



Combined Aerobic and Resistance Exercise Improves Body Composition and Physical Function in Super-Aged Female Elderly

In-Gyu Kim¹ and Ji-Seok Kim^{1*}

¹GNU Exe-Physio Lab., Department of Physical Education, Gyeongsang National University, Korea

ABSTRACT

Background and Purpose: Although the elderly population is rapidly increasing in Korea, most researches on the effect of exercise in the elderly are limited to age 65, the old standard. Therefore the purpose of this study was to determine whether combined aerobic and resistance exercise-mediated acquisition on the body composition, muscular strength, blood variables and physical fitness occur in female super-aged elderly over 80 years. **Methods:** Total 63 elderly (Control group, CON, n=36; Exercise group, EXE, n=27) aged between 80 and 90 years participated in this study. EXE group performed combined exercise for an hour at a time, twice a week for 8 weeks. Body composition, Physical fitness, Muscle strength, Lipid profile, and Blood pressure were evaluated as main variables. **Results:** Body composition was not significantly changed before and after 8-week treatment in both groups. However, systolic blood pressure was increased and HDL-cholesterol was decreased in CON group. Also, muscular strengths in quadriceps femoris, biceps femoris and triceps brachii were significantly decreased in CON group, while there was no statistical change in EXE group. Fasting blood-glucose in EXE group was significantly decreased. Physical-fitness factors determined by senior fitness test were all significantly improved only in EXE group, while there was no change in CON group. These results suggest that combined exercise is very effective prescription in the super-aged elderly. **Conclusion:** The present results showed that Combined exercise is very effective prescription in the super-aged elderly. Based on our study, we propose that need to develop various programs using combined exercise for super-aged elderly.

Keywords: Super-aged elderly, Combined exercise, Muscular strength, Physical fitness, Elastic band

RESULTS

Participant characteristics

	CON (n = 36)	EXE (n = 27)	p-value
Age(years)	83.3 ± 0.40	82.8 ± 0.40	0.337
Height(cm)	145.81 ± 1.10	147.43 ± 1.01	0.274
Body weight(kg)	56.12 ± 6.42	53.34 ± 1.45	0.445

Table 1. Value are mean ± SD, CON: control group, EXE: combined exercise group.

Physical fitness

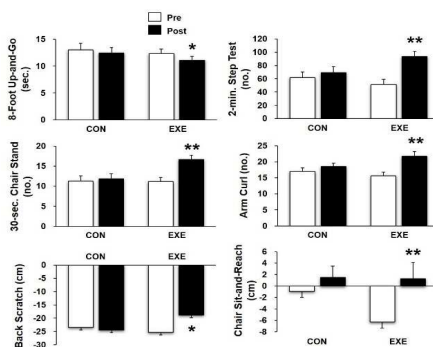


Figure 1. Changes in physical fitness of the CON and EXE after 8 weeks of combined exercise. **p* < .05 compared to pre-. ***p* < .01 compared to pre-.

Muscular strength

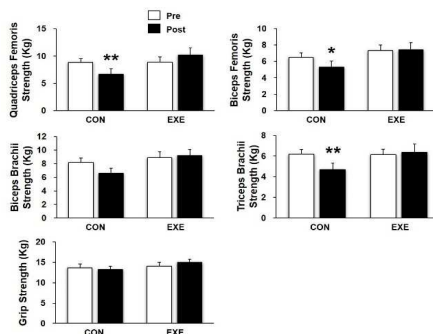


Figure 2. Changes in muscular strength of the CON and EXE after 8 weeks of combined exercise. **p* < .05 compared to pre-. ***p* < .01 compared to pre-.

Body composition

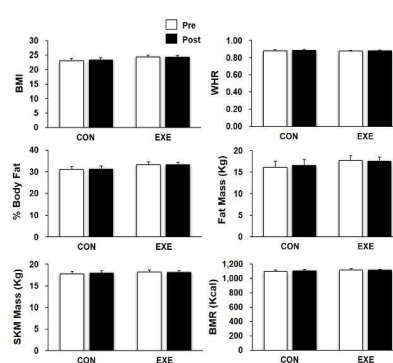


Figure 3. Changes in body composition after 8 weeks of combined exercise. CON, control group; EXE, combined exercise group; BMI, body mass index; WHR, waist-hip ratio; SKM, skeletal muscle; BMR, basal metabolic rate.

Lipid Profile

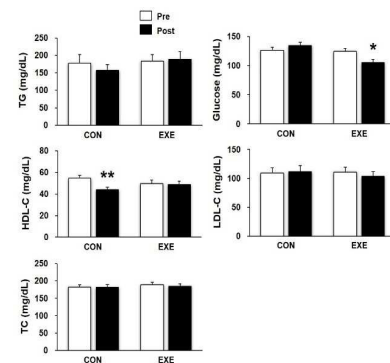


Figure 4. Changes in lipid profile of the CON and EXE after 8 weeks of combined exercise. TG, triglyceride; HDL-C, high density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; TC, total cholesterol. **p* < .05 compared to pre-. ***p* < .01 compared to pre-.

Blood pressure

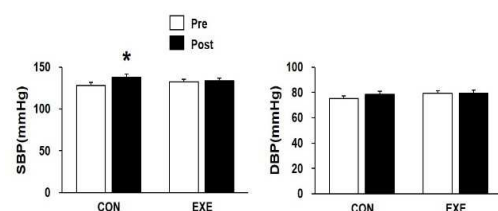


Figure 5. Changes in blood pressure of the CON and EXE after 8 weeks of combined exercise. SBP, systolic blood pressure; DBP, diastolic blood pressure. **p* < .05 compared to pre-. ***p* < .01 compared to pre-.

CONCLUSIONS

Older people can also significantly improve blood sugar and HDL-C on an empty stomach through complex exercise and prevent aging muscle strength and increased blood pressure. It is especially effective for improving physical fitness. Therefore, it is highly recommended to exercise even for the Super-Aged elderly.