

## Publication

## Impact of Body Mass Index on Muscle Strength, Thicknesses, and Fiber Composition in Young Women

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High body mass index (BMI) may influence muscle strength, muscle thickness (Mtk), and fiber composition. We evaluated these parameters in 31 and 27 women grouped in non-oral contraceptive (non-OC) groups and OC groups, respectively, and further divided them into groups based on BMI: BMI; low; , BMI; norm; , and BMI; high; . Maximum isometric force (F; max; ), Mtk, and the relative percentage of muscle fiber composition (%) were examined in both groups. F; max; and Mtk values were significantly greater in the BMI; high; than the BMI; low; within the OC group. However, there was no significant difference in the non-OC group. BMI; low; and BMI; norm; groups showed a difference in the distribution of muscle fiber types 1 and 2 with almost the same proportions in both non-OC and OC groups. However, the BMI; high; group showed a difference in the distribution of muscle fiber types 1 and 2, with type 1 about 18.76% higher in the non-OC group. Contrastively, type 2 was about 34.35% higher in the OC group. In this study, we found that there was a significant difference in F; max; and Mtk according to the BMI level in the OC group, but no significant difference was found in the non-OC group. Moreover, the distribution of type 2 muscle fibers tended to be higher in the OC group of BMI; high; , although the sample size was small. Therefore, although no significant difference of F; max; and Mtk was found according to BMI level in the non-OC group in this study, the increase in BMI level appeared to be more associative of muscle strength in the OC group. Based on the present results, future studies are needed that consider the BMI level as well as the presence or absence of OC in future research about women's muscle strength.

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