Table 1. Summary of characteristics of all studies meeting the inclusion criteria

Study	Population, age (y), No. of subjects, groups (n),	Duration (weeks)	Total sessions	Group	Exercise intensity	No. of reps		Total reps	Reps duration (s)	Work/rest ratio	Δ $VO2_{max}$ (%)	Outcomes and results
						Start	End					
Astorino et al. [26]	Recreational active men (n=16) and women (n=13), age: 25.3±4.5 y, HIT (n=20), CON (n=9)	3 weeks	6	HIT	All-out	4	6	30	30	0.10	6.1	HIT ↑ VO_{2max} , oxygen pulse and power output NC in resting BP, HR and force production
Nybo et al. [27]	Untrained inactive men (n=36), age:20-43 y, HIT (n=8), END (n=9), CON (n=11), STR (n=8)	12 weeks	36	HIT	95-100 % HR_{max}	5	5	180	120	2.0	14.0	HIT was less efficient than END for resting HR, fat percentage and ratio between total and HDL cholesterol. END ↓ body mass and fat percentage
			36	END	80% HR_{max}	-	-	-	3,600	-	7.4	NC in total bone mass and lean body mass in HIT and END groups.
Osei-Tuta et al. [28]	Healthy Caucasian sedentary men and women (n=40), age:20-40 y, END (n=15), CON (n=10)	8 weeks	40	END	60-79 HR_{max}	-	-	-	1,800	-	7.2	VO_{2max} ↑ in END. END ↓ fat percentage (-6.7%), tension and total mood disturbance.
Trapp et al. [11]	Healthy nonsmoking, inactive women (n=45), age: 18-30 y, HIT (n=15), END (n=15), CON (n=15)	15 weeks	45	HIT	95-100% HR_{max}	60	60	2 700	8	0.67	26.4	HIT and END ↑ VO_{2max} compared to CON group; only HIT ↓ total body mass, fat mass, trunk fat and insulin level. NC in adiponectin levels in HIT and END groups
			45	END	75% HR_{max}	-	-	-	1,200 – 2,400	-	19.4	
Gormley et al. [29]	Healthy young men and women (n=61), age: 18-44 y, HIT (n=13), END (n=13), CON (n=14)	6 weeks	18	HIT	100% HRR	5	5	90	300	1	20.2	HIT and END ↑ VO_{2max}; NC in resting HR and BP in any group
			24	END	75% HRR	-	-	-	2,400	-	9.6	
Ciolac et al. [30]	Healthy young college women (n=44), age: 20-30 y, HIT (n=16), END (n=16), CON (n=12)	16 weeks	48	HIT	80-90%VO_{2max}	14	14	672	60	0.5	15.7	HIT and CON were equally ↓ ambulatory blood pressure and ↓↓ insulin;
			48	END	60-70% VO_{2max}	-	-	-	2,400	-	8.0	

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Bayati et al. [31]	Young active males (n=16), age: 25.0±0.8 y, HIT (n=8), CON (n=8)	4 weeks	12	HIT	125% P_{max}	6	10	96	30	0.25	9.7	HIT ↑ power at VO_{2max} (+16.1%) and peak power output (+7.4%); blood lactate recovery ↑ in HIT compared to CON NC in mean power output
Metcalfe et al. [32]	Healthy sedentary young men and women (n=29), age; 22.5±2.0 y, HIT (n=15), CON (n=14)	6 weeks	18	HIT	All-out	1	2	35	10 - 20	-	13.4	HIT ↑insulin sensitivity by 28% in men
Ziemann et al. [33]	Recreationally active men (n=21), age: 21.3±1.0 y, HIT (n=10), CON (n=11)	6 weeks	18	HIT	80% pVO_{2max}	6	6	108	90	0.5	11.0	HIT ↑ anaerobic threshold (3.8 $mL \cdot kg^{-1} \cdot min^{-1}$), work output (12.5 $J \cdot kg^{-1}$), glycolytic work (11.5 $J \cdot kg^{-1}$), mean power (0.3 $W \cdot kg^{-1}$), peak power (0.4 $W \cdot kg^{-1}$), and max power (0.4 $W \cdot kg^{-1}$);
Ben Abderrahman et al. [34]	Male physical education students (n=15), age: 20.6±0.7 y, HIT (n=9), CON (n=6)	7 weeks	21	HIT	105-110% MAS	8	10	66	30	1	5.9	NC in time spent above 95% of VO_{2max} in absolute and relative values
Burgomaster et al. [35]	Healthy young men (n=10) and women (n=10), age:23.56±1.0 y, HIT (n=10), END (n=10)	6 weeks	18	HIT	All-out	4	6	30	30	0.11	7.3	HIT and END ↑ in mitochondrial markers for skeletal muscle and lipid oxidation; both groups ↑ VO_{2max} compared to control group without changes between training groups NC in percentage of body fat and energy intake in all groups
			30	END	65% VO_{2peak}	-	-	-	2,400 - 3,600		9.8	
Chtara et al. [36]	Male physical education students (n=48), age: 21.4±1.3 y, HIT (n=10), CON (n=9)	12 weeks	24	END	100% vVO_{2max}	5	5	120	-	-	9.8	HIT ↑ in vVO_{2max} 10.38%
Hottenrott et al. [6]	Recreational endurance men(n=15) and women (n=15), age: 43.4±6.9 y, HIT (n=14), END (n=16)	12 weeks	36	HIT	All-out	4	10	936	30	0.33	18.5	HIT and END ↑↑ peak oxygen uptake, resting HR, V_{LT} and visceral fat, body mass; END ↑ total body fat and fat free mass compared to HIT. NC in maximal lactate for both groups
			24	END	75-85% V_{LT}	-	-	-	1,800 – 7,200	-	7.0	

