

Supplementary Table 1 Detailed description of included studies.

<b>Study</b>	<b>Duration of Intervention</b>	<b>Study Design</b>	<b>Activity Level<sup>b</sup></b>	<b>High intensity used</b>	<b>HIIT protocol</b>	<b>Frequency</b>
Ciolac et al. 2011 <sup>38</sup>	16 wk	RCT	Physically inactive <sup>c</sup>	80-90% VO <sub>2</sub> max (HR checked using HR monitor)	14 x 1-min of running at 80-90% of VO <sub>2</sub> max alternating with 2-min walking at 50-60% of VO <sub>2</sub> max	3x/wk
Ciolac et al. 2010 <sup>17</sup>	16 wk	RCT	Physically inactive <sup>c</sup>	80-90% VO <sub>2</sub> max (HR checked using HR monitor)	14 x 1-min of running at 80-90% of VO <sub>2</sub> max alternating with 2-min walking at 50-60% of VO <sub>2</sub> max	3x/wk
Tremblay et al. 1994 <sup>39a</sup>	15 wk	NRCT	Not engaged in a regular exercise training program or sports or other physical activities	70% of max HRR progressively increased to 95% of max HRR (HR checked using HR monitor)	short interval cycling: 15 bouts of 15-30sec duration; long interval cycling: 5 bouts of 60-90sec duration separated by rest periods (HR 120-130 bpm)	19 short and 16-long interval sessions over a period of 15 weeks
Wisloff et al. 2007 <sup>15</sup>	12 wk	RCT	No data	90-95% HRpeak (HR checked using HR monitor)	4 x 4-min interval running at 90-95% of HR peak with 3-min recovery period at ~ 70% HR max between intervals	3x/wk
Chtara et al. 2005 <sup>40a</sup>	12 wk	CT	Sports students (15hr multiple activities/wk)	100% VO <sub>2</sub> max (HR checked using ECG & HR monitor)	running at 100% VO <sub>2</sub> max and 60% VO <sub>2</sub> max	2x/wk
Nytroen et al. 2013 <sup>41</sup>	12 mo	RCT	No data	85-95% HRmax (HR checked using HR monitor)	4 x 4-min treadmill running interposed by 3-min rest	3x/wk
Rustad et al. 2014 <sup>42</sup>	24 wk	RCT	No data	85-95% of HR max (HR checked using HR monitor)	4 x 4-min treadmill running separated by 3-min rest	3x/wk
Tjonna et al. 2008 <sup>16</sup>	16 wk	RCT	No data	90% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 90% HR max with 3-min recovery at 70% HRmax between intervals	3x/wk
Mohr et al. 2014 <sup>43</sup>	15 wk	RCT	Sedentary <sup>c</sup>	maximal sprints (HR checked using HR monitor)	6-10 x 30-sec maximal swimming efforts alternating with 2-min rest periods	3x/wk

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Conraads et al. 2015 <sup>44</sup>	12 wk	RCT	No data	85-90% VO <sub>2</sub> peak (HR checked using HR monitor)	4 x 4-min cycling at 90-95% HRpeak (85-90% VO <sub>2</sub> peak) alternating with 3-min recovery at 50-70% HRpeak	3x/wk
Keating et al. 2014 <sup>45</sup>	12 wk	RCT	Physically inactive (exercise < 3 days/wk)	120% VO <sub>2</sub> peak (HR checked using ECG)	4-6 x 60-sec cycling at 120% VO <sub>2</sub> peak alternating with 120-sec active recovery periods	3x/wk
Madssen et al. 2014 <sup>46</sup>	12 wk	RCT	No data	85-95% HRmax (HR checked using HR monitor)	4 x 4-min cycling at 85-95% HRmax alternating with 3-min recovery at 70% HRmax	3x/wk
Mitranun et al. 2014 <sup>47a</sup>	12 wk	RCT	No previous exercise training	85% VO <sub>2</sub> peak (HR checked using HR monitor)	6 x 1-min at 85% VO <sub>2</sub> peak separated by 4-min rest at 60% VO <sub>2</sub> peak	3x/wk
Astorino et al. 2013 <sup>48</sup>	12 wk	RCT	Sedentary (<1hr/wk of regular physical activity)	85-100% HRmax (HR checked using HR monitor)	6-10 x 60-sec of cycling at 85-100% HRmax alternating with 75-sec rest periods	3x/wk
Heydari et al. 2013 <sup>49</sup>	12 wk	RCT	Physically inactive <sup>c</sup>	80-90% HRmax (HR checked using HR monitor)	20 min of 8-sec sprint cycling at 80-90% HR max separated by 12-sec rest periods	3x/wk
Heydari et al. 2013 <sup>50a</sup>	12 wk	RCT	Physically inactive <sup>c</sup>	80-90% HRmax (HR checked using HR monitor)	20 min of 8-sec sprint cycling at 80-90% HR max separated by 12-sec rest periods	3x/wk
Heydari & Boutcher 2013 <sup>51</sup>	12 wk	RCT	Physically inactive <sup>c</sup>	80-90% HRmax (HR checked using HR monitor)	20 min of 8-sec sprint cycling at 80-90% HR max separated by 12-sec rest periods	3x/wk
Terada et al. 2013 <sup>52</sup>	12 wk	RCT	<150 min of structured exercise per wk	100% HRR <sup>d</sup>	7 x 1-min interval cycling at 100% HRR followed by 3-min recovery intervals at 40% HRR	4x/wk
Moholdt et al. 2012 <sup>53</sup>	12 wk	RCT	No data	85-95% HRpeak (HR checked using HR monitor)	4 x 4-min interval running at 85-95% HRmax with 3-min recovery at 70% HRmax between intervals	2x/wk

