

1 **Supplemental material**

2 **Title:** Effects of a five-year programme of supervised exercise on cardiovascular risk factors in older adults. The  
3 Generation 100 randomized controlled trial.

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## 1 **Supplemental Methods**

### 2 **Exclusion criteria before and during the study**

3 Uncontrolled hypertension (untreated systolic blood pressure >220 mmHg or diastolic blood pressure  
4 >110mmHg), symptomatic valvular disease, hypertrophic cardiomyopathy, unstable angina pectoris, primary  
5 pulmonary hypertension, heart failure, severe arrhythmia, diagnosed dementia, cancer that made participation  
6 impossible, chronic communicable infectious diseases, illness or disabilities that precluded exercise such as  
7 severe knee osteoarthritis, or participation in other exercise training interventions.

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### 9 **Reasons not to participate**

10 In total, 1,422 actively declined to participate, and they were asked about the reason why they were not  
11 interested. As previous reported<sup>1</sup> the following reason was given, in addition to the 236 meeting exclusion  
12 criteria; (i) not interested in the study, n= 378, (ii) no reason given, n=808. Among those choosing not to  
13 participate (n=1,422) the proportion performing little physical activity was larger; however, a larger proportion  
14 was also highly active among the non-participants (26%) compared to the participants (22%).<sup>1</sup>

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### 16 **Dropout from the study**

17 The overall number of dropouts (death, withdrawal, and exclusion) was 389 (24.8%), where death, withdrawal  
18 an exclusion accounted for 4.6% points, 16.6 % points and 3.6% points, respectively. Participants in the  
19 Generation 100 study were free to withdraw from study participation without stating specific reasons for their  
20 withdrawal. Therefore, dropout was registered independently of whether reasons for withdrawal were reported to  
21 the study center or not. In a previously published paper where we looked at drop-out after three years, the most  
22 frequently reported reason for dropping out was health-related problems (57.7%), followed by loss of interest in  
23 the project (20.3%), lack of time (17.1%), and family reasons (4.9%).<sup>2</sup> By intervention group, the drop-out by  
24 active withdrawal, death, or exclusion in HIIT, MICT and Con after five years were 33%, 26% and 20%,  
25 respectively.

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### 27 **Cardiopulmonary exercise testing**

28 The NextMove core facility for exercise training and testing at the Norwegian University of Science and  
29 Technology, with established procedures for quality control of equipment, performed the CPET  
30 ([ntnu.edu/mh/nextmove](http://ntnu.edu/mh/nextmove)).

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**Self-report questionnaires**

Smoking was reported as never, former, cigarettes occasionally, cigars/cigarillos/pipe occasionally, cigarettes daily, cigars/cigarillos/pipe daily, and alcohol consumption as weekly average of alcohol intake in units of alcohol. Information on previous myocardial infarction, angina pectoris, heart failure, stroke, atrial fibrillation, other heart disease, asthma, chronic obstructive pulmonary disease, and cancer was collected at baseline and follow-ups. Information on exercise habits were gathered from a validated questionnaire.<sup>3</sup>

**Information on prescription medication use**

Information on medication use for each study year was gathered from the Norwegian prescription database using the following Anatomical Therapeutic Chemical (ATC) codes:

Antihypertensives: C02A C05, C02C A04, C02D B02, C03A A, C03D A01, C03E A, C07B B07, C08C A, C09A, C09B, C09C, C09D A, C09D B, C09D X01.

Beta blockers and heart selective calcium channel blockers: C07A A05, C07A B, C07A G, C08D A, C08D B.

Lipid lowering drugs: C10.

Antidiabetic drugs: A10.

Nitrates: C01D A

**Statistical analyses**

Normality of residuals were checked by visual inspection of QQ-plots. For some of the outcome variables, the QQ-plots indicated slightly heavier tails than would be expected from a normal distribution. Therefore, we also carried out analyses with bootstrapping of 95% confidence intervals (CIs), taking the cluster structure of the data into account. However, the results were not substantially different without bootstrapping, and thus the presented results are obtained from analyses without bootstrapping.

Analyses on low-density lipoprotein (LDL) was also performed using the Friedewald formula for calculating LDL at all time points with similar results to the ones presented.

Supplemental per-protocol analyses were performed for the  $VO_{2peak}$  (mL/kg/min) and CCR endpoints to investigate the influence of adherence to the exercise intervention. In these analyses only participants reporting

1 adherence to the MICT or HIIT intervention at respective years were retained in analyses ( $VO_{2peak}$ :  $n=1,322$ ,  
2 3,573 observations, CCR:  $n=1,332$ , 3710 observations), in addition to participants in Control.