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						Start	End					
Lo et al. [37]	Healthy nonathletic men (n=34), age: 20.4±1.36 y, HIT (n=10), STR (n=10), CON (n=14)	24 weeks	72	END	75-85% HRR	-	-	-	1,800	-	20.5	END and STR ↑ VO_{2max} and lower body strength; STR ↑ upper body strength, lean mass and body size of arm and calf compared to END and CON groups.
McKay et al. [38]	Young adult men (n=12), age:25.0±4.0 y, HIT (n=6), END (n=6)	3 weeks	8	HIT	120% WR_{max}	8	12	60	60	1	4.3	HIT and END ↑ VO_{2max} after training programme; HIT and END ↓ time constant for VO_2 response by ~20% after only 2 days of training and by ~40% post-training, with no difference between groups;
			8	END	65% VO_{2max}	-	-	-	5,400 – 7,200	-	7	
Tabata et al. [39]	Young male students (n=14), age: 23.0±1.0 y, HIT (n=7), END (n=7)	6 weeks	30	HIT	170% VO_{2max}	7	8	225	20	2	14.6	END did not increase anaerobic capacity but ↑↑ in VO_{2max}; HIT ↑↑ VO_{2max} by 7 $mL \cdot kg^{-1} \cdot min^{-1}$ and anaerobic capacity by 28%.
			30	END	70% VO_{2max}	-	-	-	3,600	-	9.4	
Cocks et al. [40]	Young sedentary men (n=16), age: 21.0±0.7 y, HIT (n=8), END (n=8)	6 weeks	18	HIT	All-out	4	5	85	30	0.11	7.6	HIT and END ↑ VO_{2peak} and maximal power output (END 16%, HIT 9%); both groups ↓ in HRR, mean and diastolic BP with no difference between group; NC in systolic BP in both groups
			30	END	65% VO_{2peak}	-	-	-	2,400 – 3,600	-	15.6	
Dunham and Harms [41]	Physically active, healthy, untrained subjects (n=15), age: 21.3±2.3 y, HIT (n=8), END (n=7)	4 weeks	12	HIT	90% VO_{2max}	5	5	60	60	0.33	9.6	HIT and END ↑ VO_{2max} and time trials following training with no differences between groups; HIT ↑ in maximum inspiratory pressure compared to END; NC in expiratory flow rates in both groups
			12	END	60-70% VO_{2max}	-	-	-	2,700	-	5.5	
Edge et al. [42]	Recreationally female students (n=16), age: 20.0±1.0 y, HIT (n=8), END (n=8)	5 weeks	15	HIT	120–140% LT	2	10	100	120	2	14.0	HIT and END ↑ in VO_{2peak} and the LT (7–10%), with no significant differences between groups; NC in percentage of VO_{2peak} at which LT occurred
			15	END	80-95% LT	-	-	-	-	-	14	

