Supplemental table 1: *Sample size calculations.* Summary of the prospective power analysis on anticipated interaction effects between the contraction type (i.e. eccentric vs. concentric) x exercise/training on the exercise response that were of interest to our investigation. Calculations were carried out with G*Power with the indicated values for alpha and beta.

response type	parameter type	parameter	time point vs. exercise	exercise type	intensity per 1RM	exercise volume	contraction number	exercise device	muscle group	effect size f	alpha	power (1-beta)	sample size	references
acute	cardiopulmonary	peak cardiac output	during	interval type	17%	1x	450	soft robot	knee extensors	0.913	0.05	0.80	16	Fluck et al 2017
acute	cardiopulmonary	peak heart rate	during	interval type	17%	1x	450	soft robot	knee extensors	1.214	0.05	0.80	10	Fluck et al 2017
acute	cardiopulmonary	VO2peak	during	interval type	17%	1x	450	soft robot	knee extensors	1.667	0.05	0.80	6	Fluck et al 2017
acute	cardiopulmonary	oxygen uptake	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	2.322	0.05	0.80	6	Meyer et al 2003
acute	cardiopulmonary	heart rate	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	0.818	0.05	0.80	12	Meyer et al 2003
acute	cardiovascular	mean arterial blood pressure	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	0.115	0.05	0.80	> 1Mio	Meyer et al 2003
acute	cardiovascular	systemic vascular resistance	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	0.395	0.05	0.80	38	Meyer et al 2003
acute	cardiovascular	arterio-venous O2 difference	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	1.570	0.05	0.80	6	Meyer et al 2003
acute	muscle metabolism	blood lactate concentration	during	continuous cycling	30%	1x, into training	1650	cycle ergometer	knee extensors	0.827	0.05	0.80	12	Meyer et al 2003
acute	muscle metabolism	maximal blood lactate	during	interval type	17%	1x	450	soft robot	knee extensors	0.941	0.05	0.80	15	Fluck et al, 2017
acute	muscle metabolism	lactate finish	end	interval type	17%	1x	450	soft robot	knee extensors	2.000	0.05	0.80	5	Fluck et al 2017
acute	muscle metabolism	lactate 8-min post	8 min post	interval type	17%	1x	450	soft robot	knee extensors	2.135	0.05	0.80	5	Fluck et al 2017
acute	cardiovascular	blood glucose concentration	end	interval type	17%	1x	450	soft robot	knee extensors	0.385	0.05	0.80	62	Fluck et al 2017
acute	cardiovascular	blood glucose concentration	8 min post	interval type	17%	1x	450	soft robot	knee extensors	0.308	0.05	0.80	94	Fluck et al 2017
acute	cardiovascular	blood glucose concentration	48 hrs post	resistance	100%	1x	75	dynamometer	knee extensors	0.920	0.05	0.80	10	Paschalis et al 2011
acute	muscle strength	peak torque	end	resistance	100%	1x	75	dynamometer	knee extensors	1.028	0.05	0.80	8	Paschalis et al 2011