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## 4 **Supplemental Results**

### 5 **Per protocol analyses**

6 The per protocol analyses showed that the five-year effect estimate for analyses on  $VO_{2peak}$  for HIIT was  
7 enhanced both vs. Control (1.8 mL/kg/min 99% CI 0.7 to 2.9,  $p<0.0001$ ) and MICT (1.5 mL/kg/min 99% CI 0.2  
8 to 2.8,  $p=0.002$ ). The result for ExComb vs Control was also enhanced and significant in these analyses (0.8  
9 mL/kg/min 99% CI 0.1 to 1.5,  $p=0.004$ ). Similarly, the effect estimates for CCR was enhanced against Control (-  
10 0.38, 99% CI -0.87 to 0.11,  $p=0.044$ ) and MICT (-0.29, 99% CI -0.86 to 0.28,  $p=0.18$ ) for HIIT, although  
11 precision was lower due to the lower number of observations in the analyses.

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### 13 **Supplemental References**

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1 **Supplemental Table 1. Number of observations in analyses per year and intervention**

2 **arm**

	Year	Control	MICT	HIIT
CCR	0	773	378	395
CCR	1	622	290	282
CCR	3	524	248	249
CCR	5	502	248	235
HDL cholesterol	0	777	382	397
HDL cholesterol	1	641	304	300
HDL cholesterol	3	530	250	251
HDL cholesterol	5	510	252	237
LDL cholesterol	0	776	381	397
LDL cholesterol	1	633	300	298
LDL cholesterol	3	530	250	251
LDL cholesterol	5	510	252	237
TC	0	777	382	397
TC	1	641	304	300
TC	3	530	250	251
TC	5	510	252	237
TG	0	777	382	397
TG	1	642	304	300
TG	3	530	250	251
TG	5	510	252	237
BP measures	0	777	383	399
BP measures	1	642	302	289
BP measures	3	556	254	261
BP measures	5	513	256	240
Resting heart rate	0	779	386	400
Resting heart rate	1	628	289	281
Resting heart rate	3	557	254	261
Resting heart rate	5	514	258	238
Waist circumference	0	777	385	398
Waist circumference	1	661	315	302
Waist circumference	3	557	256	262
Waist circumference	5	521	257	238
BMI	0	773	383	395
BMI	1	650	311	294
BMI	3	557	256	262
BMI	5	522	258	240
HbA1c	0	778	382	397
HbA1c	1	646	306	297
HbA1c	3	541	251	255
HbA1c	5	510	252	237
Glucose	0	778	382	397
Glucose	1	643	304	300
Glucose	3	527	250	251
Glucose	5	510	252	237

VO <sub>2peak</sub> (mL/kg/min)	0	763	377	393
VO <sub>2peak</sub> (mL/kg/min)	1	609	289	291
VO <sub>2peak</sub> (mL/kg/min)	3	491	234	241
VO <sub>2peak</sub> (mL/kg/min)	5	442	206	210
VO <sub>2peak</sub> (mL/kg fat free mass/min)	0	751	374	388
VO <sub>2peak</sub> (mL/kg fat free mass/min)	1	603	286	283
VO <sub>2peak</sub> (mL/kg fat free mass/min)	3	484	233	238
VO <sub>2peak</sub> (mL/kg fat free mass/min)	5	434	204	207

MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. CCR = continuous cardiovascular risk score. HDL = high-density lipoprotein. LDL = low-density lipoprotein. TC = total cholesterol. TG = triglycerides. BP = blood pressure. BMI = body mass index. HbA1c = glycosylated hemoglobin. VO<sub>2peak</sub> = Peak oxygen uptake

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1 **Supplemental Table 2. Characteristics by sex and intervention group at year 1.**

