Supporting Documentation

Supporting file **S1:** Search Strategy

Supporting file **S2:** Pairwise meta-analysis (example) for weight loss

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Supporting file S1: Search strategy

Database	Search Terms		
	Randomised Controlled trial	*Obesity*	*Exercise*
PUBMED	'clinical trials as topic' [MeSH Major Topic] OR (randomized controlled trial) OR (controlled trial) OR (randomized controlled study)	obesity OR overweight	'exercise therapy' [MeSH Major Topic] OR (physical activity) OR exercise OR aerobic OR resistance OR (strength training) OR (combined training) OR (concurrent training) OR (circuit training) OR (HIIT training) OR (interval training)
CENTRAL (Cochrane Central Register of Controlled Trials)	'controlled clinical trial' [MeSH term] OR (randomized controlled trial)	obesity OR overweight	'exercise' [MeSH term] OR (physical activity) OR aerobic OR resistance OR (strength training) OR (combined training) OR (concurrent training) OR (HIIT training)
EMBASE	'randomized controlled trial' [Emtree term] OR (controlled trial) OR (randomized controlled study) OR (clinical trial)	obesity OR overweight	'exercise' [Emtree term] OR (physical activity) OR aerobic OR resistance OR (strength training) OR (combined training) OR (concurrent training) OR (fitness training) OR (HIIT training) OR (interval training)
CINAHL and SPORTS DISCUS	(randomized controlled trial) OR (controlled trial) OR (randomized controlled study) OR (clinical trial)	obesity OR overweight	exercise OR (physical activity) OR aerobic OR resistance OR (strength training) OR (combined training) OR (concurrent training) OR (fitness training) OR (HIIT training) OR (interval training)

Supporting file S2: Example of pairwise meta-analysis for weight loss (Intervention duration included as co-variate)

```
replace tx=1 if treat=="control"
replace tx=2 if treat=="Vigorous intensity aerobic"
replace tx=3 if treat=="Moderate intensity aerobic"
replace tx=4 if treat=="Resistance high"
replace tx=5 if treat=="Resistance low"
replace tx=6 if treat=="Combined high"
replace tx=7 if treat=="Combined low"
```

Weight Loss

Control versus aerobic high intensity

metan n2 m2 sd2 n1 m1 sd1

```
            Study  |   SMD     [95% Conf. Interval]    % Weight
--------------------+--------------------------------------------------
2                  |  0.883     0.105     1.662          5.93
3                  | -2.759    -3.557    -1.962          5.66
6                  | -2.650    -3.770    -1.531          2.87
9                  | -0.200    -1.103     0.703          4.41
10                 | -1.750    -2.724    -0.776          3.79
11                 | -3.393    -3.977    -2.810         10.57
12                 | -1.083    -1.380    -0.786         40.82
15                 | -2.167    -3.272    -1.061          2.95
16                 | -4.889    -6.284    -3.494          1.85
17                 | -2.317    -3.370    -1.264          3.24
20                 | -1.933    -3.147    -0.720          2.44
25                 | -1.750    -2.749    -0.751          3.60
26                 | -1.750    -2.800    -0.700          3.26
27                 | -2.500    -3.317    -1.683          5.39
31                 |  0.167    -0.894     1.227          3.20
--------------------+--------------------------------------------------
I-V pooled SMD     | -1.582    -1.772    -1.393        100.00
--------------------+--------------------------------------------------

  Heterogeneity chi-squared = 147.71 (d.f. = 14) p = 0.000
  I-squared (variation in SMD attributable to heterogeneity) = 90.5%

  Test of SMD=0: z= 16.35 p = 0.000
```