acute 2011	muscle strength	peak torque	48 hrs post	resistance	100%	1x	75	dynamometer	knee extensors	4.850	0.05	0.80	4	Paschalis et al	
training	cardiopulmonary 12736	VO2peak Meyer et al, 2003	at rest	continuous cycling		30%	24 x over 8 weeks	39600	cycle ergometer	knee extensors		0.002	0.05	0.80	
training 2011	cardiovascular	blood glucose concentration	before & 48 h post	resistance	100%	8x over 8 weeks	600	dynamometer	knee extensors	0.780	0.05	0.80	12	Paschalis et al	
training	cardiovascular	blood glucose concentration	fasted at rest	leg extension	75%	12 x over 12 weeks	540	leg extension	knee extensors	2.000	0.05	0.80	6	Chen et al 2017	
training	cardiovascular	HOMA index	at rest	leg extension	75%	12x over 12 weeks	540	leg extension	knee extensors	3.400	0.05	0.80	4	Chen et al 2017	
training 2006	muscle strength	one repetition maximum (1RM)		at rest	resistance	100%	24x over 8 weeks	1200	arm curl	arms	0.950	0.05	0.80	12Okamoto et	
training 1998	muscle strength	one repetition maximum	at rest	hamstring curls	100%	12x over 6 weeks	192	leg-curl machine	hamstrings	1.150	0.05	0.80	8	Kaminski et al	
training	muscle strength	one repetition maximum	at rest	hamstring curls	100%	24x over 8 weeks	360	leg-curl machine	hamstrings	1.290	0.05	0.80	6	Potier et al 2009	
training	muscle strength	peak torque	at rest	resistance	100%	60x over 20 weeks	2400	dynamometer	knee extensors	0.920	0.05	0.80	10	Seger et al 1998	
training 2007	muscle strength	torque	at rest	resistance	100%	30 x over 10 weeks	900	dynamometer	knee extensors	0.290	0.05	0.80	86	Blazevich etal	
training 1Mio	muscle strength Meyer et al 2003	PPO	at rest	continuous cycling		30%	24x over 8 weeks	39600	cycle ergometer	knee extensors		0.000	0.05	0.80	>
training	muscle strength 1976	PPO Meyer et al 2003	at rest	continuous cycling		30%	24x over 8 weeks	39600	cycle ergometer	knee extensors		0.050	0.05	0.80	

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Supplemental table 2: *Correlations between stress during the stimulus of interval exercise and the adjustments with training.*

List of the 131 linear relationships between indices of metabolic and mechanical stress during interval exercise and training-induced adjustments (nodes) for Pearson correlations which passed a threshold of |r| >0.70 and p<0.05 as shown in a condensed manner in figure 5. Underlined parameters reflect those which demonstrated significant interaction effects of interval 'training' x the contraction 'protocol'. Abbreviations/code: _A, AUC during exercise; BPdia, diastolic blood pressure; BPsys, systolic blood pressure; bm, body mass; DO2, oxygen deficit; DO2_ave, average oxygen deficit; fold, post vs. pre ratio; gas, m. gastrocnemius; glucose, blood glucose concentration; HR, heart rate; _I, during interval exercise; _S, number of intervals (sets); _L, left leg; lactate, blood lactate concentration; nPP, negative peak power; nW, negative work; P_ave, average power; post, after training; PPO, peak power output during the ramp test; pPP, positive peak power; pre, prior to training; pW, positive work; rPP, reactive peak power; R, right leg; _R, during ramp test; pRFD, rate of force development during the development of positive peak power; RPE, rate of perceived exertion; sP, target power per PPO; _t, exercise duration; tHb, concentration of total hemoglobin; vas, m. vastus lateralis; tHb_ave, average concentration of total hemoglobin; VO2peak, peak oxygen uptake.

node_1	***node_2***	***r-value***
fold_tHb_ave_vas_I	fold_A_lactate_I	-0.785
post_A_BPdia_I	fold_pPP	-0.701
post_A_BPdia_I	fold_pRFD	-0.705
post_A_BPdia_I	fold_rPP	-0.723
post_A_BPdia_I	fold_tHb_ave_vas_I	-0.874
post_A_BPsys_I	fold_pPP	-0.772
post_A_BPsys_I	fold_pRFD	-0.816
post_A_lactate_I	fold_tHb_ave_gas_I	-0.67
post_A_tHb_gas_I	fold_VO2peak	-0.709
post_A_tHb_vas_I	fold_A_lactate_R	-0.78
post_DO2_ave_vas_I	fold_A_glucose_R	-0.738
post_DO2_vas_I	fold_A_lactate_R	-0.789
post_DO2_vas_I	fold_pPP	-0.699
post_S_I	fold_A_lactate_R	-0.706
post_nW_L_I	fold_A_tHb_vas_I	-0.693
post_nW_L_I	fold_t_I	-0.732
post_pW_L_I	fold_A_lactate_R	-0.736
post_pW_L_I	fold_pRFD	-0.678
post_pW_R_I	fold_A_lactate_R	-0.742
post_pW_R_I	fold_pRFD	-0.689
post_sP_I	fold_P_I	-0.772

