

Supplementary Table S1. Specific ROB details of included studies

Author, Year	Method of random-ization	Allocation concealed	Blinding of partic-ipants	Blinding of research personnel	Incomplete outcome data	Dropout rate %	Other sources of bias*	1	2	3	4	5	6	7	Overall Score (Category)
Ma, Said, 2021	Unclear	No	No	Unclear	Yes	11	Yes	H	H	H	H	H	H	L	5 (High)
Hu, Mingzhu and Kong, Zhaowei, 2021	PASW software	No	No	Unclear	No	9.1	No	L	H	H	H	L	H	L	3 (moderate)
Tucker, 2021	Unclear	No	No	Unclear	No	0	No	H	H	H	H	L	L	L	3 (moderate)
Robinson, 2020	Software	Yes	No	Yes	No	0	No	L	L	H	L	L	L	L	1 (low)
Ebrahim Skakiba, 2019	Unclear	No	No	Unclear	No	0	Unclear	H	H	H	L	L	L	H	4 (moderate)
Zhao, Jun, Liang, Jinyu, 2019	Unclear	No	No	Unclear	No	0	No	H	H	H	L	L	L	L	3 (moderate)
Gram, 2018	Stratified	No	No	No	Yes	< 5	No	L	H	H	H	H	H	L	4 (moderate)
Tong, 2018	Stratified	No	No	No	Yes	15	Yes	L	H	H	H	H	H	H	5 (High)
Chih-Hui, 2017	Unclear	No	No	No	Yes	9	Yes	H	H	H	H	H	H	H	6 (high)
Rustaden, 2017	Software	Yes	No	No	Yes	16	No	L	L	H	H	H	H	L	3 (moderate)
Jabbour, 2015	Unclear	No	No	No	Yes	0	No	H	H	H	H	L	L	L	4 (moderate)
Keating, 2015	Software	Yes	No	No	No	< 5	No	L	L	H	H	L	H	L	1 (low)
Sheikholeslami-Vatani, 2015	Unclear	No	No	No	Yes	No reported	Unclear	H	H	H	H	H	H	H	6 (high)
Arad, 2015	Unclear	No	No	No	Yes	26	Unclear	H	H	H	H	H	H	H	6 (high)
Croymans, 2014	Software	No	No	Yes	Yes	< 5	Yes	L	H	H	L	H	H	H	4 (moderate)
Donnelly, 2013	Software	No	No	Yes	No	33	No	L	H	H	L	L	L	L	1 (low)
Tseng, 2013	Unclear	No	No	No	Yes	9	Unclear	H	H	H	H	H	H	H	6 (high)
Arslan, 2011	Unclear	No	No	Unclear	Unclear	Unclear	Yes	H	H	H	H	H	H	H	6 (high)
Alves, 2009	Unclear	No	No	No	No	0	No	H	H	H	L	L	L	L	3 (moderate)
Van-Aggel Leijssen, 2001	Software	No	No	No	Yes	Unclear	Yes	L	H	H	H	H	H	H	5 (high)
Kong, 2014	Unclear	No	No	No	Yes	18	No	H	H	H	H	L	L	L	4 (moderate)
Wang, 2012	No	No	No	No	Yes	10	No	H	H	H	H	H	H	L	5 (high)
Zhao, 2016	Unclear	No	No	No	No	0	No	H	H	H	L	L	L	L	3 (moderate)
Wiesner, 2012	Unclear	No	No	No	Unclear	10	No	H	H	H	H	H	L	L	5 (high)
Rojo-Tirado, 2021	Software	No	No	No	Unclear	Unclear	No	L	H	H	H	H	L	L	4 (moderate)
Cardoso, 2013	Unclear	No	No	Yes	Unclear	Unclear	No	H	H	H	L	H	H	L	4 (moderate)
Fortuin-de Smidt, 2020	Software	No	No	Yes	Unclear	0	No	L	H	H	L	L	L	L	1 (low)
Alvarez-Alvarado, 2017	Unclear	No	No	No	No	9	No	H	H	H	L	L	L	L	4 (moderate)
Milanese, 2013	Unclear	No	No	No	Unclear	18	No	H	H	H	H	H	H	L	5 (high)
Wilms, 2012	Unclear	No	No	No	Unclear	Unclear	Unclear	H	H	H	H	H	H	H	6 (high)
Kerri M. Winters-Stone, 2020	Unclear	No	No	Yes	Unclear	Unclear	No	H	H	L	L	H	H	L	4 (moderate)
Takuma Morishima, 2013	Unclear	No	No	No	No	0	No	H	H	H	H	L	L	L	4 (moderate)

