Two-Week Reduction in Physical Activity on Skeletal Muscle Strength and Endurance in Young Men and Women

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Certain form of physical inactivity, i.e. daily step counts of less than 2,500 steps/day, is considered to be very low and meeting only basic requirements (Tudor-Locke et al., 2009). Two weeks of such low physical activity can result in deterioration of glycaemic control, reduction in the rate of muscle protein synthesis and induce a decrease in muscle strength (Breen et al., 2013; Devries et al., 2015; McGlory et al., 2018). Our study focused on effects of two-week reduction in physical activity on young men and women. All volunteers ($n = 39$) gave their written informed consent to participate in the study which was approved by the Kaunas Regional Biomedical Ethics Committee (No. BE-2-98). Volunteers were randomly assigned (1:1) to the control (CON) or intervention (INT) groups, respectively. CON group (8 men, 11 women) maintained their usual levels of physical activity while INT group (8 males, 12 females) reduced physical activity to less than 2,500 steps per day as monitored for two weeks with step counts recorded using wrist bands (*Xiaomi Mi Smart Band 6, 1.56"*). There were no significant changes in body mass or composition in the groups. There were no differences between men and women in daily step counts as CON group had approximately five-fold greater ($p < 0.001$) step count compared to INT group. Women had higher ($p < 0.01$) heart rate (HR) than men. HR increased ($p < 0.001$) with an increase in exercise intensity for both sexes. There were no significant differences in changes of HR between CON or INT groups in pre- and post- intervention measurements. Men generated greater torque ($p < 0.001$) than women in both knee extension and flexion. CON and INT groups differed ($p < 0.01$) in changes of MVC for knee extension as MVC increased in CON group and decreased in INT group from the pre- to the post- measurements. There were no such differences for knee flexion. There were no differences between men and women in the endurance time. Endurance time tended to be slightly longer in pre- compared to post- measurements, but this change was not significant ($p = 0.0684$).



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