post_sP_I	fold_sP_I	-0.767
post_tHb_ave_vas_I	fold_A_BPdia_R	-0.698
post_tHb_ave_vas_I	fold_A_HR_I	-0.678
post_tHb_ave_vas_I	fold_P_ave_L_I	-0.686
post_tHb_ave_vas_I	fold_P_ave_R_I	-0.7
post_tHb_ave_vas_I	fold_pW__R_I	-0.697
post_tHb_ave_vas_I	fold_pW_L_I	-0.67
pre_A_BPdia_I	fold_A_BPdia_I	-0.696
pre_A_BPdia_I	fold_bm	-0.841
pre_A_BPdia_I	fold_pPP	-0.729
pre_A_BPdia_I	fold_pRFD	-0.711
pre_A_BPsys_I	fold_A_glucose_I	-0.829
pre_A_BPsys_I	fold_nW_L_I	-0.697
pre_A_BPsys_I	fold_nW_R_I	-0.676
pre_A_BPsys_I	fold_pPP	-0.974
pre_A_BPsys_I	fold_pRFD	-0.973
pre_A_glucose_I	fold_A_glucose_I	-0.673
pre_A_glucose_I	fold_pPP	-0.758
pre_A_glucose_I	fold_pRFD	-0.848
pre_A_HR_I	fold_A_BPdia_R	-0.735
pre_A_HR_I	fold_A_glucose_I	-0.679
pre_A_HR_I	fold_A_lactate_R	-0.715
pre_A_HR_I	fold_A_RPE_I	-0.678
pre_A_RPE_I	fold_A_BPdia_R	-0.751
pre_A_RPE_I	fold_A_glucose_I	-0.746
pre_A_RPE_I	fold_A_lactate_R	-0.706
pre_A_RPE_I	fold_A_RPE_I	-0.677
pre_A_RPE_I	fold_nW_L_I	-0.708
pre_A_tHb_gas_I	post_nW_L_I	-0.85
pre_A_tHb_gas_I	post_nW_R_I	-0.86

pre_A_tHb_vas_I	fold_A_BPdia_R	-0.709
pre_A_tHb_vas_I	fold_A_lactate_R	-0.821
pre_A_tHb_vas_I	fold_pRFD	-0.698
pre_DO2_ave_gas_I	fold_A_glucose_R	-0.811
pre_DO2_ave_vas_I	fold_A_BPsys_I	-0.695
pre_DO2_ave_vas_I	fold_A_glucose_R	-0.868
pre_DO2_ave_vas_I	fold_A_HR_I	-0.707
pre_DO2_ave_vas_I	fold_nPP	-0.702
pre_DO2_ave_vas_I	fold_P_ave_L_I	-0.671
pre_DO2_gas_I	fold_A_glucose_R	-0.732
pre_DO2_gas_I	fold_pPP	-0.671
pre_DO2_vas_I	fold_A_glucose_R	-0.792
pre_DO2_vas_I	fold_A_HR_I	-0.684
pre_DO2_vas_I	fold_nW_R_I	-0.692
pre_DO2_vas_I	fold_P_ave_L_I	-0.674
pre_DO2_vas_I	fold_pPP	-0.697
pre_S_I	fold_A_lactate_R	-0.732
pre_nW_R_I	fold_A_tHb_vas_I	-0.7
pre_nW_R_I	fold_t_I	-0.746
pre_P_ave_L_I	fold_A_HR_I	-0.794
pre_P_ave_L_I	fold_DO2_vas_I	-0.694
pre_P_ave_L_I	fold_P_ave_L_I	-0.833
pre_P_ave_L_I	fold_P_ave_R_I	-0.797
pre_P_ave_L_I	fold_pW__R_I	-0.755
pre_P_ave_L_I	fold_pW_L_I	-0.832
pre_P_ave_L_I	fold_t_I	-0.768
pre_P_ave_R_I	fold_A_BPdia_R	-0.702
pre_P_ave_R_I	fold_A_HR_I	-0.826
pre_P_ave_R_I	fold_DO2_vas_I	-0.676
pre_P_ave_R_I	fold_nW_R_I	-0.692