Supplementary Table SII. Consistency test and heterogeneity test

Weight

Variable	Coef.	Std. err.	z	P > z	[95% Conf. interval]	
_y_B						
_cons	-1.10296	1.943235	-0.57	0.570	-4.91163	2.70571
_y_C						
_cons	-2.55832	1.508378	-1.70	0.090	-5.514686	.3980459
_y_D						
_cons	-2.164762	2.857552	-0.76	0.449	-7.765462	3.435938
_y_E						
_cons	-1.178201	1.473942	-0.80	0.424	-4.067075	1.710672
_y_F						
_cons	1.770171	1.080228	1.64	0.101	-.3470377	3.88738
_y_G						
_cons	-.7550393	2.827509	-0.27	0.789	-6.296855	4.786777
_y_H						
_cons	.276053	1.562277	0.18	0.860	-2.785953	3.338059
_y_I						
_cons	1.111974	2.047784	0.54	0.587	-2.901608	5.125557
Prob > χ^2 = 0.8911						

BMI

Variable	Coef.	Std. err.	z	P > z	[95% Conf. interval]	
_y_B						
_cons	-0.1307269	0.4846566	-0.27	0.787	-1.080636	0.8191825
_y_C						
_cons	-0.0848458	0.3608672	-0.24	0.814	-0.7921326	0.6224409
_y_D						
_cons	-0.179459	0.7000707	-0.26	0.798	-1.551572	1.192654
_y_E						
_cons	-0.0849432	0.3476861	-0.24	0.807	-0.7663955	0.5965091
_y_F						
_cons	1.160487	0.2554847	4.54	0.000	0.659746	1.661228
_y_G						
_cons	0.3574906	0.6500347	0.55	0.582	-0.9165541	1.631535
_y_H						
_cons	0.7241207	0.3895048	1.86	0.063	-0.0392947	1.487536
_y_I						
_cons	0.7653413	0.5494219	1.39	0.164	-0.3115058	1.842188
Prob > χ^2 = 0.3272						

Supplementary Table SII. Cont.

FAT%

Variable	Coef.	Std. err.	z	P > z	[95% Conf. interval]	
_y_B						
_cons	-1.195068	2.007209	-0.60	0.552	-5.129126	2.738989
_y_C						
_cons	-0.5630729	1.281918	-0.44	0.660	-3.075586	1.94944
_y_D						
_cons	-1.916078	2.967449	-0.65	0.518	-7.732171	3.900016
_y_E						
_cons	-1.283601	1.505677	-0.85	0.394	-4.234673	1.667472
_y_F						
_cons	2.783819	0.9884982	2.82	0.005	0.8463986	4.72124
_y_G						
_cons	0.6907715	2.523098	0.27	0.784	-4.254409	5.635952
_y_H						
_cons	-0.7013413	1.786513	-0.39	0.695	-4.202842	2.800159
_y_I						
_cons	2.470729	1.591846	1.55	0.121	-0.6492315	5.590689
Prob > $\chi^2 = 0.5367$						

WC

Variable	Coef.	Std. err.	z	P > z	[95% Conf. interval]	
_y_B						
_cons	1.96	5.842127	0.34	0.737	-9.490358	13.41036
_y_C						
_cons	-0.6965733	1.744399	-0.40	0.690	-4.115532	2.722385
_y_D						
_cons	-0.8547914	1.699585	-0.50	0.615	-4.185916	2.476333
_y_E						
_cons	6.287844	1.294654	4.86	0.000	3.750369	8.825319
_y_F						
_cons	4.187676	4.19405	1.00	0.318	-4.03251	12.40786
_y_G						
_cons	1.682371	1.770398	0.95	0.342	-1.787546	5.152287
_y_H						
_cons	4.017398	2.494806	1.61	0.107	-8.723314	8.907127
Prob > $\chi^2 = 0.9790$						

VO_{2max}

Variable	Coef.	Std. err.	z	P > z	[95% Conf. interval]	
_y_B						
_cons	0.2	0.6446705	0.31	0.756	-1.063531	1.463531
_y_C						
_cons	0.0832339	0.0446783	1.86	0.062	-0.004334	0.1708018
_y_D						
_cons	-0.233328	0.0482182	-4.84	0.000	-0.3278339	-0.1388222
Prob > $\chi^2 = 0.9162$						

