

Extended Data 8. Blood factors that increased significantly only after resistance training

Blood factor	Unit	All (n = 56)			AT (n = 26)			RT (n = 30)			Change (Δ)		
		Before	After	p value	Before	After	p value	Before	After	p value	AT	RT	p value ^a
Cathepsin B	ng/mL	136.58 ± 5.32	144.99 ± 5.85	< 0.10	134.41 ± 8.34	139.60 ± 8.01	0.43	138.46 ± 6.93	149.67 ± 8.46	< 0.10	+5.20 ± 6.27	+11.21 ± 6.27	0.51
IL-8/CXCL8	pg/mL	8.30 ± 0.79	9.25 ± 0.81	< 0.10	9.50 ± 1.50	9.74 ± 1.40	0.64	7.25 ± 0.69	8.83 ± 0.94	< 0.05	-0.14 ± 0.76	+1.59 ± 0.76	0.17
RANTES	ng/mL	12.23 ± 0.37	12.53 ± 0.44	< 0.01	12.25 ± 0.58	12.32 ± 0.58	0.16	12.20 ± 0.49	12.72 ± 0.65	< 0.05	+0.06 ± 0.47	+0.52 ± 0.47	0.46
TNF-β	pg/mL	143.00 ± 6.35	145.29 ± 4.71	0.48	151.35 ± 13.36	148.18 ± 9.49	0.54	135.77 ± 2.36	142.78 ± 3.28	< 0.10	-3.16 ± 3.92	+7.01 ± 3.92	0.12
α1-Microglobulin	ng/mL	11.73 ± 0.18	12.00 ± 0.20	< 0.05	11.77 ± 0.33	11.90 ± 0.35	0.46	11.7 ± 0.19	12.08 ± 0.21	< 0.05	+0.13 ± 0.14	+0.38 ± 0.14	0.27
BMP-7	pg/mL	78.98 ± 5.14	87.67 ± 7.18	< 0.05	84.41 ± 9.46	95.33 ± 13.55	0.10	74.28 ± 5.01	81.03 ± 6.48	< 0.10	+10.92 ± 3.44	+6.75 ± 3.44	0.56
FABP4/A-FABP	ng/mL	7.73 ± 1.51	8.04 ± 1.29	0.62	9.51 ± 3.01	9.06 ± 2.31	0.72	6.19 ± 1.07	7.16 ± 1.34	< 0.05	-0.45 ± 0.44	+0.98 ± 0.44	0.26
CTRP9/C1qTNF9	pg/mL	222.84 ± 68.97	211.65 ± 48.98	0.60	303.27 ± 146.19	263.90 ± 102.28	0.39	153.13 ± 22.69	166.36 ± 22.94	< 0.01	-39.37 ± 4.71	+13.22 ± 4.71	0.22
FGF-23	pg/mL	31.60 ± 8.92	33.89 ± 9.46	0.28	31.44 ± 13.06	29.22 ± 11.42	0.42	31.74 ± 12.42	37.93 ± 14.78	< 0.05	-2.23 ± 2.95	+6.20 ± 2.95	< 0.05
FGF-13	FI ^b	51.37 ± 1.01	52.74 ± 1.11	< 0.05	52.04 ± 1.94	52.50 ± 2.20	0.79	50.78 ± 0.89	52.95 ± 0.87	< 0.001	+0.46 ± 0.60	+2.17 ± 0.60	0.28
VEGFR1/Flt-1	pg/mL	130.29 ± 5.48	136.83 ± 5.53	< 0.05	125.51 ± 9.50	130.07 ± 9.12	0.35	134.43 ± 6.13	142.70 ± 6.60	< 0.10	+4.55 ± 4.38	+8.27 ± 4.38	0.57
PIGF	FI ^b	50.21 ± 1.61	49.89 ± 1.62	0.29	52.42 ± 2.47	49.81 ± 2.64	0.39	48.28 ± 2.08	49.97 ± 2.02	< 0.05	-2.62 ± 0.81	+1.68 ± 0.81	< 0.05
2-Aminoadipic acid	μM	0.69 ± 0.03	0.74 ± 0.03	0.12	0.75 ± 0.05	0.79 ± 0.04	0.64	0.63 ± 0.03	0.70 ± 0.04	< 0.01	+0.00 ± 0.09	+0.07 ± 0.09	0.64
3-(4-Hydroxyphenyl)propionic acid	μM	0.86 ± 0.11	0.90 ± 0.11	0.98	0.97 ± 0.20	0.76 ± 0.15	0.30	0.75 ± 0.09	1.08 ± 0.15	< 0.05	-0.16 ± 0.15	+0.04 ± 0.15	0.47
Creatinine	μM	89.81 ± 1.58	93.88 ± 1.86	< 0.01	89.71 ± 2.23	91.89 ± 2.81	0.27	89.89 ± 2.27	95.61 ± 2.48	< 0.01	+2.51 ± 1.85	+5.97 ± 1.85	0.19
Erythrose 4-phosphate	μM	8.51 ± 0.85	9.25 ± 0.53	0.61	9.80 ± 1.75	9.03 ± 0.74	0.92	7.41 ± 0.43	9.50 ± 0.76	< 0.10	+1.61 ± 1.30	+1.47 ± 1.30	0.95
Ethanolamine	μM	5.67 ± 0.10	5.97 ± 0.12	< 0.05	5.66 ± 0.15	5.89 ± 0.16	0.18	5.68 ± 0.14	6.05 ± 0.16	< 0.10	+0.22 ± 0.20	+0.39 ± 0.20	0.53
Homovanillic acid	μM	1.42 ± 0.06	1.57 ± 0.07	< 0.05	1.51 ± 0.09	1.46 ± 0.11	0.65	1.35 ± 0.06	1.65 ± 0.09	< 0.0001	+0.07 ± 0.08	+0.40 ± 0.08	< 0.05