pre_P_ave_R_I	fold_P_ave_L_I	-0.866
pre_P_ave_R_I	fold_P_ave_R_I	-0.833
pre_P_ave_R_I	fold_pW__R_I	-0.782
pre_P_ave_R_I	fold_pW_L_I	-0.852
pre_P_ave_R_I	fold_t_I	-0.706
pre_P_I	fold_A_BPdia_R	-0.73
pre_pW_L_I	fold_A_BPdia_R	-0.917
pre_pW_L_I	fold_A_lactate_R	-0.838
pre_pW_L_I	fold_nW_L_I	-0.687
pre_pW_R_I	fold_A_BPdia_R	-0.896
pre_pW_R_I	fold_A_lactate_R	-0.825
pre_sP_I	fold_P_I	-0.959
pre_sP_I	fold_sP_I	-0.957
pre_t_I	fold_A_lactate_R	-0.732
fold_A_HR_I	fold_A_lactate_I	0.857
fold_A_lactate_R	post_nW_R_I	0.695
fold_DO2_ave_gas_I	fold_A_lactate_I	0.771
fold_DO2_ave_vas_I	fold_A_lactate_I	0.675
fold_DO2_gas_I	fold_A_lactate_I	0.809
fold_P_ave_L_I	fold_A_lactate_I	0.815
fold_P_ave_R_I	fold_A_lactate_I	0.872
fold_pW__R_I	fold_A_lactate_I	0.918
post_A_gluc_I	fold_t_I	0.768
post_A_HR_I	fold_DO2_vas_I	0.677
post_A_HR_I	fold_t_I	0.681
post_A_tHb_gas_I	fold_A_tHb_gas_I	0.722
post_A_tHb_gas_I	fold_A_tHb_vas_I	0.725
post_A_tHb_gas_I	fold_t_I	0.745
post_A_tHb_vas_I	fold_A_tHb_vas_I	0.723
post_A_tHb_vas_I	fold_t_I	0.702

post_nW_L_I	fold_A_lactate_R	0.686
post_nW_R_I	fold_pRFD	0.7
post_t_I	fold_A_tHb_vas_I	0.718
post_t_I	fold_t_I	0.783
post_tHb_ave_gas_I	fold_tHb_ave_gas_I	0.963
post_tHb_ave_vas_I	fold_tHb_ave_vas_I	0.802
pre_A_glucose_I	pre_A_HR_I	0.759
pre_A_RPE_I	pre_A_HR_I	0.865
pre_A_tHb_gas_I	post_A_HR_I	0.758
pre_A_tHb_gas_I	post_A_RPE_I	0.763
pre_A_tHb_gas_I	post_A_tHb_vas_I	0.821
pre_A_tHb_gas_I	pre_A_BPsys_I	0.707
pre_A_tHb_gas_I	pre_A_RPE_I	0.827
pre_A_tHb_gas_I	pre_A_tHb_vas_I	0.984
pre_A_tHb_gas_I	pre_t_I	0.966
pre_A_tHb_vas_I	pre_A_HR_I	0.819
pre_P_I	fold_PPO	0.693
pre_pW_L_I	pre_A_HR_I	0.863
pre_pW_R_I	pre_A_HR_I	0.882
pre_sP_I	fold_VO2peak	0.705

Supplemental table 3: *Correlations between stress during the stimulus of interval exercise.*

List of the 266 linear relationships between indices of metabolic and mechanical stress during interval exercise prior and post interval training (nodes) for Pearson correlations which passed a threshold of |r| >0.70 and $p<0.05$. Abbreviations/code: _A, AUC during exercise; BPdia, diastolic blood pressure; BPsys, systolic blood pressure; bm, body mass; DO2, oxygen deficit; DO2_ave, average oxygen deficit; gas, m. gastrocnemius; glucose, blood glucose concentration; HR, heart rate; _L, left leg; lactate, blood lactate concentration; nW, negative work; P_ave, average power; post, after training; PPO, peak power output during the ramp test; pre, prior to training; pW, positive work; R, right leg; RPE, rate of perceived exertion; S, number of intervals (sets); sP, target power per PPO; t, exercise duration; tHb, concentration of total hemoglobin; vas, m. vastus lateralis; tHb_ave, average concentration of total hemoglobin.

