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Comparative Study on Physical Fitness in Female College Students between Different BFP Grades

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Objective Through testing the body fat percentage (BFP) and physical fitness by laboratory methods in female college students, the relationship between physical fitness and body morphology of female college students was revealed.
Methods BFP and fat free mass were measured among 633 healthy female college students randomly selected. All subjects were divided into five groups by their BFP: low, normal, high body fat, grade I obesity and grade II/III obesity. Grip Strength, Leg Strength, Back Strength, Vital Capacity, Maximal Oxygen Uptake, Reaction Time, Sit And Reach, Back Scratch and Standing On One Foot With Closed Eyes were tested.
Results There were significant differences between all groups in Grip Strength, Back Strength, Vital Capacity, the absolute and relative value of VO_2max, Back Scratch on both sides and Standing on One Foot with Closed Eyes. The difference in Grip Strength and Back Strength showed significantly ($P < 0.05$), and the others showed very significant difference ($P < 0.01$). There was no significant difference in Resting Heart Rate, Reaction Time, Sit And Reach and Leg Strength. The results of multiple comparison showed that compared with 4 group,there were significant differences in Vital Capacity, relative value of Maximum Oxygen Uptake, Back Scratch in both sides in 2 group and 3 group. Moreover, compared with 5 group, there were significant differences in all the indicators in 2 group and 3 group. And there were significant differences in all the indicators except Back Strength and the relative value of Maximum Oxygen Uptake between 5 group and 4 group.
Conclusions The results showed that the physical fitness of female college students with normal BFP was significantly better than that of obese ones. The major influence of exceeding 30 percent in BFP was the cardiopulmonary endurance fitness and upper limb flexibility fitness. In the group of BFP higher than 35%, these influences were more significant, meanwhile, balance fitness declined.