Characteristic	Men			Women		
	Control, N = 318	MICT, N = 165	HIIT, N = 163	Control, N = 343	MICT, N = 149	HIIT, N = 139
Age (years)	73 (1.9)	73 (2.1)	73 (2.1)	73 (2.1)	73 (2.0)	73 (2.0)
Weight (kg)	82 (11)	81 (11)	82 (12)	67 (11)	67 (9.9)	66 (9.8)
Height (cm)	177 (5.6)	177 (5.9)	177 (6.1)	163 (5.3)	163 (5.0)	163 (5.2)
Fat free mass (kg)	61 (6.0)	61 (6.2)	61 (6.5)	43 (4.6)	44 (4.1)	43 (4.3)
Body fat (%)	26 (6.3)	25 (6.4)	25 (6.4)	34 (6.8)	34 (6.9)	33 (6.4)
VO <sub>2peak</sub> (mL/kg/min)	33 (7.3)	33 (7.3)	35 (6.7)	28 (5.5)	28 (5.3)	29 (5.7)
Respiratory exchange ratio	1.07 (0.08)	1.08 (0.07)	1.08 (0.06)	1.04 (0.07)	1.04 (0.08)	1.05 (0.08)
Borg scale peak	17.4 (1.4)	17.2 (1.4)	17.6 (1.4)	17.2 (1.6)	17.1 (1.5)	17.6 (1.4)
Current smoker	22 (7.4%)	14 (9.7%)	6 (3.9%)	23 (7.2%)	12 (8.5%)	8 (6.0%)
Former smoker	136 (46%)	68 (47%)	79 (52%)	111 (35%)	50 (35%)	43 (32%)
Alcohol (units/week)	4.6 (4.5)	4.4 (4.1)	4.6 (4.5)	3.3 (3.7)	2.4 (3.0)	2.2 (2.9)
Lipid lowering therapy	31 (9.7%)	27 (16%)	19 (12%)	37 (11%)	13 (8.7%)	19 (14%)
Beta blockers <sup>c</sup>	39 (12%)	22 (13%)	26 (16%)	26 (7.6%)	11 (7.4%)	15 (11%)
Antihypertensives	122 (38%)	63 (38%)	48 (29%)	117 (34%)	39 (26%)	43 (31%)
Antidiabetic medication	23 (7.2%)	11 (6.7%)	12 (7.4%)	5 (1.5%)	7 (4.7%)	2 (1.4%)
Nitrates	6 (1.9%)	2 (1.2%)	5 (3.1%)	4 (1.2%)	5 (3.4%)	2 (1.4%)

2 Values are mean (standard deviation) or n (%).

3 Abbreviations: MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. VO<sub>2peak</sub> = peak oxygen uptake.

4 <sup>a</sup>Beta blockers or heart selective calcium channel blockers

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1 **Supplemental Table 3. Characteristics by sex and intervention group at year 3.**

Characteristic	Men			Women		
	Control, N = 274	MICT, N = 132	HIIT, N = 140	Control, N = 343	MICT, N = 149	HIIT, N = 139
Age (years)	73 (1.9)	73 (2.2)	73 (2.1)	73 (2.1)	73 (2.0)	73 (2.0)
Weight (kg)	81 (10)	82 (11)	82 (11)	67 (11)	67 (9.9)	66 (9.8)
Height (cm)	177 (5.8)	177 (5.9)	177 (5.8)	163 (5.3)	163 (5.0)	163 (5.2)
Fat free mass (kg)	60 (6.2)	61 (6.1)	60 (5.8)	43 (4.6)	44 (4.1)	43 (4.3)
Body fat (%)	26 (6.3)	26 (6.3)	26 (6.8)	34 (6.8)	34 (6.9)	33 (6.4)
VO <sub>2peak</sub> (mL/kg/min)	32 (7.6)	32 (6.6)	33 (7.3)	28 (5.5)	28 (5.3)	29 (5.7)
Respiratory exchange ratio	1.07 (0.08)	1.06 (0.08)	1.08 (0.08)	1.03 (0.08)	1.04 (0.09)	1.05 (0.08)
Borg scale peak	17.3 (1.5)	17.1 (1.5)	17.4 (1.2)	17.1 (1.7)	17.1 (1.5)	17.5 (1.3)
Current smoker	12 (4.5%)	10 (8.2%)	7 (5.1%)	23 (7.2%)	12 (8.5%)	8 (6.0%)
Former smoker	124 (47%)	65 (53%)	61 (45%)	111 (35%)	50 (35%)	43 (32%)
Alcohol (units/week)	4.6 (4.3)	4.5 (4.3)	4.4 (4.0)	3.3 (3.7)	2.4 (3.0)	2.2 (2.9)
Lipid lowering therapy	32 (12%)	23 (17%)	21 (15%)	37 (11%)	13 (8.7%)	19 (14%)
Beta blockers <sup>c</sup>	38 (14%)	20 (15%)	24 (17%)	26 (7.6%)	11 (7.4%)	15 (11%)
Antihypertensives	116 (42%)	52 (39%)	45 (32%)	117 (34%)	39 (26%)	43 (31%)
Antidiabetic medication	24 (8.8%)	9 (6.8%)	13 (9.3%)	5 (1.5%)	7 (4.7%)	2 (1.4%)
Nitrates	10 (3.6%)	0 (0%)	4 (2.9%)	4 (1.2%)	5 (3.4%)	2 (1.4%)