node_1	*node_2*	*r-value*
DO2_ave_gas_post	DO2_ave_vas_post	0.679
DO2_ave_gas_post	DO2_vas_post	0.684
DO2_ave_gas_pre	DO2_ave_vas_post	0.793
DO2_ave_gas_pre	DO2_ave_vas_pre	0.869
DO2_ave_gas_pre	DO2_vas_pre	0.820
DO2_ave_vas_post	DO2_ave_vas_pre	0.842
DO2_ave_vas_post	ave_tHb_vas_pre	0.771
DO2_ave_vas_post	DO2_gas_pre	0.811
DO2_ave_vas_pre	ave_tHb_vas_pre	0.686
ave_tHb_gas_pre	ave_tHb_vas_post	0.696
ave_tHb_gas_pre	ave_tHb_vas_pre	0.778

ave_tHb_gas_pre	P_week3_4	0.840
ave_tHb_gas_pre	P_week5_6	0.868
ave_tHb_vas_post	ave_tHb_vas_pre	0.691
ave_tHb_vas_post	P_ave_L_pre	0.741
ave_tHb_vas_pre	P_ave_L_pre	0.675
ave_tHb_vas_pre	P_ave_R_pre	0.716
ave_tHb_vas_pre	DO2_gas_pre	0.734
ave_tHb_vas_pre	DO2_vas_post	0.701
ave_tHb_vas_pre	P_week5_6	0.683
ave_tHb_vas_pre	P_week7_8	0.728
ave_tHb_vas_pre	pW_L_pre	0.740
ave_tHb_vas_pre	pW_R_pre	0.709
P_ave_L_post	P_ave_R_post	0.895
P_ave_L_pre	P_ave_R_pre	0.984
P_ave_R_post	P_week1_2	0.680
P_ave_R_post	P_week3_4	0.722
P_ave_R_post	P_week5_6	0.744
P_ave_R_post	P_week7_8	0.753
P_ave_R_pre	ave_tHb_vas_post	0.810

P_ave_R_pre	P_week7_8	0.673
A_RPE_post	A_RPE_pre	0.670
A_RPE_post	A_BPsys_post	0.854
A_RPE_post	A_HR_post	0.691
A_RPE_post	A_lactate_post	0.787
A_RPE_post	t_post	0.709
A_RPE_post	t_pre	0.801
A_RPE_post	S_post	0.692
A_RPE_post	S_pre	0.801
A_RPE_post	pW_R_post	0.786
A_RPE_pre	A_BPsys_pre	0.712
A_RPE_pre	t_pre	0.781
A_RPE_pre	nW_L_post	0.670
A_RPE_pre	nW_R_post	0.677
A_RPE_pre	S_pre	0.781
A_RPE_pre	pW_R_post	0.695
A_BPdia_post	A_BPsys_post	0.764
A_BPdia_pre	A_BPsys_post	0.680
A_BPsys_post	A_glucose_pre	0.725

A_BPsys_post	A_BPsys_pre	0.752
A_BPsys_post	t_post	0.673
A_BPsys_post	t_pre	0.677
A_BPsys_post	S_pre	0.677
A_BPsys_post	DO2_gas_post	0.793
A_BPsys_post	DO2_vas_post	0.684
A_BPsys_post	pW_R_post	0.804
A_BPsys_post	Thb_gas_post	0.709
A_BPsys_post	Thb_gas_pre	0.734
A_BPsys_post	Thb_vas_pre	0.724
A_BPsys_pre	DO2_gas_pre	0.709
A_BPsys_pre	DO2_vas_post	0.703
A_BPsys_pre	Thb_vas_pre	0.679
A_glucose_post	A_lactate_post	0.705
A_glucose_post	t_post	0.775
A_glucose_pre	A_BPsys_pre	0.816
A_glucose_pre	A_HR_post	0.810
A_glucose_pre	A_lactate_post	0.825
A_glucose_pre	t_post	0.815