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Molmem-Hansen et al. 2012 <sup>54</sup>	12 wk	RCT	No data	90-95% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 90-95% HR max with 3-min recovery at 60-70% HR max between intervals	3x/wk
Stensvold et al. 2012 <sup>55a</sup>	12 wk	RCT	Physically inactive <sup>c</sup>	90% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 90% of HR max with a 3-min recovery period at ~70% HR max between intervals	3x/wk
Sijie et al. 2012 <sup>56a</sup>	12 wk	RCT	No data	85% VO <sub>2</sub> max (HR checked using HR monitor)	5 x 3-min interval running at individualized HR of 85% of VO <sub>2</sub> max intervened by 3-min active break in between at HR of 50% of VO <sub>2</sub> max	5x/wk
Stensvold et al. 2010 <sup>57</sup>	12 wk	RCT	No data	90-95% HRpeak (HR checked using HR monitor)	4 x 4-min interval running at 90-95% of HR peak with 3-min recovery period at ~ 70% HR max between intervals	3x/wk
Schjerve et al. 2008 <sup>58</sup>	12 wk	RCT	No data	85-95% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 85-95% of HR max with 3-min recovery period at ~ 50-60% HR max between intervals	3x/wk
Esfarjani & Laursen 2007 <sup>59a</sup>	10 wk	CT	Moderately trained <sup>c</sup>	130% VO <sub>2</sub> max (HR checked using HR monitor)	12 x 30-sec running at 130% VO <sub>2</sub> max alternating with 4.5-min rest periods	2x/wk
Dupont et al. 2004 <sup>60a</sup>	10 wk	CT	No data	120% of maximal aerobic speed (HR checked using HR monitor)	12-15 intermittent runs of 15-sec at 120% of max aerobic speed alternated with 15-sec of rest	2x/wk
Matsuo et al. 2014 <sup>61</sup>	8 wk	RCT	Sedentary lifestyle (no regular exercise activities)	120% VO <sub>2</sub> max (HR checked using indirect calorimeter)	7 x 30-sec of cycling at 120% of VO <sub>2</sub> max alternating with 15-sec rest periods	5x/wk
Sandvei et al. 2012 <sup>62a</sup>	2 wk	RCT	Sedentary to moderately trained <sup>c</sup>	maximal sprints (HR checked using HR monitor)	5-10 x 30-sec maximal cycling efforts alternating with 3-min rest periods	3x/wk