2 Values are mean (standard deviation) or n (%).

3 Abbreviations: MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. VO<sub>2peak</sub> = peak oxygen uptake.

4 <sup>a</sup>Beta blockers or heart selective calcium channel blockers

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1 **Supplemental Table 4. Characteristics by sex and intervention group at year 5.**

Characteristic	Men			Women		
	Control, N = 263	MICT, N = 134	HIIT, N = 129	Control, N = 259	MICT, N = 124	HIIT, N = 111
Age (years)	73 (1.9)	73 (2.2)	73 (2.1)	73 (2.1)	73 (2.0)	73 (2.0)
Weight (kg)	81 (11)	82 (11)	82 (12)	67 (11)	68 (11)	65 (9.2)
Height (cm)	176 (5.8)	177 (6.2)	176 (6.1)	163 (5.3)	163 (5.0)	162 (5.3)
Fat free mass (kg)	59 (6.2)	60 (6.1)	59 (6.3)	43 (4.4)	44 (4.1)	43 (4.5)
Body fat (%)	27 (6.4)	26 (6.7)	27 (6.5)	35 (7.3)	35 (7.2)	34 (6.1)
VO <sub>2peak</sub> (mL/kg/min)	30 (7.3)	31 (6.8)	31 (6.9)	26 (5.2)	26 (5.1)	27 (5.3)
Respiratory exchange ratio	1.06 (0.08)	1.06 (0.07)	1.08 (0.08)	1.03 (0.08)	1.03 (0.08)	1.04 (0.09)
Borg scale peak	17.2 (1.4)	17.1 (1.6)	17.3 (1.2)	17.0 (1.5)	16.9 (1.4)	17.2 (1.4)
Current smoker	7 (2.9%)	7 (5.7%)	7 (5.9%)	12 (5.1%)	6 (5.4%)	5 (4.7%)
Former smoker	117 (48%)	61 (50%)	53 (45%)	78 (33%)	35 (31%)	32 (30%)
Alcohol (units/week)	4.5 (4.1)	4.7 (4.4)	4.5 (4.1)	3.0 (3.0)	2.5 (3.0)	1.9 (2.2)
Lipid lowering therapy	35 (13%)	28 (21%)	21 (16%)	34 (13%)	25 (20%)	18 (16%)
Beta blockers <sup>c</sup>	24 (9.1%)	9 (6.7%)	16 (12%)	15 (5.8%)	13 (10%)	6 (5.4%)
Antihypertensives	110 (42%)	58 (43%)	43 (33%)	95 (37%)	37 (30%)	42 (38%)
Antidiabetic medication	23 (8.7%)	10 (7.5%)	10 (7.8%)	5 (1.9%)	9 (7.3%)	1 (0.9%)
Nitrates	12 (4.6%)	2 (1.5%)	6 (4.7%)	5 (1.9%)	5 (4.0%)	2 (1.8%)

2 Values are mean (standard deviation) or n (%).

3 Abbreviations: MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. VO<sub>2peak</sub> = peak oxygen uptake.

4 <sup>a</sup>Beta blockers or heart selective calcium channel blockers

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1 **Supplemental Table 5. Descriptive means and standard deviations by intervention**  
 2 **groups and study year.**