A_glucose_pre	t_pre	0.826
A_glucose_pre	nW_L_post	0.859
A_glucose_pre	nW_R_post	0.880
A_glucose_pre	S_post	0.798
A_glucose_pre	S_pre	0.826
A_glucose_pre	pW_L_post	0.734
A_glucose_pre	pW_R_post	0.727
A_glucose_pre	Thb_gas_pre	0.806
A_glucose_pre	Thb_vas_post	0.743
A_glucose_pre	Thb_vas_pre	0.761
A_HR_post	A_BPsys_post	0.730
A_HR_post	A_lactate_post	0.853
A_HR_post	t_post	0.929
A_HR_post	t_pre	0.787
A_HR_post	S_pre	0.787
A_HR_post	Thb_gas_post	0.672
A_HR_post	Thb_vas_pre	0.703
A_HR_pre_rect	A_BPsys_pre	0.738
A_HR_pre_rect	A_lactate_pre	0.886

A_HR_pre_rect	t_pre	0.786
A_HR_pre_rect	nW_L_post	0.738
A_HR_pre_rect	nW_R_post	0.751
A_HR_pre_rect	S_pre	0.786
A_HR_pre_rect	pW_R_post	0.670
A_HR_pre_rect	Thb_gas_pre	0.848
A_HR_pre_rect	Thb_vas_post	0.760
A_lactate_post	t_post	0.893
A_lactate_post	S_post	0.931
A_lactate_post	S_pre	0.910
A_lactate_post	pW_L_post	0.853
A_lactate_post	pW_R_post	0.836
A_lactate_post	Thb_gas_pre	0.810
A_lactate_post	Thb_vas_post	0.781
A_lactate_post	Thb_vas_pre	0.820
A_lactate_pre	pW_L_pre	0.685
t_post	nW_R_post	0.949
t_post	S_pre	0.811
t_post	pW_L_post	0.855

t_post	pW_R_post	0.829
t_post	Thb_gas_post	0.776
t_post	Thb_gas_pre	0.764
t_post	Thb_vas_post	0.944
t_post	Thb_vas_pre	0.746
t_pre	A_lactate_post	0.910
t_pre	t_post	0.811
t_pre	nW_L_post	0.874
t_pre	nW_L_pre	0.819
t_pre	nW_R_post	0.881
t_pre	nW_R_pre	0.804
t_pre	S_post	0.881
t_pre	S_pre	1.000
t_pre	pW_L_post	0.876
t_pre	pW_L_pre	0.769
t_pre	pW_R_post	0.880
t_pre	pW_R_pre	0.780
t_pre	Thb_vas_post	0.806
nW_L_post	A_RPE_post	0.750

nW_L_post	A_BPsys_post	0.740
nW_L_post	A_HR_post	0.967
nW_L_post	A_lactate_post	0.891
nW_L_post	t_post	0.960
nW_L_post	nW_L_pre	0.984
nW_L_post	nW_R_post	0.996
nW_L_post	nW_R_pre	0.977
nW_L_post	pW_L_post	0.913
nW_L_post	pW_R_post	0.904
nW_L_post	Thb_gas_post	0.738
nW_L_post	Thb_vas_post	0.934
nW_L_pre	A_glucose_pre	0.794
nW_L_pre	A_RPE_post	0.721
nW_L_pre	A_BPsys_post	0.669
nW_L_pre	A_HR_post	0.961
nW_L_pre	A_lactate_post	0.864
nW_L_pre	t_post	0.976
nW_L_pre	t_pre	0.819
nW_L_pre	nW_R_post	0.968

nW_L_pre	nW_R_pre	0.999
nW_L_pre	S_post	0.924
nW_L_pre	pW_L_post	0.865
nW_L_pre	pW_R_post	0.850
nW_L_pre	Thb_gas_post	0.763
nW_L_pre	Thb_gas_pre	0.776
nW_L_pre	Thb_vas_post	0.939
nW_L_pre	Thb_vas_pre	0.751
nW_R_post	A_RPE_post	0.731
nW_R_post	A_BPsys_post	0.745
nW_R_post	A_HR_post	0.964
nW_R_post	A_lactate_post	0.900
nW_R_post	pW_L_post	0.922
nW_R_post	pW_R_post	0.913
nW_R_post	Thb_gas_post	0.703
nW_R_post	Thb_vas_post	0.921
nW_R_pre	A_glucose_pre	0.779
nW_R_pre	A_RPE_post	0.731
nW_R_pre	A_BPsys_post	0.673