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Musa et al. 2009 <sup>63</sup>	8 wk	RCT	Untrained <sup>c</sup>	90% HRmax (HR checked using HR monitor)	4 x 800-m interval running, 1:1 work:rest ratio	3x/wk
Helgerud et al. 2007 <sup>64</sup>	8 wk	RCT	No data	90-95% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 90-95% HR max with 3-min of active resting periods at 70% HR max	3x/wk
Abderrahman et al. 2013 <sup>65a</sup>	7 wk	RCT	Well-trained	105% MAV (HR checked using HR monitor)	8 x 30-sec intensive runs at 105% MAV alternating with 30-sec active recovery at 50% MAV	2x/wk
MacDougall et al. 1998 <sup>66a</sup>	7 wk	NCT	Physically active	maximal sprints (HR checked expiratory gas analyzer)	4-10 x 30-sec maximal cycling efforts alternating with 2-4 min rest periods	3x/wk
Cocks et al. 2013 <sup>67a</sup>	6 wk	RCT	Sedentary (<1hr of exercise/wk)	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 4.5-min rest periods	3x/wk
Shepherd et al. 2013 <sup>68a</sup>	6 wk	RCT	Sedentary (<2 30-min sessions of physical activity/wk)	maximal sprints (HR checked using expiratory gas analyzer)	4-6 x 30-sec maximal cycling efforts alternating with 4.5-min rest periods	3x/wk
Walter et al. 2010 <sup>69a</sup>	6 wk	RCT	Recreationally active <sup>c</sup>	80-110% VO <sub>2</sub> peak (HR, VO <sub>2</sub> peak checked using expiratory gas analyzer)	5 x 2-min cycling bouts at predetermined percentage of VO <sub>2</sub> peak followed by 1-min passive recovery each set	3x/wk
Croft et al. 2009 <sup>70a</sup>	6 wk	RCT	Recreationally active <sup>c</sup>	90% VO <sub>2</sub> max (HR, VO <sub>2</sub> max checked using expiratory gas analyzer)	5 x 3-min running bouts at 90% VO <sub>2</sub> max separated by 3-min active recovery periods	4x/wk
Burgomaster et al. 2008 <sup>9a</sup>	6 wk	CT	Active but untrained (≤2 sessions/wk and ≤30 min/session)	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 4.5-min rest periods	3x/wk
Gormley et al. 2008 <sup>71</sup>	6 wk	RCT	No data	95% HRR (HR checked using HR monitor)	5 x 5-min cycling at 95% HRR alternating with 5-min recovery period at 50% HRR	3x/wk

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Rakobowchuk et al. 2008 <sup>72a</sup>	6 wk	RCT	Not engaged in regular exercise ( $\leq 2$ sessions/wk and $\leq 30$ min/session)	maximal sprints (HR checked using ECG)	4-6 x 30-sec maximal cycling efforts alternating with 4.5-min rest periods	3x/wk
Tabata et al. 1996 <sup>73a</sup>	6 wk	CT	Physically active <sup>c</sup> (varsity members)	170% of VO <sub>2</sub> max <sup>d</sup>	7-8 x 20-sec cycling bouts at 170% of VO <sub>2</sub> max with 10-sec rest between intervals	5x/wk
Edge et al. 2006 <sup>74a</sup>	5wk	RCT	Recreationally active (participates in various team sports)	120-140% LT <sup>d</sup>	6-10 x 2-min interval cycling at 120-140% LT with 1-min rest between intervals	3x/wk
Dunham & Harms 2012 <sup>75</sup>	4 wk	RCT	Physically active but not trained or regularly participating in competitive sports	90% VO <sub>2</sub> max (HR, VO <sub>2</sub> max checked using expiratory gas analyzer)	5 x 1-min cycling bouts at 90% VO <sub>2</sub> max separated by 3-min recovery periods	3x/wk
Bayati et al. 2011 <sup>76a</sup>	4 wk	RCT	Habitually active but untrained	maximal sprints <sup>d</sup>	3-5 x 30-sec maximal cycling efforts alternating with 4-min rest periods	3x/wk
Astorino et al. 2012 <sup>77</sup>	2 wk	CT	Recreationally active <sup>c</sup>	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 5-min rest periods	3x/wk
Leggate et al. 2010 <sup>78</sup>	60 min	RCD	Physically active <sup>c</sup>	85-90% VO <sub>2</sub> peak (87.5%) (HR checked using HR monitor)	10 x 4-min interval cycling at 85-90% VO <sub>2</sub> peak separated by 2-min rest	10 x 4 min
Maran et al. 2010 <sup>79</sup>	30 min	RCD	Physically active <sup>c</sup>	85% of VO <sub>2</sub> max (HR checked using ECG)	continuous cycling at 40% VO <sub>2</sub> max interspersed with maximal sprint efforts lasting few sec (5-sec cycling at 85% of VO <sub>2</sub> max) performed every 2 min	15 sprint efforts in 30 min
Guelfi et al. 2005 <sup>80a</sup>	30 min	RCD	Physically active	maximal sprints (HR checked using HR monitor)	16 x 4-sec maximal cycling efforts alternating with 2-min rest periods	15 sprint efforts in 30 min