Risk factor	Year	Control	ExComb	MICT	HIIT
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
CCR (sum of Z)	0	0 (2.98)	0.01 (3.07)	0.01 (3.11)	0.01 (3.04)
	1	-0.76 (3.06)	-0.92 (2.97)	-0.9 (3.13)	-0.95 (2.8)
	3	-0.66 (3.04)	-0.68 (2.94)	-0.48 (3.06)	-0.87 (2.82)
	5	0.1 (2.99)	-0.16 (2.81)	0.02 (2.79)	-0.36 (2.84)
HDL cholesterol (mmol/L)	0	1.75 (0.51)	1.73 (0.51)	1.73 (0.49)	1.73 (0.53)
	1	1.78 (0.51)	1.75 (0.49)	1.76 (0.48)	1.75 (0.49)
	3	1.8 (0.52)	1.77 (0.51)	1.76 (0.5)	1.77 (0.52)
	5	1.63 (0.46)	1.63 (0.43)	1.62 (0.42)	1.65 (0.43)
LDL cholesterol (mmol/L)	0	3.42 (0.97)	3.36 (1.02)	3.36 (1.02)	3.36 (1.01)
	1	3.36 (0.95)	3.27 (1)	3.27 (1)	3.27 (1)
	3	3.44 (0.96)	3.32 (0.95)	3.3 (0.92)	3.33 (0.98)
	5	3.16 (0.95)	3.07 (0.94)	3.06 (0.89)	3.09 (0.99)
TC (mmol/L)	0	5.68 (1.1)	5.6 (1.12)	5.61 (1.14)	5.59 (1.1)
	1	5.54 (1.08)	5.42 (1.12)	5.41 (1.14)	5.42 (1.09)
	3	5.55 (1.14)	5.39 (1.1)	5.37 (1.08)	5.4 (1.12)
	5	5.35 (1.13)	5.24 (1.08)	5.2 (1.05)	5.28 (1.11)
TG (mmol/L)	0	1.13 (0.53)	1.14 (0.55)	1.16 (0.58)	1.13 (0.53)
	1	1.01 (0.47)	0.99 (0.44)	1 (0.46)	0.99 (0.42)
	3	1.01 (0.44)	1 (0.42)	1.02 (0.46)	0.99 (0.39)
	5	1.1 (0.48)	1.05 (0.44)	1.06 (0.47)	1.04 (0.4)
Diastolic BP (mmHg)	0	75.4 (9.77)	75 (9.33)	74.6 (9.07)	75.5 (9.57)
	1	73.5 (9.48)	73.4 (9.19)	73.4 (8.69)	73.3 (9.71)
	3	74.7 (9.59)	74 (9.58)	74.6 (9.46)	73.6 (9.69)
	5	76.7 (9.94)	76.4 (10)	76.6 (10.2)	76.2 (9.85)
Systolic BP (mmHg)	0	135 (17.5)	134 (17.6)	133 (17.7)	134 (17.6)
	1	132 (17)	131 (17.2)	131 (17.3)	132 (17.1)
	3	133 (17.5)	131 (16.9)	132 (17.9)	130 (15.8)
	5	135 (17)	134 (17.4)	134 (18)	134 (16.8)
MAP (mmHg)	0	94.9 (10.5)	94.4 (10.4)	93.9 (10.4)	94.8 (10.5)
	1	92.7 (10.2)	92.5 (10.2)	92.5 (9.93)	92.5 (10.5)
	3	93.8 (10.4)	92.9 (10.3)	93.6 (10.5)	92.2 (10)
	5	95.8 (10.4)	95.4 (10.5)	95.5 (10.8)	95.3 (10.2)
Resting heart rate (beats/min)	0	65.4 (10.9)	64.5 (10.7)	64.6 (10.8)	64.4 (10.7)
	1	64.2 (10.3)	63.1 (10.4)	63 (9.76)	63.2 (10.9)
	3	63.9 (10.7)	62.2 (10.7)	62 (11)	62.4 (10.4)
	5	63.8 (10.7)	61.5 (10.2)	61.8 (9.9)	61.1 (10.5)
Waist circumference (cm)	0	94.2 (10.7)	94.2 (11.4)	93.8 (11.2)	94.6 (11.5)
	1	92.1 (11.9)	92 (11.5)	92.1 (11.7)	91.9 (11.4)
	3	93.7 (10.7)	93.6 (11)	94.2 (11)	93 (10.9)
	5	94.8 (10.9)	94.6 (11.4)	95.2 (12)	94 (10.7)
BMI (kg/m <sup>2</sup> )	0	25.9 (3.42)	26 (3.69)	25.9 (3.69)	26.2 (3.69)
	1	25.6 (3.44)	25.5 (3.44)	25.5 (3.53)	25.5 (3.34)
	3	25.6 (3.27)	25.7 (3.46)	25.9 (3.71)	25.6 (3.2)
	5	25.7 (3.49)	25.7 (3.55)	25.9 (3.8)	25.5 (3.26)
HbA1c (%)	0	5.65 (0.39)	5.7 (0.5)	5.71 (0.55)	5.7 (0.44)

