

Extended Data 5. Blood factors that decreased significantly only after aerobic training

Blood factor	Unit	All (n = 56)			AT (n = 26)			RT (n = 30)			Change (Δ)		
		Before	After	<i>p</i> value	Before	After	<i>p</i> value	Before	After	<i>p</i> value	AT	RT	<i>p</i> value ^a
HGF	pg/mL	246.41 ± 12.06	227.63 ± 9.45	< 0.05	242.67 ± 23.22	218.04 ± 16.8	< 0.05	249.65 ± 10.55	235.94 ± 10.00	0.22	-24.63 ± 10.88	-13.71 ± 10.88	0.47
IFN-γ	pg/mL	15.07 ± 4.65	12.57 ± 3.62	< 0.10	21.01 ± 9.93	15.08 ± 7.18	< 0.05	9.94 ± 1.09	10.07 ± 1.15	0.81	-5.12 ± 1.26	-0.89 ± 1.26	0.14
IL-2Ra	pg/mL	46.22 ± 2.06	43.72 ± 1.67	0.16	48.09 ± 4.05	42.95 ± 2.64	< 0.10	44.59 ± 1.63	44.38 ± 2.15	0.92	-5.14 ± 1.97	-0.21 ± 1.97	0.16
IL-4	pg/mL	2.28 ± 0.11	2.18 ± 0.11	0.20	2.49 ± 0.20	2.27 ± 0.19	< 0.05	2.11 ± 0.11	2.11 ± 0.12	0.98	-0.23 ± 0.12	0.00 ± 0.12	0.15
IL-12(p40)	pg/mL	63.12 ± 7.64	52.32 ± 7.00	< 0.10	72.29 ± 15.12	46.38 ± 11.07	< 0.01	55.84 ± 6.64	57.62 ± 8.88	0.92	-19.35 ± 9.47	-0.20 ± 9.47	0.14
IL-13	pg/mL	2.26 ± 0.26	1.98 ± 0.22	< 0.10	2.75 ± 0.54	2.22 ± 0.41	< 0.05	1.85 ± 0.16	1.79 ± 0.20	0.72	-0.59 ± 0.16	-0.06 ± 0.16	< 0.10
SCF	pg/mL	65.95 ± 2.25	63.74 ± 2.35	0.25	64.86 ± 3.38	60.31 ± 3.31	< 0.10	66.90 ± 3.06	66.72 ± 3.27	0.95	-4.56 ± 2.98	-0.18 ± 2.98	0.26
SCGF-b	ng/mL	138.86 ± 4.27	132.28 ± 4.27	< 0.01	132.39 ± 5.52	121.58 ± 5.14	< 0.001	144.46 ± 6.27	141.55 ± 6.20	0.33	-10.82 ± 2.93	-2.91 ± 2.93	< 0.05
TRAIL	pg/mL	47.61 ± 1.65	44.39 ± 1.15	< 0.05	49.63 ± 3.07	43.07 ± 1.48	< 0.05	45.87 ± 1.52	45.55 ± 1.71	0.78	-6.56 ± 1.16	-0.32 ± 1.16	< 0.05
Eotaxin-3/CCL26	pg/mL	11.33 ± 0.67	10.32 ± 0.68	< 0.01	12.08 ± 1.32	10.77 ± 1.35	< 0.01	10.69 ± 0.51	9.92 ± 0.53	0.11	-1.32 ± 0.47	-0.76 ± 0.47	0.37
Gro-β/CXCL2	pg/mL	130.49 ± 8.22	117.92 ± 7.71	< 0.05	123.02 ± 12.00	104.54 ± 8.42	< 0.05	136.96 ± 11.35	129.52 ± 12.14	0.30	-18.48 ± 7.02	-7.43 ± 7.02	0.29
TARC/CCL17	pg/mL	36.33 ± 2.36	30.59 ± 2.74	< 0.05	35.35 ± 3.56	28.67 ± 2.98	< 0.05	37.18 ± 3.18	32.19 ± 4.40	0.21	-7.78 ± 3.90	-4.99 ± 3.90	0.58
TECK/CCL25	pg/mL	290.71 ± 8.62	269.59 ± 8.42	< 0.01	295.98 ± 12.83	268.11 ± 9.00	< 0.05	286.15 ± 11.78	270.88 ± 13.8	0.14	-27.87 ± 10.01	-15.27 ± 10.01	0.39
