

Appendix 1. Change of blood biomarkers and body composition parameters

Variable	Group	Pre	Post	t	F
ACE	GFST	64.90 ± 2.73	36.95 ± 9.40	9.173***	10.225**
	CON	52.34 ± 19.30	43.61 ± 19.45	2.322	
BDNF	GFST	20,793.73 ± 3,771.82	25,024.65 ± 2,760.31	-2.526	23.262***
	CON	20,260.97 ± 7,158.04	20,187.67 ± 2,927.66	2.373	
IL-6	GFST	1.07 ± 0.65	1.38 ± 0.81	-1.721	1.120
	CON	1.16 ± 0.60	1.16 ± 0.59	0.005	
TNF- α	GFST	1.12 ± 0.16	1.31 ± 0.24	-2.070	3.678
	CON	1.16 ± 0.26	1.15 ± 0.14	0.119	
HGH	GFST	0.59 ± 0.38	1.21 ± 0.36	-3.217*	18.743***
	CON	0.58 ± 0.37	0.38 ± 0.33	0.918	
IGF	GFST	116.45 ± 42.50	152.47 ± 30.00	-2.454*	2.176
	CON	114.72 ± 19.13	130.42 ± 31.20	-2.364	
AST	GFST	24.80 ± 5.84	25.40 ± 4.50	-0.580	0.253
	CON	22.63 ± 3.50	23.63 ± 2.37	-1.158	
ALT	GFST	19.40 ± 11.21	16.60 ± 7.42	1.057	1.419
	CON	16.27 ± 8.84	13.00 ± 3.89	1.514	
CK	GFST	74.71 ± 14.64	72.00 ± 15.25	0.699	0.960
	CON	95.54 ± 27.90	98.81 ± 32.00	-0.451	
Glucose	GFST	97.50 ± 7.69	97.10 ± 12.03	0.113	0.042
	CON	88.72 ± 32.00	92.63 ± 5.97	-1.467	
TG	GFST	138.14 ± 39.38	106.85 ± 34.88	3.025*	3.752
	CON	115.00 ± 22.41	117.00 ± 23.86	-0.254	
LDL	GFST	141.75 ± 22.57	134.87 ± 23.41	1.099	1.578
	CON	110.09 ± 24.95	119.27 ± 17.67	-2.018	
HDL	GFST	49.71 ± 9.41	52.42 ± 6.97	-1.546	0.041
	CON	53.44 ± 7.74	53.88 ± 9.42	-0.144	
Total lean mass	GFST	36,396.32 ± 3,696.55	37,410.76 ± 2,985.98	-2.257	10.360**
	CON	34,436.18 ± 2,912.06	34,105.06 ± 2,865.53	1.016	
Total fat	GFST	35.33 ± 2.42	34.35 ± 2.69	2.764*	3.008
	CON	34.26 ± 2.75	34.31 ± 2.39	-0.153	

t values are pre and post t-test.

F values are between group ANCOVA results. *p < 0.001, **p < 0.01, ***p < 0.001.

ACE, angiotensin converting enzyme; GFST, γ -aminobutyric acid-enriched fermented sea tangle; CON, placebo; BDNF, brain derived neurotrophic factor; IL, interleukin; TNF- α , tumor necrosis factor α ; HGH, human growth hormone; IGF, insulin-like growth factor; AST, aspartate aminotransferase; ALT, alanine aminotransferase; CK, creatine kinase; TG, triglyceride; LDL, low-density lipoprotein; HDL, high-density lipoprotein.