Supplementary Table SIII. Detailed data information

Weight

Study	Year	N	trt	Mean	SD
Tucker	2021	9	CON	0.9	12.3
Tucker	2021	9	AE-M	-0.4	18.2
Tucker	2021	10	AE-V	1.4	6.8
MaSaid	2021	14	CON	-4.76	4.57
MaSaid	2021	14	COM-LM	-8.82	8.46
MaSaid	2021	16	R-LM	-6.25	11.95
MaSaid	2021	13	AE-M	-7.5	11.13
Hu	2021	15	CON	-0.2	8.3
Hu	2021	15	AE-V	-3.3	6.05
Hu	2021	15	AE-M	-3.4	7.86
Robinson	2020	15	CON	-1.1	17.6
Robinson	2020	14	AE-V	-4.5	11
Robinson	2020	12	R-LM	-4.8	12.44
Robinson	2020	14	COM-LM	-1.6	22.9
Ebrahim	2019	11	CON	0.14	8.15
Ebrahim	2019	11	AE-V	-4.34	9.49
Ebrahim	2019	11	R-HI	-5.54	7.49
Ebrahim	2019	11	COM-HI	-5.19	9.36
Zhao	2019	12	CON	-0.75	2.8
Zhao	2019	12	AE-M	-3.25	3.25
Zhao	2019	12	COM-LM	-2.92	3.63
Hintze	2018	29	CON	0.9	14.2
Hintze	2018	25	R-HI	1.3	14.73
Tong	2018	16	CON	-0.4	10.4
Tong	2018	14	AE-V	-4	11.27
Chih	2017	12	CON	0.74	4.39
Chih	2017	12	AE-V	-6.72	2.54
Chih	2017	12	AE-M	5.03	3.71
Jabbour	2015	12	CON	1	22.7
Jabbour	2015	12	AE-V	-1.2	18.33
Keating	2015	12	CON	0.8	4.95
Keating	2015	12	AE-V	-1.3	5.65
Keating	2015	12	AE-M	-1.4	16.84
Sheikho	2015	10	CON	0.3	6
Sheikho	2015	10	COM-HI	-3.5	4.39
Arad	2015	14	CON	-1.1	10.65
Arad	2015	14	AE-V	0.1	13.42
Croymans	2014	8	CON	-0.5	14.67
Croymans	2014	28	R-HI	0.5	12.73
Donnelly	2013	15	CON	0.5	11.86
Donnelly	2013	31	AE-V	-5.9	13.13
Tseng	2013	10	CON	0.8	3.35
Tseng	2013	10	AE-M	-8.5	3.97
Tseng	2013	10	R-LM	-5.6	4.01
Tseng	2013	10	COM-LM	-9.1	4.13

Supplementary Table SIII. Cont.

Study	Year	N	trt	Mean	SD
Arslan	2011	20	CON	0.3	10.46
Arslan	2011	29	AE-M	-2.8	9.9
Alves	2009	78	CON	0.4	11.2
Alves	2009	78	AE-M	-1.3	8
Van	2001	8	CON	-0.2	14.26
Van	2001	7	AE-M	0.6	10.15
Kong	2015	8	AE-M	-3.9	24.45
Kong	2015	10	AE-M-R	-7	18.75
Wang	2012	7	AE-M	-4.27	26.09
Wang	2012	11	AE-M-R	-7.29	17.93
ZhaoAA	2016	9	AE-M	-4.16	8.61
ZhaoAA	2016	9	AE-M-R	-12.21	11.70
Wiesner	2010	21	AE-M	-1.7	3.6
Wiesner	2010	24	AE-M-R	-1.8	2.6
MIQU	2021	27	CON	-7.8	1.9
MIQU	2021	21	COM-LM	-8.9	2.2
MIQU	2021	25	AE-M	-8.9	2
MIQU	2021	25	R-LM	-8.6	2
Cardoso	2013	22	CON	0.1	4.76
Cardoso	2013	12	R-LM	0.4	5.8
Alvarez	2017	13	CON	-0.1	2.9
Alvarez	2017	25	WBVT	0.1	1.9
Milanese	2013	13	CON	1.4	2.8
Milanese	2013	28	WBVT	-0.3	1.95
B	2012	7	CON	0.1	6.79
B	2012	7	WBVT	-0.3	6.85
Kerri	2020	40	CON	0.36	13.11
Kerri	2020	15	WBVT	0.08	18.15
Takuma	2013	11	AE-M	-0.6	3.95
Takuma	2013	9	AE-M-R	-0.3	4.10

BMI

Study	Year	N	trt	Mean	SD
MaSaid	2021	14	CON	-1.6	1.84
MaSaid	2021	14	COM-LM	-2.76	1.48
MaSaid	2021	16	R-LM	-2	2.77
MaSaid	2021	13	AE-M	-2.4	2.44
Hu	2021	15	CON	0	2.45
Hu	2021	15	AE-V	-1.3	2.4
Hu	2021	15	AE-M	-1.2	2.46
Ebrahim	2019	11	CON	0.05	3.08
Ebrahim	2019	11	AE-V	-0.53	1.3
Ebrahim	2019	11	R-HI	-1.74	1.61
Ebrahim	2019	11	COM-HI	-1.67	3.37
Zhao	2019	12	CON	-0.26	0.75
Zhao	2019	12	AE-M	-1.51	1.37
Zhao	2019	12	COM-LM	-1.58	1.04

Supplementary Table SIII. Cont.