	1	5.62 (0.47)	5.63 (0.47)	5.63 (0.47)	5.63 (0.47)
	3	5.51 (0.45)	5.52 (0.48)	5.53 (0.49)	5.52 (0.47)
	5	5.54 (0.58)	5.55 (0.49)	5.56 (0.54)	5.53 (0.43)
Glucose (mmol/L)	0	5.65 (0.75)	5.7 (0.94)	5.72 (1.03)	5.68 (0.85)
	1	5.62 (0.91)	5.64 (0.89)	5.68 (0.96)	5.6 (0.82)
	3	5.63 (1.07)	5.63 (0.86)	5.65 (0.85)	5.61 (0.87)
	5	5.53 (1)	5.49 (0.85)	5.53 (0.88)	5.44 (0.82)
VO <sub>2peak</sub> (mL/kg/min)	0	28.6 (6.41)	28.8 (6.48)	28.6 (6.58)	29 (6.38)
	1	30.6 (6.87)	31.5 (6.86)	30.8 (6.9)	32.2 (6.76)
	3	29.3 (7.13)	30.1 (6.78)	29.1 (6.54)	31 (6.89)
	5	28.4 (6.65)	29 (6.51)	28.5 (6.5)	29.4 (6.5)
VO <sub>2peak</sub> (mL/kg fat free mass/min)	0	41.1 (6.82)	41 (6.96)	40.7 (7.1)	41.3 (6.82)
	1	43.5 (7.53)	44.3 (7.58)	43.3 (7.5)	45.3 (7.55)
	3	41.8 (8.02)	42.7 (7.78)	41.5 (7.49)	43.8 (7.91)
	5	40.8 (7.38)	41.4 (7.18)	40.8 (6.85)	42 (7.45)

ExComb = combined exercise groups. MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. SD = standard deviation. CCR = continuous cardiovascular risk score. HDL = high-density lipoprotein. LDL = low-density lipoprotein. TC = total cholesterol. TG = triglycerides. BP = blood pressure. MAP = mean arterial pressure. BMI = body mass index. HbA1c = glycosylated hemoglobin. VO<sub>2peak</sub> = peak oxygen uptake.

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1 **Supplemental Table 6. Results from linear mixed models showing treatment effect as Year × Group interaction with 99% CI for**  
2 **ExComb, MICT and HIIT compared to Control. Including analyses at year 3 and MICT vs. Control comparison.**

Risk factor	Year	ExComb vs. Control		MICT vs. Control		HIIT vs. Control		HIIT vs. MICT	
		Year x Group		Year x Group		Year x Group		Year x Group	
		Estimate (99% CI)	P value	Estimate (99% CI)	P value	Estimate (99% CI)	P value	Estimate (99% CI)	P value
CCR (sum of Z)	0								
	1	-0.08 (-0.32 to 0.17)	0.42	-0.05 (-0.34 to 0.25)	0.69	-0.1 (-0.4 to 0.2)	0.38	-0.06 (-0.41 to 0.29)	0.68
	3	-0.16 (-0.42 to 0.09)	0.1	0.01 (-0.3 to 0.33)	0.91	-0.34 (-0.66 to -0.02)	0.006	-0.35 (-0.72 to 0.02)	0.014
	5	-0.19 (-0.46 to 0.07)	0.055	-0.08 (-0.39 to 0.24)	0.54	-0.32 (-0.64 to 0.01)	0.011	-0.24 (-0.62 to 0.13)	0.095
HDL cholesterol (mmol/L)	0								
	1	0.01 (-0.02 to 0.04)	0.51	0.01 (-0.03 to 0.05)	0.65	0.01 (-0.03 to 0.05)	0.53	0 (-0.05 to 0.05)	0.89
	3	0 (-0.03 to 0.04)	0.77	-0.01 (-0.05 to 0.03)	0.53	0.02 (-0.03 to 0.06)	0.27	0.03 (-0.02 to 0.08)	0.14
	5	0.01 (-0.03 to 0.05)	0.43	-0.01 (-0.05 to 0.04)	0.71	0.03 (-0.02 to 0.07)	0.089	0.04 (-0.02 to 0.09)	0.073
LDL cholesterol (mmol/L)	0								
	1	-0.03 (-0.12 to 0.07)	0.48	0 (-0.12 to 0.12)	0.98	-0.05 (-0.17 to 0.06)	0.24	-0.05 (-0.19 to 0.08)	0.3
	3	-0.05 (-0.15 to 0.05)	0.23	-0.04 (-0.17 to 0.08)	0.4	-0.05 (-0.18 to 0.07)	0.27	-0.01 (-0.16 to 0.13)	0.83
	5	-0.03 (-0.13 to 0.07)	0.46	-0.02 (-0.15 to 0.1)	0.64	-0.04 (-0.16 to 0.09)	0.47	-0.01 (-0.16 to 0.13)	0.81
TC (mmol/L)	0								
	1	-0.02 (-0.12 to 0.08)	0.59	-0.01 (-0.14 to 0.12)	0.85	-0.03 (-0.16 to 0.09)	0.49	-0.02 (-0.17 to 0.12)	0.67
	3	-0.05 (-0.17 to 0.06)	0.2	-0.05 (-0.19 to 0.08)	0.31	-0.06 (-0.19 to 0.08)	0.3	0 (-0.16 to 0.16)	0.99
	5	-0.05 (-0.16 to 0.07)	0.3	-0.06 (-0.2 to 0.07)	0.23	-0.03 (-0.16 to 0.11)	0.64	0.04 (-0.12 to 0.2)	0.54
TG (mmol/L)	0								
	1	-0.01 (-0.06 to 0.04)	0.64	-0.01 (-0.08 to 0.05)	0.59	-0.01 (-0.07 to 0.06)	0.83	0.01 (-0.07 to 0.08)	0.77
	3	-0.02 (-0.08 to 0.03)	0.31	-0.01 (-0.08 to 0.06)	0.68	-0.03 (-0.1 to 0.04)	0.21	-0.02 (-0.1 to 0.06)	0.48
	5	-0.05 (-0.11 to 0.01)	0.024	-0.04 (-0.11 to 0.03)	0.16	-0.06 (-0.13 to 0.01)	0.023	-0.02 (-0.1 to 0.06)	0.45
Diastolic BP (mmHg)	0								
	1	-0.09 (-1.13 to 0.95)	0.82	0.14 (-1.14 to 1.41)	0.78	-0.32 (-1.61 to 0.97)	0.52	-0.46 (-1.96 to 1.04)	0.43
	3	-0.54 (-1.64 to 0.56)	0.21	0.18 (-1.19 to 1.54)	0.74	-1.25 (-2.6 to 0.11)	0.018	-1.42 (-3.01 to 0.17)	0.021
	5	-0.09 (-1.22 to 1.04)	0.84	0.28 (-1.1 to 1.65)	0.6	-0.47 (-1.87 to 0.93)	0.39	-0.75 (-2.36 to 0.87)	0.23