nW_R_pre	A_HR_post	0.960
nW_R_pre	A_lactate_post	0.857
nW_R_pre	t_post	0.975
nW_R_pre	nW_R_post	0.958
nW_R_pre	S_post	0.912
nW_R_pre	pW_L_post	0.856
nW_R_pre	pW_R_post	0.840
nW_R_pre	Thb_gas_post	0.770
nW_R_pre	Thb_gas_pre	0.759
nW_R_pre	Thb_vas_post	0.930
nW_R_pre	Thb_vas_pre	0.735
S_post	A_HR_post	0.943
S_post	t_post	0.907
S_post	nW_L_post	0.954
S_post	nW_R_post	0.966
S_post	S_pre	0.881
S_post	pW_L_post	0.940
S_post	pW_R_post	0.926
S_post	Thb_gas_pre	0.833

S_post	Thb_vas_post	0.862
S_pre	nW_L_post	0.874
S_pre	nW_R_post	0.881
S_pre	nW_R_pre	0.804
S_pre	pW_L_pre	0.769
S_pre	pW_R_pre	0.780
S_pre	Thb_gas_pre	0.966
S_pre	Thb_vas_post	0.806
S_pre	Thb_vas_pre	0.966
DO2_gas_post	DO2_ave_gas_post	0.917
DO2_gas_post	DO2_vas_post	0.824
DO2_gas_post	Thb_gas_post	0.752
DO2_gas_pre	DO2_ave_gas_pre	0.931
DO2_gas_pre	DO2_ave_vas_pre	0.817
DO2_gas_pre	DO2_vas_post	0.795
DO2_gas_pre	DO2_vas_pre	0.905
DO2_vas_post	DO2_ave_vas_post	0.841
DO2_vas_post	DO2_vas_pre	0.718
DO2_vas_post	Thb_gas_post	0.771

DO2_vas_pre	DO2_ave_vas_post	0.847
DO2_vas_pre	DO2_ave_vas_pre	0.929
DO2_vas_pre	ave_tHb_vas_pre	0.803
DO2_vas_pre	A_BPsys_pre	0.682
sP_week1_2	sP_week3_4	0.976
sP_week1_2	sP_week5_6	0.956
sP_week1_2	sP_week7_8	0.919
sP_week3_4	sP_week5_6	0.996
sP_week3_4	sP_week7_8	0.973
sP_week3_4	Thb_gas_post	0.669
sP_week5_6	sP_week7_8	0.984
sP_week5_6	Thb_gas_post	0.689
sP_week7_8	Thb_gas_post	0.678
sP_week7_8	Thb_vas_post	0.675
P_week1_2	ave_tHb_gas_pre	0.814
P_week1_2	P_week3_4	0.993
P_week1_2	P_week5_6	0.975
P_week1_2	P_week7_8	0.957
P_week3_4	P_week5_6	0.991

P_week3_4	P_week7_8	0.978
P_week5_6	ave_tHb_vas_post	0.711
P_week5_6	P_week7_8	0.997
P_week7_8	ave_tHb_gas_pre	0.868
P_week7_8	ave_tHb_vas_post	0.735
P_week7_8	pW_L_pre	0.684
pW_L_post	A_RPE_post	0.765
pW_L_post	A_BPsys_post	0.784
pW_L_post	A_HR_post	0.900
pW_L_post	S_pre	0.876
pW_L_post	pW_L_pre	0.715
pW_L_post	pW_R_post	0.997
pW_L_post	pW_R_pre	0.719
pW_L_post	Thb_gas_post	0.689
pW_L_post	Thb_gas_pre	0.899
pW_L_post	Thb_vas_post	0.861
pW_L_pre	A_RPE_pre	0.848
pW_L_pre	pW_R_post	0.741
pW_L_pre	pW_R_pre	0.994

pW_L_pre	Thb_gas_pre	0.877
pW_L_pre	Thb_vas_post	0.679
pW_R_post	A_HR_post	0.886
pW_R_post	S_pre	0.880
pW_R_post	pW_R_pre	0.744
pW_R_post	Thb_gas_post	0.685
pW_R_post	Thb_gas_pre	0.910
pW_R_post	Thb_vas_post	0.844
pW_R_post	Thb_vas_pre	0.884
pW_R_pre	A_RPE_pre	0.862
pW_R_pre	A_lactate_pre	0.704
pW_R_pre	sP_week5_6	0.698
pW_R_pre	sP_week7_8	0.693
pW_R_pre	Thb_gas_pre	0.885
pW_R_pre	Thb_vas_post	0.714
pW_R_pre	Thb_vas_pre	0.889
Thb_gas_post	Thb_vas_post	0.846
Thb_vas_post	A_HR_post	0.856
Thb_vas_pre	A_RPE_post	0.815

