Supplementary Table 1. Total and Regional Body Composition Variables Pre and Post-training

Variable	Group			
	TR70 (n=12)	TR45 (n=9)	BFR20 (n=12)	CON (n=8)
Pre Total BFLBM (gm)	60568 ± 8366	55989 ± 5695	59234 ± 8271	59617 ± 8459
Post Total BFLBM (gm)	60899 ± 8559	57461 ± 5745	59999 ± 8606	60194 ± 8613
Pre Total FFM (gm)[d]	64009 ± 8934	59241 ± 6064	62643 ± 8691	63124 ± 8966
Post Total FFM (gm)	64369 ± 9146	60694 ± 6112	63394 ± 9025	63696 ± 9103
Pre Arms BFLBM (gm)[cd]	7499 ± 401	7565 ± 349	7474 ± 320	7664 ± 425
Post Arms BFLBM (gm)	7811 ± 415[†]	7878 ± 359[††]	7787 ± 339[††]	7469 ± 409
Pre Legs BFLBM (gm)	21090 ± 1187	18741 ± 652	20526 ± 875	21695 ± 1783
Post Legs BFLBM (gm)	21673 ± 1218	19305 ± 655	21065 ± 956	21207 ± 1258
Pre Trunk BFLBM (gm)	27462 ± 983	25411 ± 910	26966 ± 1223	26374 ± 1340
Post Trunk BFLBM (gm)	24044 ± 1960	26006 ± 950	26525 ± 1126	26830 ± 1353
Pre Total FM (gm)	18320 ± 15983	11698 ± 5323	20583 ± 10766	21606 ± 10059
Post Total FM (gm)	19254 ± 16574	12057 ± 5695	28426 ± 26047	21402 ± 10453
Pre Arms FM (gm)	1388 ± 382	884 ± 162	1634 ± 293	1735 ± 315
Post Arms FM (gm)	1414 ± 358	937 ± 178	2358 ± 739	1635 ± 289
Pre Legs FM (gm)	6884 ± 1842	6307 ± 2314	6926 ± 1055	8621 ± 1616
Post Legs FM (gm)	7279 ± 1894	4339 ± 686	7022 ± 1015	6665 ± 964
Pre Trunk % Fat[c]	22.1 ± 11.1	18.9 ± 7.2	27.0 ± 9.1	29.5 ± 10.5
Post Trunk % Fat	23.2 ± 11.5[††]	18.6 ± 7.1	26.9 ± 8.8	28.7 ± 11

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Pre Trunk FM (gm)	9316 ± 2240	6169 ± 979	11335 ± 1868	12510 ± 2244
Post Trunk FM (gm)	11144 ± 3161	6287 ± 1015	10985 ± 1735	12283 ± 2308

Values are Mean ± SD. TR70 – High intensity 70% 1RM; TR45 – Moderate intensity 45% 1RM; BFR20 – Blood flow restriction 20%1RM; CON – Control; FM – Fat mass; BFLBM – Bone-free lean body mass; FFM – Fat-free mass;
[c] significant group × time interaction; [†]$p \leq 0.05$, [††]$p \leq 0.01$ significant vs. Pre; [d] $p \leq 0.01$ time main effect

Supplementary Table 2. Effect Sizes for Bone Marker and Hormone Responses

	IGF-1		IGFBP-3		T		Cortisol		Bone ALP		CTX-I	
Effect	p	η_p^2	p	η_p^2	p	η_p^2	p	η_p^2	p	η_p^2	p	η_p^2
Group	0.564	0.054	**0.048**	**0.190**	0.718	0.032	0.389	0.077	0.662	0.041	0.422	0.072
Training	**0.026**	**0.001**	0.687	0.004	0.535	0.011	**<0.0002**	**0.332**	0.740	0.003	0.773	0.002
Time	**<0.0001**	**0.192**	**0.016**	**0.147**	**0.001**	**0.271**	0.386	0.020	**<0.0001**	**0.357**	**<0.0001**	**0.558**
Group × Training	**0.051**	**0.192**	0.840	0.022	0.451	0.068	0.712	0.036	0.148	0.133	0.486	0.063
Group × Time	0.184	0.124	**<0.0001**	**0.470**	0.074	0.169	0.520	0.059	**<0.0002**	**0.295**	0.611	0.057
Training × Time	0.78	0.002	0.250	0.036	**0.019**	**0.140**	0.542	0.010	0.209	0.042	0.679	0.010
Group × Training × Time	0.217	0.115	0.259	0.102	0.460	0.007	0.246	0.105	0.766	0.043	0.145	0.127

