Effects of Exercise Training on Vascular Endothelial Function of Obese Elderly Women

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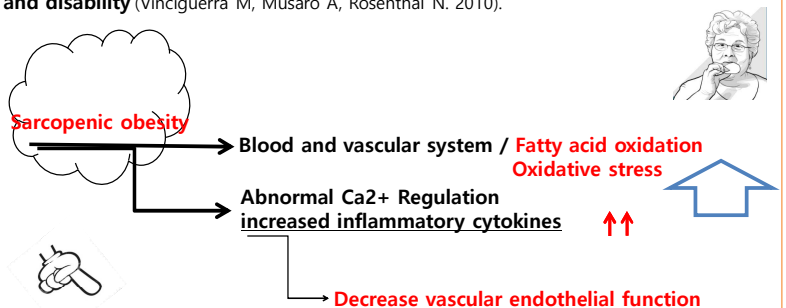
Ⅰ. Introduction

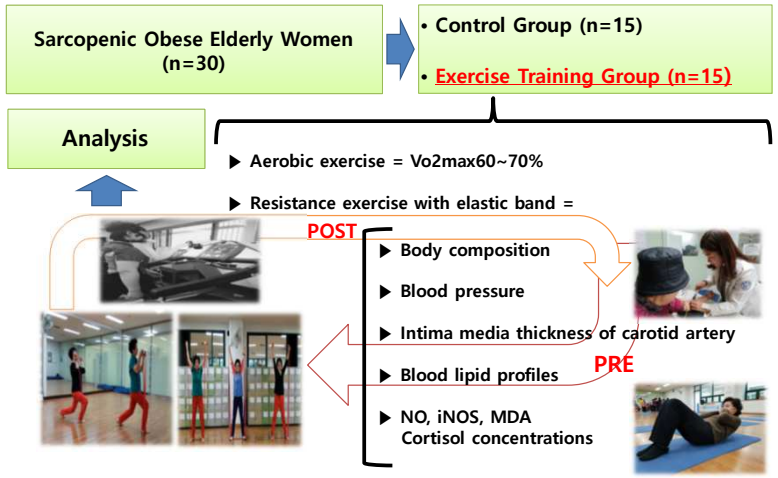
Obesity is emerging as a worldwide **problem**. To prevent obesity, you need to live a regular life. But inadequate nutrition pose a severe threat to **skeletal muscle health and function** (Chun-wei Li et al 2019).

In particular, persistent inflammation and **increased levels of inflammatory cytokines have been strongly implicated in the ageing-related loss of skeletal muscle mass**, that is sarcopenia. **Sarcopenia** is an ageing-related syndrome characterized by decreased **skeletal muscle mass, lower muscle strength ,and/or physical performance.** Hence, it is also associated with functional impairment and disability (Vinciguerra M, Musaro A, Rosenthal N. 2010).



This study examined how **12-week regular exercise training** affects changes in body composition and factors related to vascular endothelial function including blood nitric oxide in **elderly women with sarcopenic obesity.**

Ⅱ. Methods



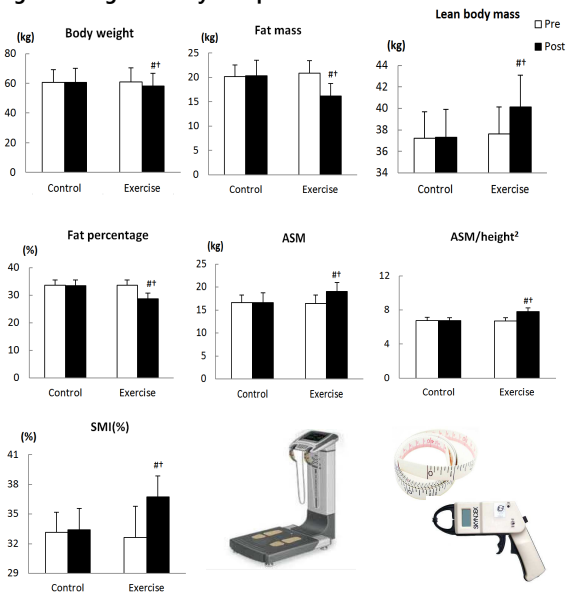
Ⅲ. Results

Table 1. Physical characteristics of subjects

Group	Age(yr)	Height(cm)	Body Weight(kg)	BMI (kg/m²)	%Fat
Control	72.15 2.95	155.23 3.12	60.59 8.65	23.85 1.65	33.65 1.95
Exercise	72.35 1.86	155.35 2.95	61.02 9.54	23.92 1.95	33.72 1.86

