

**Abstract Submission No. : 2324**

**Myostatin/appendicular skeletal muscle mass(ASM) ratio, not myostatin, may be a marker of low handgrip strength in the community dwelling older women**

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**Objectives:** Higher myostatin has been proposed as a biomarker for sarcopenia. Recent studies show higher myostatin was associated with physical fitness and performance. This study aimed to examine the significance of myostatin in the association between muscle mass and physical performance in the elderly.

**Methods:** This cross-sectional study is based on the Korean Frailty and Aging Cohort study involved 1,053 people aged 70 years or over. Anthropometric, physical performance, and laboratory data were collected. Dual energy X-ray absorptiometry was conducted for appendicular skeletal muscle mass (ASM). Walking speed and maximal handgrip strength were measured.

**Results:** The mean age of the participants was 75.8 years, and 50.7% of them were female. Serum myostatin level in men ( $3.7 \pm 1.2$  vs.  $3.2 \pm 1.1$  ng/ml,  $p < 0.001$ ) was higher compared with that in women. Serum myostatin level was associated with appendicular skeletal muscle mass (ASM) index ( $r = 0.285$ ,  $p < 0.001$ ) and eGFR by cystatin C ( $r = -0.013$ ,  $p < 0.001$ ). While serum myostatin level was associated with handgrip strength in men and walking speed in women, these associations disappeared after adjustment. Serum myostatin/ASM ratio was associated with handgrip strength in women.

**Conclusions:** Higher serum myostatin levels was related with higher muscle mass and better physical performances in elderly. Serum myostatin/ASM ratio may be a predictor for physical performance rather than myostatin.

Table 1. Myostatin/ASM ratio


  
**KSN 2021**
  
**FULLY VIRTUAL MEETING**
  
**September 02 (Thu) - 05 (Sun)**

**Table 1. Simple and multiple regression analyses for serum myostatin/ASM ratio in 519 men and 534 women.**

Variables	Univariate				Multivariate			
	$\beta$	Lower	Upper	<i>P</i> -value	$\beta$	Lower	Upper	<i>P</i> -value
<b>Men</b>								
Age (years)	1.254	-0.142	2.650	0.078				
Smoking	0.116	-8.604	8.837	0.979				
Alcohol	-5.996	-16.190	4.197	0.248				
Diabetes mellitus	0.717	13.263	11.828	0.911				
Hs-CRP	-4.842	-7.483	-2.201	<0.001	-5.450	-8.045	-0.350	<0.001
25-hydroxy vitamin D	-0.452	-1.094	0.190	0.168				
Free testosterone	-0.809	-2.361	0.743	0.306				
eGFR by CKD-EPI sCystC	-0.909	-1.266	-0.552	<.0001	-0.984	-1.342	-0.627	<0.001
Walking speed (m/sec)	1.629	-15.362	18.620	0.851				
Handgrip strength (kg)	-0.668	-1.625	0.290	0.171				
<b>Women</b>								
Age (years)	2.891	1.145	4.636	0.001				
Smoking	-2.969	-23.875	17.937	0.780				
Alcohol	5.335	-6.602	17.271	0.380				
Diabetes mellitus	17.396	34.246	0.547	0.043	25.377	39.748	6.642	0.006
Hs-CRP	-0.804	-5.310	3.702	0.726				
25-hydroxy vitamin D	0.811	0.117	1.505	0.022	0.878	0.197	1.558	0.012
Free testosterone	-1.026	-9.126	7.074	0.804				
eGFR by CKD-EPI sCystC	-0.886	-1.245	-0.527	<0.001	-0.982	-1.366	-0.0598	<0.001
Walking speed (m/sec)	-7.277	-32.956	18.403	0.578				
Handgrip strength (kg)	-2.879	-4.610	-1.148	0.001	-2.785	-4.608	-0.9630	<0.001