IGF-1 - Insulin-like growth factor-1; IGFBP-3 – Insulin-like growth factor binding protein-3; T – Testosterone; Bone ALP – Bone-specific alkaline phosphatase; CTX-I - C-terminal cross-linking telopeptide of type I collagen

η_p^2 partial eta squared

Supplementary Table 3. Corrected Bone Marker Responses Pre-Exercise (Pre), Immediately Post-Exercise (IP), and 60 Minutes Post-exercise (60P) at Week 1 (WK1) and Week 6 (WK6) of Resistance Training

Variable	Group			
	TR70 (n=11)	TR45 (n=9)	BFR20 (n=11)	CON (n=6)
Bone ALP (U/L)				
WK1 Pre	42.07 ± 13.22	40.52 ± 10.58	36.07 ± 12.76	39.40 ± 12.92
WK1 IP	41.49 ± 14.53	40.65 ± 11.43	35.67 ± 11.52	39.62 ± 14.18
WK1 60P	40.42 ± 13.00	40.65 ± 11.44	36.08 ± 12.02	39.08 ± 15.07
WK6 Pre	43.26 ± 11.77	38.86 ± 10.97	37.05 ± 13.13	39.69 ± 12.66
WK6 IP	43.61 ± 11.44	38.05 ± 8.85	35.92 ± 12.10	38.45 ± 10.88
WK6 60P	41.98 ± 11.26	38.64 ± 10.08	35.55 ± 10.61	43.09 ± 15.74
CTX-I (ng/mL)[d]				
WK1 Pre	1.30± 0.55	1.17 ± 0.45	1.08 ± 0.40	1.05 ± 0.29
WK1 IP[**]	1.13 ± 0.47	0.99 ± 0.48	0.94 ± 0.39	0.97 ± 0.27
WK1 60P[**††]	1.05 ± 0.43	1.03 ± 0.52	0.75 ± 0.31	0.74 ± 0.21
WK6 Pre	1.11 ± 0.49	1.18 ± 0.46	1.03 ± 0.42	1.05 ± 0.41
WK6 IP[**]	0.96 ± 0.37	0.97 ± 0.42	0.99 ± 0.41	1.03 ± 0.42
WK6 60P[**††]	0.98 ± 0.42	0.85 ± 0.34	0.83 ± 0.36	0.83 ± 0.19

Values are Means ± SD. IP concentrations are corrected for plasma volume changes. TR70 – High intensity 70% 1RM; TR45 – Moderate intensity 45% 1RM; BFR20 – Blood flow restriction 20%1RM; CON – Control; Abs Δ from Pre; [d] $p \leq 0.001$ significant time effect; [**] $p \leq 0.01$ vs. Pre; [††] $p \leq 0.001$ vs. IP

Supplementary Table 4. Corrected Hormone Concentrations at Baseline (WK1) and Post-Training (WK6) before (Pre) and after (IP) Acute Resistance Exercise.

Variable	Group			
	TR70 (n=11)	TR45 (n=9)	BFR20 (n=11)	CON (n=6)
Testosterone (ng/mL)[ce]				
WK1 Pre Testosterone	4.69 ± 1.28	5.84 ± 2.85	4.67 ± 2.54	4.58 ± 1.64
WK1 IP Testosterone	4.75 ± 1.23	5.82 ± 2.36	4.71 ± 2.37	5.27 ± 3.13
WK6 Pre Testosterone	4.89 ± 1.81	5.89 ± 2.08	5.21 ± 2.78	5.16 ± 2.23
WK6 IP Testosterone	4.96 ± 1.71	4.92 ± 2.07	4.72 ± 2.59	4.97 ± 2.06
Cortisol (µg/dL)[bd]				
WK 1 Pre Cortisol	27.58 ± 4.55	30.29 ± 14.90	30.59 ± 10.85	23.65 ± 9.69
WK 1 IP Cortisol	26.95 ± 5.23	30.58 ± 20.93	25.92 ± 14.15	21.20 ± 13.76
WK 6 Pre Cortisol	22.18 ± 3.91	28.71 ± 17.4	24.92 ± 8.59	17.81 ± 8.96
WK 6 IP Cortisol	20.94 ± 6.41	21.35 ± 9.61	21.19 ± 10.23	19.87 ± 11.56
IGF-1 (ng/mL)				
WK 1 Pre IGF-1	128.83 ± 41.94	130.88 ± 44.06	136.38 ± 43.43	120.00 ± 64.82
WK 1 IP IGF-1	140.35 ± 51.11	126.32 ± 46.61	133.77 ± 43.68	116.85 ± 71.13
WK 6 Pre IGF-1	131.77 ± 59.41	144.20 ± 44.64	151.83 ± 45.66	100.15 ± 40.04
WK 6 IP IGF-1	131.32 ± 56.81	142.91 ± 50.07	149.78 ± 43.57	99.85 ± 45.02
IGFBP-3 (ng/mL) [ad]				
WK 1 Pre IGFBP-3	2158.58 ± 515.55	2442.78 ± 283.63	2690.09 ± 407.54	2351.08 ± 317.62
WK 1 IP IGFBP-3	2108.63 ± 448.66	2289.01 ± 231.74	2655.99 ± 322.68	2235.83 ± 430.75