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Keteyian et al. 2014 <sup>81</sup>	10 wk	RCT	No data	80-90% HRR (HR checked using ECG & HR monitor)	4 x 4-min treadmill running separated by 3-min active recovery periods	3x/wk
Tjonna et al. 2013 <sup>82a</sup>	10 wk	RCT	Physically inactive <sup>c</sup>	90% HRmax (HR checked using HR monitor)	4 x 4-min treadmill running interposed by 3-min rest at 70% HRmax	3x/wk
Rognmo et al. 2004 <sup>83</sup>	10 wk	RCT	No data	85-95% HRpeak (HR checked using HR monitor)	4 x 4-min interval running at 85-95% of HR peak with 3-min recovery period at ~ 50-60% of VO <sub>2</sub> peak between intervals	3x/wk
Wallman et al. 2009 <sup>84a</sup>	8wk	RCT	Sedentary (no regular exercise)	90-105% VO <sub>2</sub> peak <sup>d</sup>	1-min cycling at 90-105% VO <sub>2</sub> peak alternating with 2-min recovery period at 30-45% VO <sub>2</sub> peak	4x/wk
Tsekouras et al. 2008 <sup>85a</sup>	8 wk	RCT	Recreationally active but untrained <sup>c</sup>	90% VO <sub>2</sub> peak (HR checked using HR monitor)	4 x 4-min alternating running at 90% VO <sub>2</sub> peak and 60% VO <sub>2</sub> peak	3x/wk
Freese et al. 2015 <sup>86a</sup>	6 wk	RCT	Physically inactive	maximal sprints (HR checked using HR monitor)	4-8 x 30-sec maximal cycling efforts alternating with 4-min rest periods	3x/wk
Gillen et al. 2013 <sup>87</sup>	6 wk	RCT	≤ 2 sessions/wk of structured exercising lasting ≤ 30 min	~90% HRmax	10 x 60-sec cycling at ~90% HRmax separated by 60-sec rest	3x/wk
MacPherson et al. 2011 <sup>88</sup>	6 wk	CT	Recreationally active <sup>c</sup>	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 4-min rest periods	3x/wk
Trilk et al. 2011 <sup>89a</sup>	4 wk	RCT	Sedentary (exercise ≤ 1 day/wk)	maximal sprints (HR checked using HR monitor)	4-7 x 30-sec maximal cycling efforts alternating with 4-min rest periods	3x/wk
Moholdt et al. 2009 <sup>14</sup>	4 wk	RCT	No data	90% HRmax (HR checked using HR monitor)	4 x 4-min interval running at 90% of HR max with a 3-min recovery period at ~ 70% HR max between intervals	5x/wk

Supplementary Table 1 (continued)

Study	Duration of Intervention	Study Design	Activity Level <sup>b</sup>	High intensity used	HIIT protocol	Frequency
Kendall et al. 2009 <sup>90a</sup>	4 wk	RCT	Recreationally active (1-5 hr/wk aerobic exercise, resistance training or recreational sports)	90-120% VO <sub>2</sub> max <sup>d</sup>	5-6 x 2-min interval cycling at 90% VO <sub>2</sub> max progressing up to 120% VO <sub>2</sub> max with 1-min rest between intervals	5x/wk
Skleryk et al. 2013 <sup>91</sup>	2 wk	RCT	Sedentary <sup>c</sup>	maximal sprints (HR checked using HR monitor)	8-12 x 10-sec maximal cycling efforts alternating with 80-sec rest periods	3x/wk
Leggate et al. 2012 <sup>92a</sup>	14 d	NCT	Physically inactive (<2 bouts of light to moderate intensity exercise per week)	85% VO <sub>2</sub> peak (HR checked using HR monitor)	10 x 4-min interval cycling at 85% of VO <sub>2</sub> peak separated by 2-min rest periods	3x/wk
Astorino et al. 2011 <sup>93</sup>	2 wk	CT	Recreationally active <sup>c</sup>	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 5-min rest periods	3x/wk
Hood et al. 2011 <sup>94</sup>	2 wk	NCT	Sedentary (≤ 2 sessions/wk and ≤ 30 min/session of exercise)	~80-95% HRR (HR checked using HR monitor)	10 x 1-min cycling at ~80-95% HRR with 1-min rest periods	3x/wk
Little et al. 2011 <sup>95</sup>	2 wk	NCT	Sedentary (≤ 2 30-min exercise/wk)	~90% HRmax (HR checked using HR monitor)	10 x 1-min cycling at ~90% HRmax with 1-min rest periods	3x/wk
Richards et al. 2010 <sup>96</sup>	2 wk	RCT	Recreationally active <sup>c</sup>	maximal sprints (HR checked using ECG)	4-7 x 30-sec maximal cycling efforts alternating with 4-min rest periods	3x/wk
Whyte et al. 2010 <sup>97a</sup>	2 wk	NCT	Sedentary (<1hr/wk of structured exercise)	maximal sprints (HR checked using HR monitor)	4-6 x 30-sec maximal cycling efforts alternating with 4.5-min rest periods	3x/wk

