

SDC5-Table 3. Qualitative Comparison of the Power Calculations Using Paired Two-Sample *t*-Tests from Existing RCTs Examining the Cardiometabolic Disease Biomarker Response After versus Before Acute and Chronic Aerobic Exercise Compared to After versus Before Control to Detect a Significant Difference between Aerobic Exercise versus Control to the Actual RCT Sample Size (acute *k*=5; chronic *k*=13).

Study Characteristics ^a	Intervention Features: Frequency, Intensity, and Time	Sufficient Power (No=0/Yes=+) to Detect Significant Exercise-Induced Changes						
		SBP	DBP	TRIG	GLUCOSE	INSULIN	LDL-C	HDL-C
Acute – RCTs^{b, c}								
Magkos, 2010 (20) (12 hr post-AE vs. Con)								
<i>N</i> = 27 M/W	I: 60.0%±5.2% VO ₂ peak							
29.0±5.2 yr	(HR=134±2.0 bpm)							
24.7±4.2 kg·m ⁻²	T: ~30 min				+	0		
39.0±10.4 ml·kg ⁻¹ ·min ⁻¹	T: cycle							
GRIP, 2016 (2) (60 min post-AE vs. Con)								
<i>N</i> = 27 (23M/4W)	LAB I: 60% VO ₂ peak	0	0					
37% WH, 56% AA, 7% other	ABP – T: 30 min	+	0					
40.6±10.4 yr	Awake T: cycle							
30.7±3.6 kg·m ⁻²	ABP – Sleep	–	–					
27.4±5.7 ml·kg ⁻¹ ·min ⁻¹	ABP – 19-hr	0	0					
APEX, 2004;2010 (13, 21) (9 hr post-AE vs Con)								
<i>N</i> = 46 M	Low I: 40% VO ₂ peak	0	0					
100% WH	T: 30 min							
44.3±8.5 yr	T: cycle							
30.7±5.9 kg·m ⁻²	Mod I: 60% VO ₂ peak	0	0					
	T: 30 min							
	T: cycle							
	Vig I: 100% VO ₂ peak	+	+					
	T: GXT to exhaustion							
	T: cycle							
No. of Acute AE Interventions (<i>k</i>) Sufficiently Powered for Each Cardiometabolic Biomarker ‡		2	1		1	0		
% of Acute AE Interventions Sufficiently Powered for Each Cardiometabolic Biomarker ‡		28.6	14.3		100	0		
Chronic – RCTs								
AbouAssi, 2015 (1)								
<i>N</i> = 27 (13M/14W)	~32 wk (supervised)							
89% WH, 11% AA	F: 3.2±0.5 d/wk							
51.4±10.0 yr	I: 60-85% VO ₂ peak				0	+		
30.5±3.0 kg·m ⁻²	T: 38 min/d (121±20 min/wk)							
27.1±5.6 ml·kg ⁻¹ ·min ⁻¹	T: treadmill, elliptical, cycle							
	Adherence=91.9							
Bell, 2010 (N=128) (5)								
<i>N</i> = 40 M/W	~24 wk (supervised)							
100% WH	F: 3-4 d/wk							
25-65 yr	I: 55-70% VO ₂ peak	0	0	0	0		0	–
31±6 kg·m ⁻²	T: ~20-43 min/d							
24.9±5.4 ml·kg ⁻¹ ·min ⁻¹	T: cycle, treadmill							
	Adherence=77%							
Frank, 2005 (N=173) (14)								
<i>N</i> = 87 W	~52 wk (supervised)			0	–	0		