Control versus treatment 2 (moderate intensity)

metan n3 m3 sd3 n1 m1 sd1

```
            Study  |   SMD     [95% Conf. Interval]    % Weight
--------------------+--------------------------------------------------
1                  | -0.708    -1.032    -0.385         21.58
5                  |  0.095    -0.434     0.624          8.08
6                  | -5.417    -6.879    -3.955          1.06
7                  |  0.559     0.336     0.782         45.61
14                 | -0.083    -0.664     0.497          6.71
15                 | -1.000    -1.878    -0.122          2.94
17                 | -1.402    -2.171    -0.634          3.82
22                 | -2.667    -3.529    -1.804          3.04
24                 | -3.090    -4.596    -1.583          1.00
26                 | -2.833    -4.224    -1.442          1.17
28                 | -6.847    -9.249    -4.445          0.39
30                 |  0.500    -0.460     1.460          2.45
31                 |  0.833    -0.194     1.861          2.14
--------------------+--------------------------------------------------
I-V pooled SMD     | -0.178    -0.328    -0.027        100.00
--------------------+--------------------------------------------------
```

```
Control versus resistance high

          Study    |    SMD    [95% Conf. Interval]    % Weight
-------------------+----------------------------------------------------
5                  | -0.617     -1.154     -0.080         44.94
14                 | -0.083     -0.659      0.492         39.15
22                 | -2.917     -3.819     -2.014         15.91
-------------------+----------------------------------------------------
I-V pooled SMD     | -0.774     -1.134     -0.414        100.00
-------------------+----------------------------------------------------

  Heterogeneity chi-squared = 27.53 (d.f. = 2) p = 0.000
  I-squared (variation in SMD attributable to heterogeneity) = 92.7%

  Test of SMD=0 : z=   4.22 p = 0.000


Control versus resistance low


          Study    |    SMD    [95% Conf. Interval]    % Weight
-------------------+----------------------------------------------------
5                  | -0.617     -1.154     -0.080         44.94
14                 | -0.083     -0.659      0.492         39.15
22                 | -2.917     -3.819     -2.014         15.91
-------------------+----------------------------------------------------
I-V pooled SMD     | -0.774     -1.134     -0.414        100.00
-------------------+----------------------------------------------------

  Heterogeneity chi-squared = 27.53 (d.f. = 2) p = 0.000
  I-squared (variation in SMD attributable to heterogeneity) = 92.7%

  Test of SMD=0 : z=   4.22 p = 0.000
```

Combined high versus control

```
          Study    |    SMD    [95% Conf. Interval]    % Weight
-------------------+----------------------------------------------------
10                 | -0.667     -1.509      0.176         65.98
23                 | -3.417     -4.590     -2.243         34.02
-------------------+----------------------------------------------------
I-V pooled SMD     | -1.602     -2.287     -0.918        100.00
-------------------+----------------------------------------------------
```

Combined low versus control

```
    Study    |    SMD    [95% Conf. Interval]     % Weight
-------------------+----------------------------------------------------
4                  |  0.818     -0.058      1.695         14.38
14                 | -1.333     -1.977     -0.690         26.68
19                 | -0.250     -0.871      0.371         28.68
24                 | -3.090     -4.596     -1.583          4.87
25                 | -1.333     -2.312     -0.355         11.54
28                 | -7.288     -9.826     -4.751          1.72
29                 | -4.000     -4.954     -3.046         12.14
-------------------+----------------------------------------------------
I-V pooled SMD     | -1.225     -1.557     -0.892        100.00
-------------------+----------------------------------------------------

  Heterogeneity chi-squared = 90.81 (d.f. = 6) p = 0.000
  I-squared (variation in SMD attributable to heterogeneity) = 93.4%

  Test of SMD=0 :z=   7.22 p = 0.000
```

Considerable heterogeneity observed (up to 93.1%) in one or more sub-groups,
Test for heterogeneity between sub-groups likely to be invalid

Significance test(s) of SMD=0

```
1                       z= 12.21    p = 0.000
0                       z= 10.92    p = 0.000
Overall                 z= 16.35    p = 0.000
--------------------------------------------------------------------------
```