Amylin	FI ^b	3.17 ± 0.62	2.30 ± 0.62	0.10	4.10 ± 0.97	2.52 ± 0.71	< 0.10	2.36 ± 0.79	2.11 ± 0.98	0.62	-1.59 ± 0.67	-0.25 ± 0.67	0.22
Cortisol	ng/mL	78.93 ± 2.51	72.53 ± 2.41	< 0.01	78.98 ± 4.20	69.26 ± 3.28	< 0.05	78.88 ± 3.03	75.37 ± 3.46	0.20	-9.72 ± 2.69	-3.51 ± 2.69	0.16
T4	ng/mL	58.67 ± 2.62	53.51 ± 1.51	< 0.05	62.94 ± 5.25	55.16 ± 2.77	< 0.10	54.98 ± 1.64	52.08 ± 1.47	0.18	-7.78 ± 2.11	-2.9 ± 2.11	0.25
C-Peptide	pg/mL	735.96 ± 36.42	686.26 ± 30.23	< 0.10	752.58 ± 65.44	648.87 ± 45.32	< 0.05	721.55 ± 38.48	718.66 ± 40.28	0.92	-103.71 ± 28.72	-2.89 ± 28.72	< 0.10
IL-4Ra	pg/mL	29.94 ± 0.77	29.56 ± 0.72	0.24	30.36 ± 1.03	29.10 ± 0.81	< 0.05	29.58 ± 1.15	29.96 ± 1.15	0.25	-1.26 ± 0.33	0.39 ± 0.33	< 0.01
AgRP/ART	pg/mL	41.54 ± 3.63	40.04 ± 3.29	0.12	46.69 ± 7.42	43.32 ± 6.87	< 0.05	37.07 ± 2.01	37.21 ± 1.60	0.89	-3.37 ± 0.99	0.13 ± 0.99	< 0.10
PDGF-CC	ng/mL	3.82 ± 0.17	3.47 ± 0.17	< 0.01	3.72 ± 0.26	3.33 ± 0.20	< 0.05	3.92 ± 0.24	3.59 ± 0.26	0.10	-0.39 ± 0.20	-0.33 ± 0.20	0.81
GDF-15	pg/mL	434.03 ± 21.85	406.36 ± 16.12	< 0.10	482.08 ± 39.52	423.09 ± 26.85	< 0.10	392.39 ± 19.85	391.86 ± 19.11	0.95	-58.99 ± 9.19	-0.53 ± 9.19	< 0.10
Growth hormone	ng/mL	4.84 ± 0.61	3.55 ± 0.33	< 0.05	4.74 ± 0.85	2.98 ± 0.48	< 0.10	4.93 ± 0.87	4.05 ± 0.45	0.26	-1.76 ± 0.77	-0.88 ± 0.77	0.46
Renin	pg/mL	568.57 ± 149.94	548.04 ± 138.84	0.67	700.68 ± 293.74	538.13 ± 230.40	< 0.05	454.07 ± 118.99	556.64 ± 169.03	< 0.10	-162.56 ± 60.06	+102.57 ± 60.06	< 0.01
XCL1/Lymphotactin	pg/mL	42.76 ± 2.88	40.41 ± 2.97	0.22	42.98 ± 2.47	34.39 ± 2.29	< 0.01	42.58 ± 4.98	45.63 ± 5.03	0.17	-8.59 ± 2.20	+3.05 ± 2.20	< 0.01
Osteoactivin/GPNMB	ng/mL	16.43 ± 0.33	15.95 ± 0.34	< 0.05	15.27 ± 0.49	14.6 ± 0.45	< 0.05	17.43 ± 0.38	17.12 ± 0.39	0.25	-0.67 ± 0.26	-0.31 ± 0.26	0.34
TNF R2/TNFRSF1B	ng/mL	1.65 ± 0.08	1.54 ± 0.06	< 0.05	1.78 ± 0.14	1.58 ± 0.09	< 0.10	1.55 ± 0.09	1.51 ± 0.08	0.25	-0.19 ± 0.03	-0.04 ± 0.03	0.16
TNF R1/TNFRSF1A	pg/mL	947.99 ± 29.66	908.59 ± 24.85	< 0.05	942.71 ± 52.65	851.73 ± 35.20	< 0.01	952.56 ± 32.28	957.87 ± 32.87	0.70	-90.98 ± 13.44	+5.31 ± 13.44	< 0.01