Study Characteristics ^a	Intervention Features: Frequency, Intensity, and Time	Sufficient Power (No=0/Yes=+) to Detect Significant Exercise-Induced Changes						
		SBP	DBP	TRIG	GLUCOSE	INSULIN	LDL-C	HDL-C
100% WH 60.7±6.7 yr 30.4±4.1 kg·m ⁻² 20.0±3.5 ml·kg ⁻¹ ·min ⁻¹	F: ≥5 d/wk I: 60-75% HR _{max} T: ≥45 min/d T: cycle, treadmill Adherence=87%							
STRIDE, 2007; 2011 (N=303) (3, 19, 24)								
N = 215 (119M/96W) 82% WH, 15% AA, 17% other 51.0±7.7 yr 29.9±2.9 kg·m ⁻² 28.2±6.0 ml·kg ⁻¹ ·min ⁻¹	~24-48 wk (supervised) F: 3-4 d/wk I: ~60-75% VO ₂ peak T: ~45 min/d (~150 min/wk) T: treadmill, elliptical, cycle Adherence=88%			+		+		+
HERITAGE Family Study, 2012 (N=723) (8)								
N = 473 (227M/246W) 100% WH 35.8±14.5 yr 25.8±4.9 kg·m ⁻² 33.2±8.9 ml·kg ⁻¹ ·min ⁻¹	WH 20 wk (supervised) F: 3 d/wk I: 55-75% VO ₂ max T: 30-50 min/d (~30 min/d) T: cycle Adherence=100% (60 AE sessions)	-		0		+		+
N = 250 (100M/150W) 100% AA 33.6±11.5 yr 27.8±5.8 kg·m ⁻² 27.3±7.3 ml·kg ⁻¹ ·min ⁻¹	AA	0		0		+		+
DREW Study, 2007 (N=326 W) (10)								
N = 143 W 61% WH, 34% AA, 7% HL/other 57.7±6.6 yr 31.6±3.8 kg·m ⁻² 15.5±2.9 ml·kg ⁻¹ ·min ⁻¹	4 kcal/kg/wk ~24 wk (supervised) F: 2.6 d/wk I: ~50% VO ₂ max T: 30 min/d (72±12 min/wk) T: cycle, treadmill Adherence=94.6%	0		+		0		-
N = 89 W 61% WH, 33% AA, 6% HL/other 57.3±6.6 yr 32.1±3.1 kg·m ⁻² 14.9±2.4 ml·kg ⁻¹ ·min ⁻¹	8 kcal/kg/wk F: 2.8 d/wk I: ~50% VO ₂ max T: 50 min/d (136 min/wk) T: cycle, treadmill Adherence=89.0%	+		0		+		-
N = 94 W 73% WH, 25% AA, 2% HL/other 56.6±6.6 yr 31.1±3.6 kg·m ⁻² 16.0±2.9 ml·kg ⁻¹ ·min ⁻¹	12 kcal/kg/wk F: 3.1 d/wk I: ~50% VO ₂ max T: 60 min/d (192 min/wk) T: cycle, treadmill Adherence=93.3%					0		-
INFLAME, 2008 (11)								

Study Characteristics ^a	Intervention Features: Frequency, Intensity, and Time	Sufficient Power (No=0/Yes=+) to Detect Significant Exercise-Induced Changes							
		SBP	DBP	TRIG	GLUCOSE	INSULIN	LDL-C	HDL-C	
<i>N</i> = 70 (14M/56W) 70% WH, 19% AA, 11% HL/other 51.2±10.0 yr 31.1±4.3 kg·m ⁻² 19.1±5.6 ml·kg ⁻¹ ·min ⁻¹	~16 wk (<i>supervised</i>) F: 3-5 d/wk I: 60-80% VO ₂ max (75.3% HRmax) T: ~40-60 min/d (204 min/wk) T: cycle, treadmill Adherence=91%	0					0		—
ALPHA, 2010; 2011 (N=320) (15, 16)									
<i>N</i> =160 W 100% WH 61.2±5.4 yr 29.1±4.5 kg·m ⁻² 27.1±6.2 ml·kg ⁻¹ ·min ⁻¹	~52 wk (<i>supervised</i> , ≥3 d/wk) F: ≥5 d/wk I: 70-80% HRR T: ≥45 min/d T: cycle, treadmill Adherence=NR					—	0		
JYVASKYLA, 2011 (18)									
<i>N</i> = 43 (22M/21W) 100% WH 53.0±8.0 yr 25.3±2.7 kg·m ⁻² 29.1±6.3 ml·kg ⁻¹ ·min ⁻¹	21 wk (<i>supervised</i>) F: 2 d/wk I: Above/ below anaerobic threshold T: ~45-60 min/d T: cycle Adherence=99%	0		0			0		0
MARYLAND, 2002 (29)									
<i>N</i> = 160 M/W 100% WH 58.0±5.8 yr 28.3±4.6 kg·m ⁻² 25.3±4.6 ml·kg ⁻¹ ·min ⁻¹	~24 wk (<i>supervised</i>) F: 3 d/wk I: 70% HRR T: 40 min/d (~120 min/wk) T: multiple ^d Adherence=NR	—		+			+		+
No. of Chronic AE Interventions (<i>k</i>) Sufficiently Powered for Each Cardiometabolic Biomarker ‡		1	0	3	0	6	0	4	
% of Chronic AE Interventions Sufficiently Powered for Each Cardiometabolic Biomarker ‡		12.5	0	30.0	0	50.0	0	40.0	
Summary of No. of Acute and Chronic AE Interventions (<i>k</i>) Sufficiently Powered for Each Cardiometabolic Biomarker ‡		3	1	3	1	6	0	4	
Summary of the % of Acute and Chronic AE Interventions Sufficiently Powered for Each Cardiometabolic Biomarker ‡		20.0	12.5	30.0	20.0	46.1	0	40.0	