.
TREATMENT CONTROL VERSUS HIGH AEROBIC
 metan n2 m2 sd2 n1 m1 sd1, by(dur_dic) ***DURATION <= 12 weeks= 0 , control versus
high aerobic)

Study	SMD	[95% Conf. Interval]		% Weight
1> 12 weeks				
9	-0.200	-1.103	0.703	4.41
11	-3.393	-3.977	-2.810	10.57
12	-1.083	-1.380	-0.786	40.82
15	-2.167	-3.272	-1.061	2.95
26	-1.750	-2.800	-0.700	3.26
Sub-total				
I-V pooled SMD	-1.501	-1.742	-1.260	62.02
0 <=12 weeks				
2	0.883	0.105	1.662	5.93
3	-2.759	-3.557	-1.962	5.66
6	-2.650	-3.770	-1.531	2.87
10	-1.750	-2.724	-0.776	3.79
16	-4.889	-6.284	-3.494	1.85
17	-2.317	-3.370	-1.264	3.24
20	-1.933	-3.147	-0.720	2.44
25	-1.750	-2.749	-0.751	3.60
27	-2.500	-3.317	-1.683	5.39
31	0.167	-0.894	1.227	3.20
Sub-total				
I-V pooled SMD	-1.715	-2.023	-1.407	37.98
Overall				
I-V pooled SMD	-1.582	-1.772	-1.393	100.00

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**
1	57.61	4	0.000	93.1%
0	88.95	9	0.000	89.9%
Overall	147.71	14	0.000	90.5%

Overall Test for heterogeneity between sub-groups:

```
                  1.15        1      0.283
```

TREATMENT CONTROL VERSUS HIGH AEROBIC (26 weeks and less versus > 26 weeks)

Study	SMD	[95% Conf. Interval]		% Weight
0				
2	0.883	0.105	1.662	5.93
3	-2.759	-3.557	-1.962	5.66
6	-2.650	-3.770	-1.531	2.87
10	-1.750	-2.724	-0.776	3.79
15	-2.167	-3.272	-1.061	2.95
16	-4.889	-6.284	-3.494	1.85
17	-2.317	-3.370	-1.264	3.24
20	-1.933	-3.147	-0.720	2.44
25	-1.750	-2.749	-0.751	3.60
26	-1.750	-2.800	-0.700	3.26

```
27                       |  -2.500   -3.317   -1.683         5.39
31                       |   0.167   -0.894    1.227         3.20
 Sub-total               |
   I-V pooled SMD        |  -1.748   -2.033   -1.462        44.19
-------------------+------------------------------------------------
     1
9                        |  -0.200   -1.103    0.703         4.41
11                       |  -3.393   -3.977   -2.810        10.57
12                       |  -1.083   -1.380   -0.786        40.82
 Sub-total               |
   I-V pooled SMD        |  -1.451   -1.705   -1.197        55.81
-------------------+------------------------------------------------
Overall                  |
   I-V pooled SMD        |  -1.582   -1.772   -1.393       100.00
-------------------+------------------------------------------------


Test(s) of heterogeneity:
            Heterogeneity  degrees of
              statistic     freedom      P     I-squared**
0                89.54         11       0.000    87.7%
1                55.86          2       0.000    96.4%
Overall         147.71         14       0.000    90.5%
Overall Test for heterogeneity between sub-groups:
                  2.32          1       0.128


** I-squared: the variation in SMD attributable to heterogeneity)

Considerable heterogeneity observed (up to 96.4%) in one or more sub-groups,
Test for heterogeneity between sub-groups likely to be invalid

Significance test(s) of SMD=0

0                      z= 12.01     p = 0.000
1                      z= 11.20     p = 0.000
Overall                z= 16.35     p = 0.000
```