Study	Year	N	trt	Mean	SD
Gram	2018	16	CON	0.7	2.95
Gram	2018	31	AE-M	-0.6	3.2
Gram	2018	24	AE-V	-0.8	2
Hintze	2018	29	CON	0.4	4.1
Hintze	2018	25	R-HI	1.5	4.59
Chih	2017	12	CON	0.26	0.87
Chih	2017	12	AE-V	-2.35	0.5
Chih	2017	12	AE-M	-1.7	0.95
Rustaden	2017	21	CON	-0.4	5.38
Rustaden	2017	27	R-HI	-0.2	6.54
Jabbour	2015	12	CON	0.4	4.39
Jabbour	2015	12	AE-V	-0.1	3.34
Keating	2015	12	CON	0.7	1.4
Keating	2015	12	AE-V	-0.5	1.7
Keating	2015	12	AE-M	-0.5	0.9
Sheikhol	2015	10	CON	0.1	1.25
Sheikhol	2015	10	COM-HI	-1.1	0.81
Arad	2015	14	CON	-0.5	3.42
Arad	2015	14	AE-V	0.2	3.7
Croymans	2014	8	CON	-0.4	3.25
Croymans	2014	28	R-HI	0.2	2.75
Donnelly	2013	15	CON	0.1	4.3
Donnelly	2013	31	AE-V	-1.9	3.97
Tseng	2013	10	CON	0.2	1.1
Tseng	2013	10	AE-M	-2.9	1.01
Tseng	2013	10	R-LM	-1.9	1.1
Tseng	2013	10	COM-LM	-3	1.15
Arslan	2011	20	CON	0.1	2.2
Arslan	2011	29	AE-M	-1.2	3.9
Alves	2009	78	CON	0.1	3.45
Alves	2009	78	AE-M	-0.6	3.31
Van	2001	8	CON	0.3	3
Van	2001	7	AE-M	0.1	3.76
Kong	2015	8	AE-M	-0.2	5.17
Kong	2015	10	AE-M-R	-2.6	5.07
Wang	2012	7	AE-M	-1.5	5
Wang	2012	11	AE-M-R	-2.64	4.82
Wiesner	2010	21	AE-M	-1.3	0.8
Wiesner	2010	24	AE-M-R	-1.5	0.3
Miguel	2021	27	CON	-2.6	0.5
Miguel	2021	21	COM-LM	-3.1	0.55
Miguel	2021	25	AE-M	-3.1	0.5
Miguel	2021	25	R-LM	-2.6	0.5
Cardoso	2013	22	CON	-0.2	1.57
Cardoso	2013	12	R-LM	0.3	2.13
Fortuin	2020	22	CON	0.4	2.75
Fortuin	2020	23	COM-LM	-0.3	2.96

Supplementary Table SIII. Cont.

Study	Year	N	trt	Mean	SD
Alvarez	2017	13	CON	0	1.1
Alvarez	2017	25	WBVT	0	0.655
Milanese	2013	13	CON	0.6	1
Milanese	2013	28	WBVT	-0.1	0.7
Kerri	2020	40	CON	0.04	4.43
Kerri	2020	15	WBVT	-1.23	8.29
Takuma	2013	11	AE-M	-0.3	0.9
Takuma	2013	9	AE-M-R	0	1.2