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						Start	End					
Esfarjani and Laursen [43]	Healthy recreational men (n=17), age: 20.0±2.0 y, HIT1 (n=6), HIT2 (n=6), END (n=5)	10 weeks	20	HIT	75% vVO_{2max}	5	8	130	200	1	9.2	HIT1↑ in VO_{2max}, vVO_{2max} (+6.4%), T_{max} (5%) and V_{LT} (+11.7%); HIT2 ↑ in VO_{2max}, vVO_{2max} (+7.8%), T_{max} (32%), and V_{LT} (+11.7%) but not V_{LT}; NC in these variables were found in END. HIT1↑ in VO_{2max} and T_{max} compared to END.
			20	HIT	130% vVO_{2max}	7	12	190	30	0.11	6.2	
			40	END	75% vVO_{2max}	-	-	-	3,600	-	2.1	
Macpherson et al. [44]	Healthy young recreationally active men (n = 12) and women (n = 8), age: 24.0±3.0 y, HIT (n=6), END (n=5)	6 weeks	18	HIT	All-out	4	6	90	30	0.11	11.5	HIT and END ↑ body composition, 2000- run time trial performance and VO_{2max}; Fat mass ↓ by 12.4% with HIT and 5.8% with END; Lean mass ↑ 1% in both groups. None of these improvements differed between groups
			18	END	65% VO_{2max}	-	-	-	1,800 – 3,600	-	12.5	
Shepherd et al. [45]	Healthy sedentary men (n=16), age: 21.5±1.0 y, HIT (n=8), END (n=8)	6 weeks	18	HIT	All-out	4	6	90	30	0.11	7.6	HIT and END ↑↑ VO_{2peak}, fat free mass, and maximum workload; NC in relative fat mass.
			30	END	65% VO_{2peak}	-	-	-	2,400 – 3,600	-	15.6	
Helgerud et al. [5]	Healthy nonsmoking men (n=24), age: 24.6±3.8 y, HIT1 (n=6), HIT2 (n=6), END1 (n=6), END2 (n=6)	8 weeks	24	HIT1	90–95% HR_{max}	47	47	1128	15	1	6.4	HIT1 and HIT 2 ↑↑ VO_{2max} compared to END1 and END 2; percentage increases in VO_{2max} for the HIT1 and HIT 2 groups were 5.5 and 7.2%, respectively. Stroke volume of the heart ↑ in HIT1 and HIT2; NC in blood volume, high-density lipoprotein and low-density lipoprotein in any groups after training programme
			24	HIT2	90–95% HR_{max}	4	4	96	240	1.33	8.8	
			24	END1	70% HR_{max}	-	-	-	2,700	-	1.8	

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						Start	End					
			24	END2	85% HR_{max}	-	-	-	1,455	-	2.0	
Warburton et al. [46]	Healthy untrained men (n=20), age:30±4 y, HIT (n=6), END (n=6), CON (n=8)	12 weeks	36	HIT	90% VO_{2max}	8	12	384	120	1	22.2	HIT and END ↑↑ VO_{2max} and peak stroke volume, blood volume compared to CON; no differences between HIT and END in any parameters;
			36	END	65% VO_{2max}	-	-	-	1,800 – 2,880	-	23	
Berger et al. [47]	Healthy sedentary men (n=11) and women (n=12), age:24±5 y, HIT (n=8), END (n=8), CON (n=7)	6 weeks	22	HIT	90% VO_{2max}	15	20	445	60	1	21.0	HIT and END ↑↑ VO_{2max} and pulmonary VO_{2max} kinetics, compared to CON
			22	END	60% VO_{2max}	-	-	-	1,800	-	20.0	
Matsuo et al. [48]	Sedentary men (n=42), age:26.5±6.2 y, HIT (n=14), END (n=14)	8 weeks	40	HIT	80-85 % VO_{2max}	3	3	120	180	1.5	22.5	HIT and END ↑↑ VO_{2max}, HIT ↑↑ VO_{2max} compared to END; only HIT ↑↑left ventricular mass, stroke volume and resting HR;
			40	END	60-65% VO_{2max}	-	-	-	2,400	-	10.0	
O'Donovan et al. [49]	Sedentary men (n=42), age:41±4 HIT (n=13), END (n=14), CON (n=15)	24 weeks	72	HIT	80% VO_{2max}	-	-	-	-	-	15.7	HIT and END ↑↑ VO_{2max}, HIT ↑HDL and ↓ LDL, NC in END for HDL and LDL
			72	END	60% VO_{2max}	-	-	-	-	-	22.5	
Sandvei et al. [50]	Healthy young men (n=8) and women (n=15), age:25.2±0.7 y, HIT (n=11), END (n=12)	8 weeks	24	HIT	100% HR_{max}	5	10	189	30	0.16	5.3	HIT and END ↑ VO_{2max}, HIT ↑insulin sensitivity and holesterol profil while NC for END
			24	END	70-80% HR_{max}	-	-	-	1,800 – 3,600	-	3.8	

HIT- High-intensity interval training; END – continuous endurance training; STR – strength training CON – control group; VO_{2max} – maximal oxygen uptake; vVO_{2max}- running speed at VO_{2max}; VO_{2peak} - peak rate of oxygen consumption; rep – repetitions; HDL - high-density lipoprotein; max – maximal; T_{max} – time to exhaustion at vVO_{2max}; BP – blood pressure; HR- heart rate; HR_{max} – maximum heart rate; HRR – heart rate reserve; MAS – maximal aerobic speed; WR_{max} – work rate at maximal O2 uptake; pVO_{2max} - maximal aerobic power; P_{max}- power at VO_{2max} LT- lactate threshold; V_{LT} – velocity of the lactate threshold; NC – no changes $p>0.05$; ↑- indicates significant increase $p<0.05$; ↑↑-indicates significant increase $p<0.01$; ↓- indicates significant decreases $p<0.05$; ↓↓- indicates significant decreases $p<0.01$;