Abbreviations: bpm, beats per minute; CT, clinical trial; d, day; ECG, electrocardiogram; F, female; HIIT, high intensity interval training; HR, heart rate; hr, hour; HRmax, maximum heart rate; HRR, heart rate reserve; LT, lactate threshold; M, male; min, minute; NCT, uncontrolled trial; NRCT, non-randomized controlled trial; RCD, randomized cross-over design; RCT, randomized clinical trial; rpm, rate per minute; sec, second; VO<sub>2</sub>max, maximal oxygen consumption; VO<sub>2</sub>peak, peak rate of oxygen consumption; wk, week. <sup>a</sup>Studies that did not report rate of compliance. <sup>b</sup>Described using the terminology of the primary study. <sup>c</sup>Level of activity not clearly described in the study. <sup>d</sup>HR, VO<sub>2</sub>max monitoring not reported in the primary study.

Supplementary Table 2a Summary of effects of short-term HIIT on cardiometabolic health markers in normal weight populations.

Reference	Duration of Intervention	Average BMI >25	Disease status	Body composition						Cardiorespiratory fitness				Glucose metabolism			Blood lipids				Inflammation						
				BM	WC	HC	BMI	WHR	%BF	RHR	V0 <sub>2</sub>	SBP	DBP	FG	FI	HbA1c	TC	HDL	LDL	TG	CRP	IL6	TNFα				
Esfarjani & Laursen 2007 <sup>59</sup>	10 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Dupont et al. 2004 <sup>60</sup>	10 wk	No	No	↔	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Matsuo et al. 2014 <sup>61</sup>	8 wk	No	No	↔	↔	↔	n/a	n/a	n/a	↓	↑	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Sandvei et al. 2012 <sup>62</sup>	8 wk	No	No	↔	n/a	n/a	↔	n/a	↔	n/a	↑	n/a	n/a	↓	↔	n/a	↓	↔	↓	↔	n/a	n/a	n/a	n/a	n/a	n/a	
Musa et al. 2009 <sup>63</sup>	8 wk	No	No	↔	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Helgerud et al. 2007 <sup>64</sup>	8 wk	No	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	↔	n/a	n/a	n/a	↔	↔	↔	↔	n/a	n/a	n/a	n/a	n/a	
Abderrahman et al. 2013 <sup>65</sup>	7 wk	No	No	↔	n/a	n/a	↔	n/a	↔	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Macdougall et al. 1998 <sup>66</sup>	7 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Cocks et al. 2013 <sup>67</sup>	6 wk	No	No	↔	n/a	n/a	↔	n/a	n/a	↓	n/a	↔	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Shepherd et al. 2013 <sup>68</sup>	6 wk	No	No	↔	n/a	n/a	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Walter et al. 2010 <sup>69</sup>	6 wk	No	No	↔	n/a	n/a	n/a	n/a	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Croft et al. 2009 <sup>70</sup>	6 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	↔	↔	
Burgomaster et al. 2008 <sup>9</sup>	6 wk	No	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Gormley et al. 2008 <sup>71</sup>	6 wk	No	No	↔	n/a	n/a	↔	n/a	↔	↔	↑	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Rakobowchuk et al. 2008 <sup>72</sup>	6 wk	No	No	↔	n/a	n/a	↔	n/a	n/a	↔	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Tabata et al. 1996 <sup>73</sup>	6 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Edge et al. 2006 <sup>74</sup>	5 wk	No	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Dunham & Harms 2012 <sup>75</sup>	4 wk	No	No	↔	↔	n/a	↔	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Bayati et al. 2011 <sup>76</sup>	4 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Astorino et al. 2012 <sup>77</sup>	2 wk	No	No	↔	n/a	n/a	n/a	↔	↔	↔	↑	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Leggate et al. 2010 <sup>78</sup>	58 min	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	
Maran et al. 2010 <sup>79</sup>	30 min	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Guelfi et al. 2005 <sup>80</sup>	30 min	No	DM1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Number of studies that examined this variable				15	2	1	7	1	7	5	12	5	5	4	2	0	2	3	2	2	0	2	1				