Systolic BP (mmHg)	0								
	1	0.07 (-1.89 to 2.02)	0.93	-0.1 (-2.5 to 2.3)	0.91	0.25 (-2.18 to 2.68)	0.79	0.35 (-2.48 to 3.18)	0.75
	3	-1.16 (-3.24 to 0.92)	0.15	-0.01 (-2.58 to 2.56)	0.99	-2.27 (-4.82 to 0.29)	0.022	-2.26 (-5.25 to 0.74)	0.052
	5	-0.4 (-2.53 to 1.73)	0.63	-0.66 (-3.25 to 1.94)	0.51	-0.12 (-2.76 to 2.52)	0.91	0.54 (-2.5 to 3.59)	0.65
MAP (mmHg)	0								
	1	-0.04 (-1.21 to 1.13)	0.93	0.05 (-1.38 to 1.48)	0.93	-0.13 (-1.58 to 1.32)	0.82	-0.18 (-1.87 to 1.51)	0.78
	3	-0.75 (-1.99 to 0.5)	0.12	0.11 (-1.43 to 1.64)	0.86	-1.58 (-3.1 to -0.06)	0.008	-1.69 (-3.48 to 0.1)	0.015
	5	-0.2 (-1.47 to 1.07)	0.69	-0.04 (-1.59 to 1.5)	0.94	-0.35 (-1.93 to 1.23)	0.57	-0.31 (-2.13 to 1.51)	0.66
Resting heart rate (beats/min)	0								
	1	-0.44 (-1.59 to 0.7)	0.32	-0.53 (-1.94 to 0.88)	0.33	-0.35 (-1.78 to 1.07)	0.52	0.17 (-1.49 to 1.83)	0.79
	3	-1.25 (-2.46 to -0.05)	0.007	-1.13 (-2.61 to 0.36)	0.05	-1.38 (-2.86 to 0.1)	0.016	-0.25 (-1.98 to 1.48)	0.71
	5	-1.44 (-2.67 to -0.21)	0.003	-1.03 (-2.52 to 0.47)	0.076	-1.89 (-3.42 to -0.36)	0.002	-0.86 (-2.62 to 0.9)	0.21
Waist circumference (cm)	0								
	1	-0.06 (-0.8 to 0.68)	0.82	0.16 (-0.74 to 1.07)	0.64	-0.3 (-1.21 to 0.62)	0.4	-0.46 (-1.52 to 0.6)	0.26
	3	-0.43 (-1.22 to 0.36)	0.16	0.05 (-0.93 to 1.02)	0.9	-0.9 (-1.87 to 0.07)	0.017	-0.95 (-2.09 to 0.18)	0.031
	5	-0.09 (-0.9 to 0.72)	0.77	0.27 (-0.71 to 1.25)	0.47	-0.47 (-1.47 to 0.53)	0.23	-0.74 (-1.9 to 0.42)	0.099
BMI (kg/m <sup>2</sup> )	0								
	1	-0.14 (-0.29 to 0.01)	0.018	-0.09 (-0.27 to 0.09)	0.19	-0.18 (-0.37 to 0)	0.011	-0.09 (-0.3 to 0.13)	0.29
	3	-0.15 (-0.31 to 0.01)	0.013	-0.05 (-0.24 to 0.15)	0.55	-0.26 (-0.45 to -0.06)	<0.001	-0.21 (-0.44 to 0.01)	0.016
	5	-0.11 (-0.27 to 0.05)	0.072	0.01 (-0.19 to 0.21)	0.91	-0.24 (-0.44 to -0.04)	0.002	-0.25 (-0.48 to -0.02)	0.005
HbA1c (%)	0								
	1	-0.03 (-0.07 to 0.02)	0.12	-0.03 (-0.09 to 0.02)	0.12	-0.02 (-0.07 to 0.03)	0.34	0.01 (-0.05 to 0.07)	0.62
	3	-0.01 (-0.06 to 0.03)	0.5	-0.02 (-0.08 to 0.04)	0.43	-0.01 (-0.06 to 0.05)	0.77	0.01 (-0.06 to 0.08)	0.67
	5	-0.01 (-0.05 to 0.04)	0.76	0 (-0.06 to 0.06)	0.98	-0.01 (-0.07 to 0.05)	0.59	-0.01 (-0.08 to 0.05)	0.62
Glucose (mmol/L)	0								
	1	-0.02 (-0.12 to 0.08)	0.54	-0.01 (-0.13 to 0.11)	0.81	-0.04 (-0.16 to 0.09)	0.46	-0.02 (-0.17 to 0.12)	0.67
	3	-0.06 (-0.16 to 0.05)	0.18	-0.06 (-0.19 to 0.08)	0.27	-0.06 (-0.19 to 0.08)	0.28	0 (-0.15 to 0.16)	0.99
	5	-0.06 (-0.17 to 0.04)	0.13	-0.05 (-0.18 to 0.09)	0.36	-0.08 (-0.22 to 0.05)	0.11	-0.04 (-0.19 to 0.12)	0.55
VO <sub>2peak</sub> (mL/kg/min)	0								
	1	0.61 (0.08 to 1.15)	0.003	0.21 (-0.45 to 0.86)	0.41	1.01 (0.36 to 1.67)	<0.001	0.8 (0.04 to 1.57)	0.007
	3	0.63 (0.05 to 1.21)	0.006	0.13 (-0.59 to 0.84)	0.65	1.13 (0.42 to 1.84)	<0.001	1 (0.18 to 1.83)	0.002