Ile	μM	91.03 ± 1.78	93.20 ± 1.58	0.23	93.53 ± 2.57	92.59 ± 2.50	0.71	88.87 ± 2.43	93.73 ± 2.04	< 0.10	-1.26 ± 2.49	+4.55 ± 2.49	0.10
Imidazolelactic acid	μM	0.22 ± 0.01	0.24 ± 0.01	< 0.05	0.22 ± 0.01	0.23 ± 0.01	0.30	0.23 ± 0.01	0.25 ± 0.01	< 0.05	+0.06 ± 0.08	+0.13 ± 0.08	0.57
Isethionic acid	μM	2.01 ± 0.06	2.12 ± 0.05	< 0.05	2.05 ± 0.09	2.13 ± 0.06	0.25	1.97 ± 0.08	2.11 ± 0.08	< 0.05	+0.08 ± 0.10	+0.18 ± 0.10	0.43
Isobutyrylcarnitine	μM	0.13 ± 0.01	0.15 ± 0.01	< 0.05	0.14 ± 0.01	0.14 ± 0.01	0.50	0.13 ± 0.01	0.15 ± 0.01	< 0.05	+0.07 ± 0.09	+0.16 ± 0.09	0.48
Isovalerylcarnitine	μM	0.05 ± 0.00	0.05 ± 0.00	< 0.05	0.05 ± 0.01	0.05 ± 0.00	0.11	0.05 ± 0.00	0.05 ± 0.00	< 0.10	+0.21 ± 0.10	+0.18 ± 0.10	0.83
Leu	μM	176.04 ± 2.70	184.35 ± 2.6	< 0.01	178.98 ± 4.12	186.14 ± 4.28	0.14	173.5 ± 3.56	182.81 ± 3.18	< 0.05	+9.25 ± 3.54	+9.35 ± 3.54	0.99
Met	μM	34.2 ± 0.96	37.22 ± 0.96	< 0.05	34.89 ± 1.29	36.75 ± 1.49	0.21	33.60 ± 1.41	37.62 ± 1.25	< 0.05	+2.55 ± 1.67	+2.52 ± 1.67	0.99
N1-Acetylspermidine	μM	0.06 ± 0.00	0.07 ± 0.00	0.18	0.06 ± 0.00	0.06 ± 0.00	0.75	0.06 ± 0.00	0.07 ± 0.00	< 0.10	+0.14 ± 0.08	+0.07 ± 0.08	0.54
N6-Methyllysine	μM	3.71 ± 0.31	3.87 ± 0.36	0.15	3.87 ± 0.52	3.90 ± 0.60	0.89	3.57 ± 0.36	3.84 ± 0.44	< 0.05	+0.08 ± 0.12	+0.33 ± 0.12	0.29
Pantothenic acid	μM	0.32 ± 0.02	0.33 ± 0.02	< 0.10	0.33 ± 0.03	0.33 ± 0.04	0.31	0.30 ± 0.03	0.33 ± 0.03	< 0.10	-0.02 ± 0.09	+0.16 ± 0.09	0.14
Pelargonic acid	μM	1.17 ± 0.03	1.23 ± 0.02	< 0.05	1.21 ± 0.04	1.27 ± 0.03	0.24	1.13 ± 0.04	1.21 ± 0.03	< 0.10	+0.06 ± 0.08	+0.11 ± 0.08	0.64
Phe	μM	118.42 ± 3.22	118.15 ± 1.56	0.92	124.15 ± 6.26	115.98 ± 2.74	0.12	113.46 ± 2.36	120.02 ± 1.67	< 0.05	-4.10 ± 2.42	+5.99 ± 2.42	< 0.01
Quinic acid	μM	1.95 ± 0.21	2.20 ± 0.26	0.26	2.35 ± 0.40	1.99 ± 0.35	0.33	1.60 ± 0.16	2.39 ± 0.37	< 0.05	-0.19 ± 0.36	+0.74 ± 0.36	< 0.10
Trigonelline	μM	1.20 ± 0.19	1.54 ± 0.20	< 0.10	1.56 ± 0.35	1.76 ± 0.39	0.54	0.90 ± 0.15	1.35 ± 0.17	< 0.05	+0.25 ± 0.21	+0.47 ± 0.21	0.58
Uridine	μM	16.28 ± 0.34	17.07 ± 0.35	< 0.01	15.67 ± 0.44	16.39 ± 0.30	0.11	16.82 ± 0.49	17.67 ± 0.58	< 0.05	+0.78 ± 0.43	+0.83 ± 0.43	0.93
Urocanic acid	μM	0.25 ± 0.09	0.21 ± 0.02	0.76	0.37 ± 0.19	0.22 ± 0.03	0.48	0.15 ± 0.02	0.21 ± 0.03	< 0.10	+0.06 ± 0.06	+0.23 ± 0.06	0.16

Values show the means ± standard errors (SEs). The change value was calculated by subtracting the baseline value measured before the training intervention from the value measured after the training intervention. Statistical analyses were performed with two-sided paired *t* tests for the intragroup difference, ^atwo-sided independent *t* tests for the intergroup difference, and ^bWilcoxon signed-rank sum tests for the intragroup difference in the fluorescence intensity value. AT, aerobic training; FI, fluorescence intensity; RT, resistance training