Note. Statistics are summarized as Trials are presented as being sufficient (+), not sufficiently (0) powered or (-) data not available for power calculations. Gray shading=Data not available for power calculations. *SD calculated by assuming independence. † Blue shading=Cardiometabolic response was more favorable for Control vs. AE; *N* could not be calculated. ‡ Trials were considered to be sufficiently powered when the reported study *N* met or exceeded the estimated *N* to detect exercise induced changes in cardiometabolic disease biomarkers. AE=Endurance (aerobic) exercise. AET=AE training. DBP=Diastolic blood pressure. CE=Continuous AE.

Study Characteristics ^a	Intervention Features: <u>F</u> requency, <u>I</u> ntensity, and <u>T</u> ime	Sufficient Power (No=0/Yes=+) to Detect Significant Exercise-Induced Changes					
		SBP	DBP	TRIG	GLUCOSE	INSULIN	LDL-C
<p>CSE=Continuous sprint AE. HL=Hispanic/Latino. HDL-C=High-density lipoprotein cholesterol. GXT= graded pulmonary exercise test; start with a resistance of 30 watts and increased 30 watts every 2 minutes until exhaustion. HRmax=Maximal heart rate. HRR=Heart rate reserve. LAB=Laboratory. LDL-C=Low-density lipoprotein cholesterol. k=Number of study groups. KJ=Kilojoules. mM=millimolar. M=Men. Mod=Moderate intensity. N=Sample size. RCT=Randomized controlled trial. SBP=Systolic blood pressure. SIT=Sprint interval AE. Trig=Triglycerides. Vig=Vigorous intensity. VO₂max=Maximal oxygen consumption. VO₂peak=Peak oxygen consumption. W=Women. WH=White/Caucasian. ^a ALPHA= <u>A</u>lberta <u>P</u>hysical <u>A</u>ctivity and Breast Cancer Prevention Trial. GRIP=<u>G</u>raded <u>R</u>eductions <u>I</u>n <u>P</u>ressure Study. HERITAGE=<u>H</u>ealth, <u>R</u>isk Factors, Exercise <u>T</u>raining <u>A</u>nd <u>G</u>enetics. DREW=<u>D</u>ose <u>R</u>esponse to <u>E</u>xercise in <u>W</u>omen. STRRIDE=<u>S</u>tudies of a <u>T</u>argeted <u>R</u>isk <u>R</u>eduction <u>I</u>ntervention through <u>D</u>efined <u>E</u>xercise. MARYLAND=University of Maryland Gene Exercise Research Study. INFLAME=<u>I</u>nflammation and <u>E</u>xercise Study. JYVASKYLA=University of Jyväskylä Study. ^b Acute studies were supervised; only Intensity and Time are quantified (i.e., <u>F</u>requency=1 d/wk). ^c Details regarding the cardiometabolic biomarker response to AE are provided in parentheses (i.e., timing of post-assessment, min or hr; mean change calculation). ^dMultiple modalities: stair-stepping machines, rowing ergometers, treadmills, stationary bicycles, and ski machines. References appear in SDC 7.</p>							