	5	0.39 (-0.22 to 1)	0.097	0.02 (-0.73 to 0.76)	0.96	0.76 (0.02 to 1.51)	0.008	0.75 (-0.12 to 1.62)	0.027
VO <sub>2peak</sub> (mL/kg fat free mass/min)	0								
	1	0.76 (0.03 to 1.49)	0.007	0.21 (-0.69 to 1.1)	0.55	1.32 (0.42 to 2.22)	<0.001	1.11 (0.07 to 2.16)	0.006
	3	0.86 (0.07 to 1.65)	0.005	0.18 (-0.79 to 1.16)	0.62	1.53 (0.56 to 2.5)	<0.001	1.35 (0.22 to 2.48)	0.002
	5	0.52 (-0.31 to 1.35)	0.11	0.04 (-0.99 to 1.06)	0.92	1 (-0.02 to 2.02)	0.012	0.96 (-0.23 to 2.15)	0.038

1 CI = confidence interval. ExComb= combined exercise groups. MICT = moderate-intensity continuous training. HIIT = high-intensity interval training. SD =  
2 standard deviation. VO<sub>2peak</sub> = peak oxygen uptake. CCR = continuous cardiovascular risk score. HDL = high-density lipoprotein. LDL = low-density lipoprotein. TC  
3 = total cholesterol. TG = triglycerides. BP = blood pressure. MAP = mean arterial pressure. BMI = body mass index. HbA1c = glycosylated hemoglobin. VO<sub>2peak</sub> =  
4 peak oxygen uptake.

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