Body Mass Index

```
. metan _y _stderr, sortby(_y) by(_contrast) random

          Study      |    ES    [95% Conf. Interval]    % Weight
-------------------+------------------------------------------------
     3 - 1
1                        |  -6.966   -7.809   -6.123         1.60
53                       |  -6.294   -8.023   -4.565         1.22
6                        |  -5.380   -6.708   -4.051         1.40
13                       |  -2.222   -2.806   -1.638         1.69
38                       |  -2.172   -3.315   -1.030         1.48
51                       |  -1.697   -2.767   -0.627         1.51
30                       |  -1.296   -2.040   -0.551         1.64
34                       |  -1.188   -1.846   -0.529         1.66
19                       |  -0.802   -1.394   -0.210         1.68
15                       |  -0.269   -1.108    0.570         1.60
26                       |  -0.204   -1.032    0.624         1.61
62                       |   0.151   -0.831    1.132         1.55
60                       |   0.222   -0.728    1.172         1.56
 Sub-total               |
   D+L pooled ES         |  -2.109   -3.235   -0.983        20.19
-------------------+------------------------------------------------
     2 - 1
12                       |  -2.564   -3.208   -1.919         1.67
5                        |  -2.092   -3.006   -1.179         1.57
29                       |  -1.413   -2.267   -0.560         1.60
3                        |  -1.412   -2.051   -0.772         1.67
10                       |  -1.376   -1.832   -0.921         1.72
11                       |  -1.087   -1.385   -0.790         1.75
50                       |  -0.990   -1.916   -0.064         1.57
33                       |  -0.467   -1.465    0.530         1.54
```

```
25                       |   -0.409   -1.279    0.462         1.59
28                       |   -0.365   -1.054    0.324         1.65
44                       |   -0.275   -1.117    0.566         1.60
61                       |    0.000   -1.059    1.059         1.52
9                        |    0.143   -0.759    1.045         1.58
2                        |    0.506   -0.249    1.260         1.63
 Sub-total               |
  D+L pooled ES          |   -0.878   -1.298   -0.458        22.66
-----------------+-----------------------------------------------
    7 - 1
55                       |   -6.497   -8.268   -4.726         1.20
40                       |   -2.339   -3.506   -1.173         1.47
59                       |   -1.961   -2.631   -1.291         1.66
21                       |   -1.336   -1.948   -0.725         1.68
46                       |   -0.055   -0.932    0.822         1.59
4                        |    0.888    0.001    1.775         1.58
 Sub-total               |
  D+L pooled ES          |   -1.734   -3.088   -0.380         9.18
-----------------+-----------------------------------------------
    3 - 2
7                        |   -3.288   -4.268   -2.308         1.55
52                       |   -0.707   -1.640    0.226         1.57
31                       |    0.118   -0.576    0.811         1.65
63                       |    0.151   -0.909    1.210         1.51
27                       |    0.204   -0.556    0.965         1.63
14                       |    0.342   -0.052    0.735         1.73
 Sub-total               |
  D+L pooled ES          |   -0.492   -1.429    0.445         9.65
-----------------+-----------------------------------------------