Thb_vas_pre	A_RPE_pre	0.843
Thb_vas_pre	t_pre	0.966
Thb_vas_pre	nW_L_post	0.822
Thb_vas_pre	nW_R_post	0.829
Thb_vas_pre	S_post	0.807
Thb_vas_pre	pW_L_post	0.870
Thb_vas_pre	pW_L_pre	0.884
Thb_vas_pre	Thb_vas_post	0.805

Supplemental table 4: *Retrospective power analysis.* List summarizing the calculated effect size f and power for the applied statistical model of a repeated ANOVA for the within factor `training` (T) and the between factor `protocol` as calculated using G*Power for the statistical sizes (alpha p-values, effect size ◎2 and the correlation of repeated measures) for within-between interactions for repeated-measures ANOVA that revealed from the descriptive analysis of the results with SPSS.

parameter type	parameter	exercise type	exercise device	alpha (P) between	alpha (T) within	alpha (T x P) within x between	h2 (TxP)	r-value	effect size f within-between interactions	Power (1-beta)
muscle strength	PPP	interval type exercise	soft robot	0.829	<0.001	0.043	0.467	0.970	0.936	0.999
muscle strength	NPP	interval type exercise	soft robot	0.591	0.022	0.391	0.107	0.580	0.346	0.498
cardiopulmonary	RPE	interval type exercise	soft robot	0.004	0.004	0.015	0.072	0.810	0.279	0.962
cardiovascular	serum glucose concentration 0.558		interval type exercise		soft robot	<0.001	0.638	0.031	0.058	0.500 0.248
muscle metabolism	blood lactate concentration	interval type exercise	soft robot	0.001	0.001	0.050	0.050	0.870	0.230	0.997
cardiopulmonary	systolic blood pressure	interval type exercise	soft robot	0.012	0.405	0.001	0.131	0.880	0.388	0.998
cardiopulmonary	diastolic blood pressure	interval type exercise	soft robot	<0.001	0.500	0.200	0.021	0.690	0.147	0.800
cardiopulmonary	heart rate	interval type exercise	soft robot	0.009	0.092	0.009	0.092	0.930	0.318	0.999
muscle metabolism	total O2 deficit	interval type exercise	soft robot	0.096	0.006	0.037	0.274	0.700	0.614	0.815
muscle metabolism	average O2 deficit	interval type exercise	soft robot	0.782	0.473	0.036	0.277	0.880	0.619	1.000
muscle metabolism	total tHb	interval type exercise	soft robot	<0.001	<0.001	0.092	0.189	0.290	0.483	0.908
muscle metabolism	average tHb	interval type exercise	soft robot	0.365	0.002	0.236	0.099	0.370	0.332	0.617
cardiopulmonary	RPE	ramp exercise	cycle ergometer	<0.001	0.011	0.261	0.029	0.810	0.173	0.519
muscle metabolism	lactate	ramp exercise	cycle ergometer	<0.001	0.100	<0.001	0.296	0.870	0.648	1.000

cardiovascular	glucose	ramp exercise	cycle ergometer	0.572	0.273	0.497	0.011	0.500	0.106	0.100
cardiopulmonary	heart rate	ramp exercise	cycle ergometer	0.045	0.631	0.007	0.153	0.930	0.425	1.000
cardiopulmonary	systolic blood pressure	ramp exercise	cycle ergometer	<0.001	0.628	0.148	0.047	0.880	0.222	0.940
cardiopulmonary	diastolic blood pressure	ramp exercise	cycle ergometer	0.854	0.007	0.186	0.039	0.690	0.202	0.477