WK 6 Pre IGFBP-3	2021.76 ± 319.18	2353.86 ± 274.93	2816.30 ± 421.09	2391.12 ± 809.31
WK 6 IP IGFBP-3	2036.33 ± 388.94	2314.57 ± 347.41	2608.73 ± 490.18	2269.46 ± 633.47

Values are Mean ± SD. IP concentrations are corrected for plasma volume changes. IGF-1 - Insulin-like growth factor-1; IGFBP-3 – Insulin-like growth factor binding protein-3; Abs Δ - Absolute Change; [a] $p \leq 0.05$ significant group effect TR70 vs. BFR20; [b] $p \leq 0.01$ significant training effect vs. WK 1; [c] $p \leq 0.05$ significant group × time interaction; [d] $p \leq 0.01$ significant time effect vs. Pre; [e] $p \leq 0.05$ significant training × time interaction

Supplementary Table 5. Upper Body 1RM strength (kg) for each group at baseline (Pre), week 3 (Mid), and post-training (Post)

Variable	Group			
	TR70 (n=12)	TR45 (n=9)	BFR20 (n=12)	CON (n=8)
Pre LP	67.0 ± 11.1	66.3 ± 7.9	64.0 ± 11.1	77.4 ± 18.7
Mid LP	71.0 ± 15.8	73.9 ± 12.1*	73.6 ± 13.3**	76.7 ± 21
Post LP	78.6 ± 14.7**	77.3 ± 12**†	79.4 ± 13.4**††	78.0 ± 25.7
Pre SP	63.9 ± 12.3	65.7 ± 9	61.9 ± 20.5	84.1 ± 30
Mid SP	72.2 ± 8.4**	76.7 ± 15.4*	69.6 ± 17.2	87.6 ± 28.6*
Post SP	78.0 ± 14.4**	78.1 ± 16.2*	76.8 ± 16.4**††	89.3 ± 30.1*
Pre BC	39.8 ± 8.9	42.9 ± 9.7	38.8 ± 14.0	45.5 ± 14.6
Mid BC	49.8 ± 12.9**	48.6 ± 8.3*	47.3 ± 13.3**	45.1 ± 9.4
Post BC	50.9 ± 12.1**	53.4 ± 10.7**††	53.2 ± 12.8**††	49.1 ± 14.9
Pre TE	40.0 ± 8.0	38.2 ± 6.0	46.3 ± 9.5	41.2 ± 12.1
Mid TE	51.4 ± 16.5*	44.2 ± 8.8**	49.8 ± 11.1**	46.5 ± 16.5
Post TE	49.3 ± 9.2**	46.4 ± 8.4**	48.8 ± 10.9**††	46.7 ± 17.1

Values are Mean ± SD. TR70 – High intensity 70% 1RM; TR45 – Moderate intensity 45% 1RM; BFR20 – Blood flow restriction 20%1RM; CON – Control; LP – Lat pull down; SP – Shoulder press; BC – Bicep curl; TE – Triceps extension. * $p \leq 0.05$ vs. pre; $^{**}p \leq 0.01$ vs. pre; † $p \leq 0.05$ vs. mid; $^{\dagger\dagger}p \leq 0.01$ vs. mid