    5 - 1
54                       |   -4.264   -5.601   -2.927         1.39
32                       |   -1.109   -1.899   -0.319         1.62
39                       |   -0.501   -1.491    0.488         1.54
45                       |   -0.000   -0.856    0.856         1.60
8                        |    0.598   -0.201    1.397         1.62
18                       |    1.049    0.547    1.550         1.71
 Sub-total               |
  D+L pooled ES          |   -0.622   -1.833    0.589         9.48
-----------------+-----------------------------------------------
    4 - 1
35                       |   -0.871   -1.512   -0.230         1.67
16                       |   -0.576   -1.425    0.273         1.60
20                       |    0.000   -0.575    0.575         1.69
 Sub-total               |
  D+L pooled ES          |   -0.457   -1.016    0.102         4.96
-----------------+-----------------------------------------------
    4 - 3
17                       |   -0.307   -1.147    0.532         1.60
36                       |    0.317   -0.306    0.939         1.68
22                       |    0.802    0.241    1.363         1.69
 Sub-total               |
  D+L pooled ES          |    0.334   -0.257    0.926         4.97
-----------------+-----------------------------------------------
    7 - 3
23                       |   -0.535   -1.094    0.025         1.69
57                       |   -0.203   -1.081    0.675         1.59
42                       |   -0.167   -1.148    0.814         1.55
 Sub-total               |
  D+L pooled ES          |   -0.388   -0.813    0.038         4.83
-----------------+-----------------------------------------------
    7 - 4
24                       |   -1.336   -1.919   -0.754         1.69
 Sub-total               |
  D+L pooled ES          |   -1.336   -1.919   -0.754         1.69
-----------------+-----------------------------------------------
    6 - 1
37                       |   -2.793   -3.864   -1.722         1.51
 Sub-total               |
```

```
 D+L pooled ES      |   -2.793    -3.864    -1.722          1.51
-------------------+-----------------------------------------------
     5 - 3
41                 |    1.671     0.592     2.750          1.51
56                 |    2.030     1.031     3.030          1.54
 Sub-total         |
 D+L pooled ES     |    1.864     1.131     2.598          3.05
-------------------+-----------------------------------------------
     7 - 5
58                 |   -2.233    -3.257    -1.210          1.53
43                 |   -1.838    -2.937    -0.739          1.50
49                 |   -0.055    -0.912     0.801          1.60
 Sub-total         |
 D+L pooled ES     |   -1.347    -2.751     0.056          4.62
-------------------+-----------------------------------------------
     5 - 2
47                 |    0.275    -0.545     1.096          1.61
 Sub-total         |
 D+L pooled ES     |    0.275    -0.545     1.096          1.61
-------------------+-----------------------------------------------
     7 - 2
48                 |    0.220    -0.620     1.061          1.60
 Sub-total         |
 D+L pooled ES     |    0.220    -0.620     1.061          1.60
-------------------+-----------------------------------------------
Overall            |
 D+L pooled ES     |   -0.956    -1.297    -0.615        100.00
-------------------+-----------------------------------------------
```