Abbreviations: % BF, body fat percentage; BM, body mass; BMI, body mass index; CAD, coronary artery disease; CRP, C-reactive protein; d, day; DBP, diastolic blood pressure; DM2, type 2 diabetes mellitus; FG, fasting glucose; FI, fasting insulin; HbA1c, glycosylated hemoglobin; HC, hip circumference; HDL, high-density lipoprotein; HF, heart failure; HPN, essential hypertension; HTx, heart transplant; IL6, interleukin-6; LDL, low-density lipoprotein; MI, myocardial infarction; min, minute; MS, metabolic syndrome; ND, No data; RHR, resting heart rate; SBP, systolic blood pressure; TNFα, tumor necrosis factor-alpha; TC, total cholesterol; TG, triglycerides; VO<sub>2</sub>, maximal oxygen uptake; WC, waist circumference; WHR, waist-to-hip ratio; wk, week; ↔ no statistically significant change; †statistically significant increase; ‡statistically significant increase; n/a, not applicable. Only outcomes statistically compared to baseline were used in the study.



Supplementary Table 2b Summary of effects of short-term HIIT on cardiometabolic health markers in overweight/obese populations.

Reference	Duration of Intervention	Average BMI >25	Disease status	Body composition						Cardiorespiratory fitness				Glucose metabolism			Blood lipids				Inflammation				
				BM	WC	HC	BMI	WHR	%BF	RHR	VO <sub>2</sub>	SBP	DBP	FG	FI	HbA1c	TC	HDL	LDL	TG	CRP	IL-6	TNF $\alpha$		
Keteyian et al. 2014 <sup>81</sup>	10 wk	Yes	Yes (CAD)	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	↔	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Tjønnå et al. 2013 <sup>82</sup>	10 wk	Yes	No	↔	n/a	n/a	↓	n/a	↓	n/a	↑	↔	↓	↓	n/a	↓	↓	↔	↓	↔	↔	↔	n/a	n/a	n/a
Rognmo et al. 2004 <sup>83</sup>	10 wk	Yes	Yes (CAD)	↔	n/a	n/a	n/a	n/a	n/a	↔	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Wallman et al. 2009 <sup>84</sup>	8 wk	Yes	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↔	n/a	n/a	n/a	↔	↔	↔	↔	↔	↔	n/a	n/a	n/a
Tsekouras et al. 2008 <sup>85</sup>	8 wk	Yes	No	↔	n/a	n/a	↔	n/a	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	n/a	n/a
Freese et al. 2015 <sup>86</sup>	6 wk	Yes	Yes (MS)	↔	n/a	n/a	↔	n/a	↔	n/a	n/a	n/a	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gillen et al. 2013 <sup>87</sup>	6 wk	Yes	No	↔	n/a	n/a	n/a	n/a	↓	n/a	n/a	n/a	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MacPherson et al. 2011 <sup>88</sup>	6 wk	Yes	No	↔	n/a	n/a	n/a	n/a	↓	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Trilk et al. 2011 <sup>89</sup>	4 wk	Yes	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Moholdt et al. 2009 <sup>14</sup>	4 wk	Yes	Yes (CAD)	↔	n/a	n/a	n/a	n/a	n/a	↓	n/a	n/a	n/a	↔	n/a	n/a	n/a	n/a	↔	↔	↔	↔	n/a	n/a	n/a
Kendall et al. 2009 <sup>90</sup>	4 wk	Yes	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sklieryk et al. 2013 <sup>91</sup>	2 wk	Yes	No	n/a	↔	n/a	↔	n/a	↔	n/a	n/a	↔	↔	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Leggate et al. 2012 <sup>92</sup>	2 wk	Yes	No	n/a	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↔	↔	↔
Astorino et al. 2011 <sup>93</sup>	2 wk	Yes	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hood et al. 2011 <sup>94</sup>	2 wk	Yes	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Little et al. 2011 <sup>95</sup>	2 wk	Yes	Yes (DM2)	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Richards et al. 2010 <sup>96</sup>	2 wk	Yes	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Whyte et al. 2010 <sup>97</sup>	2 wk	Yes	No	↔	↓	↓	n/a	n/a	n/a	n/a	↑	↓	↔	↔	↔	n/a	↔	↔	n/a	↔	↔	n/a	n/a	n/a	n/a
Number of studies that examined this variable				11	3	1	4	0	6	3	5	6	6	9	6	1	3	4	3	5	1	1	1	1	1