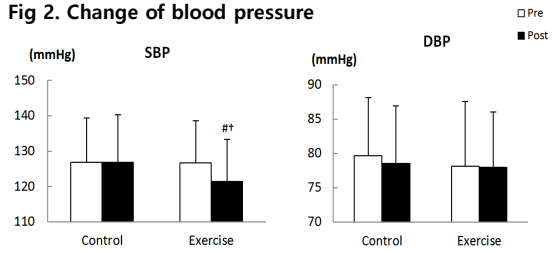
Values are mean and SD

Fig 1. Change of body composition



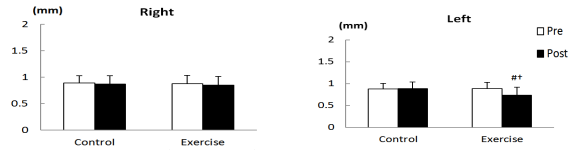
Values are mean and SD; * p<0.05 Significant difference of 2-way repeated ANOVA, # p<0.05 Significant difference as compared to Pre-value, † p<0.05 Significant difference as compared to Control group; ASM, appendicular skeletal muscle mass; SMI, skeletal muscle mass index

Fig 2. Change of blood pressure



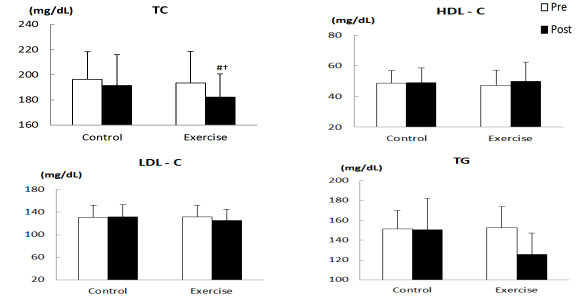
Values are mean and SD; * p<0.05 Significant difference of 2-way repeated ANOVA, # p<0.05 Significant difference as compared to Pre-value, † p<0.05 Significant difference as compared to Control group; SBP, systolic blood pressure; DBP, diastolic blood pressure

Fig 3. Changes of intima media thickness of carotid artery



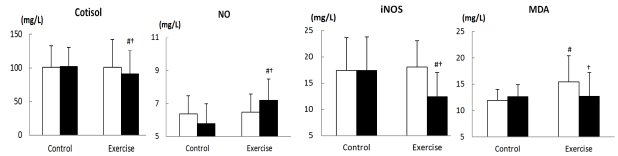
Values are mean and SD; * p<0.05 Significant difference of 2-way repeated ANOVA, # p<0.05 Significant difference as compared to Pre-value, † p<0.05 Significant difference as compared to Control group

Fig 4. Changes of blood concentrations of lipid profiles



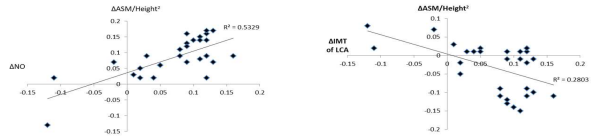
Values are mean and SD; * p<0.05 Significant difference of 2-way repeated ANOVA, # p<0.05 Significant difference as compared to Pre-value, † p<0.05 Significant difference as compared to Control group; TC, total cholesterol; HDL-C, high density lipoprotein-cholesterol; LDL-C, low density lipoprotein-cholesterol; TG, triglyceride.

Fig 5. Changes of blood concentrations of factors related to vascular endothelial function



Values are mean and SD; * p<0.05 Significant difference of 2-way repeated ANOVA, # p<0.05 Significant difference as compared to Pre-value, † p<0.05 Significant difference as compared to Control group; eNOS, endothelial nitric oxide synthase; inducible nitric oxide synthase; NO, nitric oxide; MDA, malondialdehyde

Fig. 6. Correlation coefficient among differences of ASM/height2, NO and intima-media thickness of left carotid artery between pre and after exercise training



Ⅳ. Conclusions

Regular exercise training for 12 weeks helps to relieve sarcopenic obesity in the elderly, and positive changes in body composition with increased muscle mass can be drive to positive changes in factors related to vascular endothelial function with blood NO, iNOS and lipids. These effects of exercise training thought to help the improvement of blood pressure and intima-media thickness of carotid artery.