

## SUPPLEMENTARY MATERIAL

**Supplementary Table S1.** Association between energy metabolism outcomes with S-Klotho protein and age adjusted by visceral adipose tissue (Model 1), adjusted by VO<sub>2</sub>max (Model 2), adjusted by objectively measured moderate-vigorous physical activity (Model 3), and by total energy intake (Model 4).

	Plasma S-klotho concentration			
	Model 1	Model 2	Model 3	Model 4
BMR (kcal/day)	0.126	0.142	0.226	0.140
BMR <sub>LM</sub> (kcal/ kg <sub>leanmass</sub> /day)	0.634	0.146	0.500	0.836
BFox (g/min)	<0.001	<0.001	<0.001	<0.001
BFox (% BMR)	<0.001	<0.001	<0.001	<0.001
BCHox (g/min)	<0.001	<0.001	<0.001	<0.001
BCHox (% BMR)	<0.001	<0.001	<0.001	<0.001
MFO (g/min)	<b>0.024</b>	<b>0.014</b>	<b>0.032</b>	<b>0.023</b>
MFO <sub>LM</sub> (g/kg <sub>leanmass</sub> /min)	0.232	0.409	0.254	0.253
Fat <sub>max</sub> (% VO <sub>2</sub> max)	0.109	0.630	0.161	0.112
	Chronological age			
	Model 1	Model 2	Model 3	Model 4
BMR (kcal/day)	0.828	0.287	0.758	0.983
BMR <sub>LM</sub> (kcal/ kg <sub>leanmass</sub> /day)	0.153	0.206	0.128	0.139
BFox (g/min)	0.459	0.519	0.109	0.244
BFox (% BMR)	0.834	0.806	0.116	0.374
BCHox (g/min)	0.692	0.253	0.066	0.618
BCHox (% BMR)	0.975	0.629	0.110	0.407
MFO (g/min)	0.874	0.343	0.896	0.979
MFO <sub>LM</sub> (g/kg <sub>leanmass</sub> /min)	0.155	0.168	0.147	0.132
Fat <sub>max</sub> (% VO <sub>2</sub> max)	0.275	0.918	0.051	0.655

P value of multiple-regression analysis. Abbreviations: BMR: Basal Metabolic Rate; BMR<sub>LM</sub>: Basal Metabolic Rate relative to lean mass; BFox: Basal Fat Oxidation; BCHox: Basal Carbohydrate Oxidation; MFO: Maximal Fat Oxidation; MFO<sub>LM</sub>: Maximal Fat Oxidation relative to lean mass; Fat<sub>max</sub>: Intensity of exercise that elicits MFO; VO<sub>2</sub>max: Maximum Oxygen Uptake.