Abbreviations: % BF, body fat percentage; BM, body mass; BMI, body mass index; CAD, coronary artery disease; CRP, C-reactive protein; d, day; DBP, diastolic blood pressure; DM2, type 2 diabetes mellitus; FG, fasting glucose; FI, fasting insulin; HbA1c, glycosylated hemoglobin; HC, hip circumference; HDL, high-density lipoprotein; HF, heart failure; HPN, essential hypertension; HTx, heart transplant; IL6, interleukin-6; LDL, low-density lipoprotein; MI, myocardial infarction; min, minute; MS, metabolic syndrome; ND, No data; RHR, resting heart rate; SBP, systolic blood pressure; TNF $\alpha$ , tumor necrosis factor-alpha; TC, total cholesterol; TG, triglycerides; VO<sub>2</sub>, maximal oxygen uptake; WC, waist circumference; WHR, waist-to-hip ratio; wk, week; ↔ no statistically significant change; ↑statistically significant increase; ↓statistically significant increase; n/a, not applicable. Only outcomes statistically compared to baseline were used in the study.

Supplementary Table 3 Summary of effects of long-term HIIT on cardiometabolic health markers in normal weight and overweight/obese populations.

Reference	Duration of Intervention	Average BMI >25	Disease status	Body composition						Cardiorespiratory fitness				Glucose metabolism			Blood lipids				Inflammation			
				BM	WC	HC	BMI	WHR	%BF	RHR	VO2	SBP	DBP	FG	FI	HbA1c	TC	HDL	LDL	TG	CRP	IL6	TNF $\alpha$	
Ciolac et al. 2011 <sup>38</sup>	16 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	↔	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ciolac et al. 2010 <sup>17</sup>	16 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	↓	↓	↔	↓	n/a	↔	↔	↔	↔	n/a	n/a	n/a	n/a
Tremblay et al. 1994 <sup>39</sup>	15 wk	No	No	↔	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Wisloff et al. 2007 <sup>15</sup>	12 wk	No	Yes (MI)	n/a	n/a	n/a	↔	n/a	n/a	↔	n/a	↔	↔	↔	n/a	n/a	↔	↔	n/a	↔	n/a	n/a	n/a	n/a
Chtara et al. 2005 <sup>40</sup>	12 wk	No	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Number of studies that examined this variable				1	0	0	1	0	0	2	4	2	2	2	1	0	2	2	1	2	0	0	0	0
Nytroen et al. 2013 <sup>41</sup>	12 mo	Yes	Yes (HTx)	↔	n/a	n/a	↔	n/a	↔	n/a	n/a	n/a	n/a	↔	n/a	↔	n/a	↔	↔	↔	↔	↔	↔	n/a
Rustad et al. 2014 <sup>42</sup>	24 wk	Yes	Yes (HTx)	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Tjonna et al. 2008 <sup>16</sup>	16 wk	Yes	Yes (MS)	↓	↓	n/a	↓	↔	n/a	n/a	↑	↓	↓	↔	↔	n/a	n/a	↑	n/a	↔	n/a	n/a	n/a	n/a
Mohr et al. 2014 <sup>43</sup>	15 wk	Yes	Yes (HPN)	↓	↓	↔	n/a	n/a	↓	↓	n/a	↓	↔	n/a	n/a	n/a	↔	↔	↔	↔	n/a	n/a	n/a	n/a
Conraads et al. 2015 <sup>44</sup>	12 wk	Yes	Yes (CAD)	↔	↔	n/a	↔	n/a	n/a	↓	n/a	↔	↓	↔	n/a	n/a	↔	↔	↔	↔	↓	n/a	n/a	n/a
Keating et al. 2014 <sup>45</sup>	12 wk	Yes	No	↔	↔	↔	n/a	n/a	↓	n/a	n/a	n/a	n/a	↔	↔	n/a	↔	↔	↔	↔	↔	n/a	n/a	n/a