FAT%

Study	Year	N	trt	Mean	SD
MaSaid	2021	14	CON	-2.08	1.4
MaSaid	2021	14	COM-LM	-3.01	1.7
MaSaid	2021	16	R-LM	-2.19	3.3
MaSaid	2021	13	AE-M	-2.9	3.11
Hu	2021	15	CON	-0.5	3.17
Hu	2021	15	AE-V	-2.5	2.17
Hu	2021	15	AE-M	-2.4	2.2
Zhao	2019	12	CON	-0.44	1.11
Zhao	2019	12	AE-M	-2.24	1.6
Zhao	2019	12	COM-LM	-5.62	1.46
Tong	2018	16	CON	0	3.29
Tong	2018	14	AE-V	0	2.4
Chih	2017	12	CON	0.22	1.14
Chih	2017	12	AE-V	-3.97	1.69
Chih	2017	12	AE-M	-2.91	2.09
Rustaden	2017	21	CON	-0.8	6.97
Rustaden	2017	27	R-HI	-1.5	7.2
Sheikh	2015	10	CON	0.3	3.6
Sheikh	2015	10	COM-HI	-4.4	4.03
Arad	2015	14	CON	-0.9	7.07
Arad	2015	14	AE-V	-9.9	3.91
Croymans	2014	8	CON	1.7	7.66
Croymans	2014	28	R-HI	-2.4	5.1
Donnelly	2013	15	CON	-1.1	5.1
Donnelly	2013	31	AE-V	-4.5	6.13
Arslan	2011	20	CON	-0.9	7.07
Arslan	2011	29	AE-M	-9.9	3.92
Van	2001	8	CON	0.4	3.15
Van	2001	7	AE-M	0.9	4.35
Wang	2012	7	AE-M	-2.44	4
Wang	2012	11	AE-M-R	-5.04	8.33
Zhaoaa	2016	9	AE-M	-2.93	1.71
Zhaoaa	2016	9	AE-M-R	-3.53	2.09
Cardoso	2013	22	CON	2.1	2.65
Cardoso	2013	12	R-LM	-4.4	4.85
Alvarez	2017	13	CON	-0.4	1.7

Supplementary Table SIII. Cont.

Study	Year	N	trt	Mean	SD
Alvarez	2017	25	WBVT	-0.2	0.75
Milanese	2013	13	CON	0.4	1.15
Milanese	2013	28	WBVT	-0.2	0.8
B	2012	7	CON	-0.4	2.16
B	2012	7	WBVT	-0.8	1.6
Kerri	2020	40	CON	-0.06	6.72
Kerri	2020	15	WBVT	-0.72	9.8

WC

Study	Year	N	trt	Mean	SD
MaSaid	2021	14	CON	-3.49	5.6
MaSaid	2021	14	COM-LM	-7.5	8.02
MaSaid	2021	16	R-LM	-6.19	9.07
MaSaid	2021	13	AE-M	-5.92	7.7
Chih	2017	12	CON	0.46	2.84
Chih	2017	12	AE-V	-9.38	1.99
Chih	2017	12	AE-M	-7.91	2.5
Keating	2015	12	CON	0.8	1.55
Keating	2015	12	AE-V	-2.5	4.6
Keating	2015	12	AE-M	-2.5	2.95
Croyman	2014	8	CON	0.2	8.48
Croyman	2014	28	R-HI	-1.9	6.7
Tseng	2013	10	CON	0.6	2.6
Tseng	2013	10	AE-M	-9.3	1.6
Tseng	2013	10	R-LM	-6.4	2.1
Tseng	2013	10	COM-LM	-9.7	2.76
Wang	2012	7	AE-M	-9.08	10.59
Wang	2012	11	AE-M-R	-7.12	11.86
Cardoso	2013	22	CON	1.9	1.67
Cardoso	2013	12	R-LM	-2.4	7.4
Fortuin	2020	22	CON	3	0
Fortuin	2020	23	COM-LM	-3.7	0
Milanese	2013	13	CON	1.2	2.25
Milanese	2013	28	WBVT	-1.6	1.7
Kerri	2020	40	CON	0.2	10.83
Kerri	2020	15	WBVT	-0.16	13.81

VO_{2max}

Study	Year	N	trt	Mean	SD
Tucker	2021	9	CON	-0.01	0.52
Tucker	2021	9	AE-M	0.28	0.72
Tucker	2021	10	AE-V	0.39	0.49
Gram	2018	16	CON	-0.02	0.9
Gram	2018	31	AE-M	0.23	0.43
Gram	2018	24	AE-V	0.39	0.57
Tong	2018	16	CON	-0.04	0.2
Tong	2018	14	AE-V	0.25	0.26
Keating	2015	12	CON	-0.02	0.16

Supplementary Table SIII. Cont.

Study	Year	N	trt	Mean	SD
Keating	2015	12	AE-V	0.27	0.13
Keating	2015	12	AE-M	0.2	0.12
Arad	2015	14	CON	0.08	0.46
Arad	2015	14	AE-V	0.17	0.46
Donnelly	2013	15	CON	-0.2	0.35
Donnelly	2013	31	AE-V	0.4	0.62
Van	2001	8	CON	-0.1	0.22
Van	2001	7	AE-M	0.2	0.44
Takuma	2013	11	AE-M	0.2	1.65
Takuma	2013	9	AE-M-R	0.4	1.23