Ferritin	ng/mL	40.66 ± 5.02	33.83 ± 3.48	< 0.05	47.93 ± 8.40	37.30 ± 5.02	< 0.10	34.35 ± 5.79	30.81 ± 4.83	0.14	-10.63 ± 2.36	-3.54 ± 2.36	0.20
2-Oxoisovaleric acid	μM	13.14 ± 0.31	12.28 ± 0.35	< 0.10	13.48 ± 0.52	12.08 ± 0.47	< 0.05	12.85 ± 0.36	12.46 ± 0.52	0.54	-1.4 ± 0.62	-0.37 ± 0.62	0.24
Ala	μM	492.54 ± 13.14	472.47 ± 12.81	0.16	492.85 ± 18.93	450.64 ± 15.79	< 0.05	492.27 ± 18.52	491.39 ± 19.19	0.97	-22.14 ± 19.19	4.23 ± 19.19	0.31
Argininosuccinic acid	μM	0.14 ± 0.00	0.14 ± 0.01	0.82	0.14 ± 0.01	0.13 ± 0.01	< 0.10	0.14 ± 0.01	0.15 ± 0.01	0.34	-0.25 ± 0.08	+0.16 ± 0.08	< 0.01
Butyrylcarnitine	μM	0.18 ± 0.03	0.16 ± 0.02	< 0.10	0.19 ± 0.04	0.17 ± 0.04	< 0.05	0.18 ± 0.04	0.15 ± 0.01	0.23	-0.14 ± 0.09	-0.01 ± 0.09	0.38
cis-Aconitic acid	μM	3.88 ± 0.09	3.61 ± 0.11	< 0.05	3.95 ± 0.15	3.51 ± 0.16	< 0.01	3.81 ± 0.11	3.71 ± 0.14	0.40	-0.47 ± 0.13	-0.12 ± 0.13	< 0.10
Cysteine glutathione disulfide	μM	1.49 ± 0.07	1.44 ± 0.10	0.65	1.54 ± 0.09	1.39 ± 0.10	< 0.10	1.43 ± 0.10	1.49 ± 0.18	0.72	-0.22 ± 0.17	-0.04 ± 0.17	0.37
Gluconic acid	μM	3.73 ± 0.10	3.70 ± 0.09	0.61	3.89 ± 0.16	3.73 ± 0.15	< 0.10	3.60 ± 0.11	3.68 ± 0.11	0.32	-0.19 ± 0.09	+0.05 ± 0.09	< 0.10
Hypotaurine	μM	1.76 ± 0.06	1.62 ± 0.06	< 0.05	1.74 ± 0.09	1.58 ± 0.08	< 0.05	1.77 ± 0.09	1.67 ± 0.10	0.28	-0.14 ± 0.10	-0.08 ± 0.10	0.69
Malic acid	μM	5.91 ± 0.26	4.88 ± 0.20	< 0.001	6.22 ± 0.52	4.40 ± 0.24	< 0.001	5.65 ± 0.19	5.29 ± 0.29	0.25	-1.89 ± 0.30	-0.36 ± 0.30	< 0.01
Methionine sulfoxide	μM	1.56 ± 0.06	1.45 ± 0.06	0.23	1.62 ± 0.08	1.42 ± 0.08	< 0.05	1.50 ± 0.09	1.48 ± 0.08	0.89	-0.24 ± 0.16	0.00 ± 0.16	0.24
Phosphorylcholine	μM	0.74 ± 0.03	0.69 ± 0.03	< 0.05	0.69 ± 0.03	0.63 ± 0.04	< 0.10	0.79 ± 0.04	0.75 ± 0.04	0.31	-0.02 ± 0.10	-0.14 ± 0.10	0.34
Pyruvic acid	μM	60.5 ± 4.20	47.53 ± 3.55	< 0.05	66.26 ± 7.10	39.92 ± 3.84	< 0.01	55.5 ± 4.80	54.13 ± 5.51	0.85	-27.07 ± 7.18	-1.64 ± 7.18	< 0.05
Succinic acid	μM	5.89 ± 0.19	5.01 ± 0.18	< 0.001	6.08 ± 0.25	4.84 ± 0.25	< 0.0001	5.72 ± 0.27	5.16 ± 0.27	0.16	-1.03 ± 0.43	-0.75 ± 0.43	0.63

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 FI value.

AT, aerobic training; FI, fluorescence intensity; RT, resistance training