Madssen et al. 2014 <sup>46</sup>	12 wk	Yes	Yes (CAD)	↔	↔	n/a	↔	n/a	n/a	↔	n/a	↔	↔	↔	n/a	↔	↔	↔	↔	↔	↔	n/a	n/a	n/a
Mitranun et al. 2014 <sup>47</sup>	12 wk	Yes	Yes (DM2)	↓	n/a	n/a	↓	↓	↓	↓	n/a	↓	↔	↓	n/a	↓	↓	↑	↓	↔	n/a	n/a	n/a	n/a
Astorino et al. 2013 <sup>48</sup>	12 wk	Yes	No	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Heydari et al. 2013a <sup>49</sup>	12 wk	Yes	No	↓	↓	n/a	↓	n/a	n/a	n/a	n/a	↓	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Heydari et al. 2013b <sup>50</sup>	12 wk	Yes	No	↓	↓	n/a	↓	n/a	n/a	↓	↑	↓	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Heydari & Boutcher 2013 <sup>51</sup>	12 wk	Yes	No	↓	↓	n/a	↓	n/a	n/a	↓	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Terada et al. 2013 <sup>52</sup>	12 wk	Yes	Yes (DM2)	↔	↔	↔	↔	n/a	↓	n/a	n/a	n/a	n/a	↔	n/a	↔	↔	↔	↔	↔	n/a	n/a	n/a	n/a
Moholdt et al. 2012 <sup>53</sup>	12 wk	Yes	Yes (MI)	↔	n/a	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	↔	n/a	n/a	n/a	↑	n/a	↔	↔	n/a	n/a	n/a
Molmen-Hansen et al. 2012 <sup>54</sup>	12 wk	Yes	Yes (HPN)	n/a	n/a	n/a	n/a	n/a	n/a	↓	↑	↓	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Stensvold et al. 2012 <sup>55</sup>	12 wk	Yes	Yes (MS)	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a	n/a	↔	↔	↔	↓	↓
Sijie et al. 2012 <sup>56</sup>	12 wk	Yes	No	↓	n/a	n/a	↓	↓	↓	↓	↑	↔	↔	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Stensvold et al. 2010 <sup>57</sup>	12 wk	Yes	Yes (MS)	↔	↓	n/a	↔	n/a	n/a	n/a	n/a	↔	↔	↔	n/a	↔	↔	↔	n/a	↔	n/a	n/a	n/a	n/a
Schjerve et al. 2008 <sup>58</sup>	12 wk	Yes	No	↓	n/a	n/a	↓	↔	n/a	n/a	↑	↔	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↔	n/a	n/a	n/a
Number of studies that examined this variable				17	11	3	12	4	6	10	6	12	12	9	3	5	7	10	7	10	7	2	1	1

Abbreviations: % BF, body fat percentage; BM, body mass; BMI, body mass index; CAD, coronary artery disease; CRP, C-reactive protein; d, day; DBP, diastolic blood pressure; DM2, type 2 diabetes mellitus; FG, fasting glucose; FI, fasting insulin; HbA1c, glycosylated hemoglobin; HC, hip circumference; HDL, high-density lipoprotein; HF, heart failure; HPN, essential hypertension; HTx, heart transplant; IL6, interleukin-6; LDL, low-density lipoprotein; MI, myocardial infarction; min, minute; MS, metabolic syndrome; ND, No data; RHR, resting heart rate; SBP, systolic blood pressure; TNF $\alpha$ , tumor necrosis factor-alpha; TC, total cholesterol; TG, triglycerides; VO<sub>2</sub>, maximal oxygen uptake; WC, waist circumference; WHR, waist-to-hip ratio; wk, week; ↔ no statistically significant change; †statistically significant increase; ‡statistically significant decrease; n/a, not applicable. Only outcomes statistically compared to baseline were used in the study.