Test(s) of heterogeneity:

	Heterogeneity statistic	degrees of freedom	P	I-squared**	Tau-squared
3 - 1	275.63	12	0.000	95.6%	4.0389
2 - 1	67.35	13	0.000	80.7%	0.4853
7 - 1	70.93	5	0.000	93.0%	2.5838
3 - 2	48.33	5	0.000	89.7%	1.1956
5 - 1	66.50	5	0.000	92.5%	2.0777
4 - 1	4.08	2	0.130	51.0%	0.1241
4 - 3	4.76	2	0.092	58.0%	0.1578
7 - 3	0.63	2	0.730	0.0%	0.0000
7 - 4	0.00	0	.	.%	0.0000
6 - 1	0.00	0	.	.%	0.0000
5 - 3	0.23	1	0.632	0.0%	0.0000
7 - 5	12.07	2	0.002	83.4%	1.2805
5 - 2	0.00	0	.	.%	0.0000
7 - 2	0.00	0	.	.%	0.0000
Overall	804.19	62	0.000	92.3%	1.7050

** I-squared: the variation in ES attributable to heterogeneity)

Supporting file S3: Risk of Bias Assessment

Author Year	Method of Randomisation	Allocation Concealed	Blinding of Participant	Blinding of Research Personnel	Incomplete Outcome data	Dropout Rate %	Other Sources of Bias *	1	2	3	4	5	6	7	Overall Score (Category)
Alizadeh 2013	Block	No	No	Nil stated	No	31	No	L	H	H	H	H	H	H	5 (high)
Alves 2009	Unclear	No	No	Nil stated	Yes	6	Yes	H	H	H	H	L	L	L	3 (moderate)
Arad 2015	Unclear	No	No	Nil stated	No	29	No	H	H	H	H	H	H	H	6 (high)
Arslan 2011	Unclear	No	No	Nil stated	Unclear	not reported	Yes	H	H	H	H	H	H	H	6 (high)
Bonfante 2017	Unclear	No	No	Nil stated	Unclear	not reported	No	H	H	H	H	H	H	H	6 (high)
Borg 2002	Block	No	No	Nil stated	Unclear	24	Yes	L	H	H	H	H	H	L	4 (moderate)
Chih-Hui 2017	Unclear	No	No	Nil stated	No	9	No	H	H	H	H	H	H	H	6 (high)
Church 2007	Block	Yes	No	Yes	Yes	8	Yes	L	L	L	H	L	L	L	0 (low)
Croymans 2014	Block	No	No	Yes	Unclear	<5	No	L	H	L	H	H	H	H	4 (moderate)
Dengel 1996	Unclear	No	No	Nil stated	No	not reported	Yes	H	H	H	H	L	L	H	4 (moderate)

Study	Method														Score
Donges 2013	Unclear	No	No	Nil stated	Yes	0	No	H	H	H	H	L	L	H	4 (moderate)
Donnelly 2013	Stratified	No	No	Yes	Yes	33	Yes	L	H	H	H	H	L	L	2 (low)
Foster-Schubert 2012	Stratified	No	No	Yes	No	9	Yes	L	H	H	H	L	L	L	1 (low)
Frank 2005	Unclear	No	No	Nil stated	Yes	< 5	Yes	H	H	L	H	L	L	L	2 (low)
Gram 2018	Stratified	No	No	Nil stated	No	< 5	Yes	L	H	H	H	H	H	L	4 (moderate)
Herring 2014	Non block	No	No	Nil stated	No	18	Yes	L	H	H	H	H	H	H	5 (high)
Hintze 2018	Unclear	No	No	Nil stated	No	23	No	H	H	H	H	H	H	H	6 (high)
Ho 2012 ±	Sequence	No	No	Nil stated	Unclear	30	Yes	L	H	H	H	H	H	L	4 (moderate)
Ho 2012 ±	Sequence	No	No	Nil stated	Unclear	30	Yes	L	H	H	H	H	H	L	4 (moderate)
Irving 2008	Unclear	No	No	Nil stated	No	25	Yes	H	H	H	H	H	H	L	5 (high)
Irwin 2003	Stratified	Yes	No	Yes	Yes	<5	Yes	L	L	L	H	L	L	L	0 (low)
Jabbour 2015	Unclear	No	No	Nil stated	Unclear	Not reported	Yes	H	H	H	H	H	H	L	5 (high)

Study	Method							R1	R2	R3	R4	R5	R6	R7	Score
Jabbour 2017	Unclear	No	No	Nil stated	Unclear	not reported	Yes	H	H	H	H	H	H	L	5 (high)
Keating 2015	Block	Yes	No	Nil stated	Yes	10	Yes	L	L	H	H	L	L	L	1 (low)
Keating 2017	Block	Yes	No	Nil stated	Yes	<5	Yes	L	L	H	H	L	L	L	1 (low)
Kline 2011	Stratified	Yes	No	Yes	Yes	12	Yes	L	L	L	H	L	L	L	0 (low)
Mengistie 2013	Nil stated	No	No	Nil stated	Unclear	12	Yes	H	H	H	H	H	H	H	6 (high)
Moghasdasi 2012	Nil stated	No	No	Nil stated	Unclear	not reported	No	H	H	H	H	H	H	H	6 (high)
Mohanka 2006	Stratified	No	No	Yes	Yes	<5	Yes	L	H	H	H	L	L	L	2 (low)
Mora-Rodriguesz 2017	Nil stated	No	No	Nil stated	No	15	No	H	H	H	H	H	H	H	6 (high)
Nunes 2016	Nil stated	No	No	Nil stated	No	16	No	H	H	H	H	H	H	H	6 (high)
Quist 2018	Block	Yes	No	Yes	Yes	31	Yes	L	L	L	H	L	L	L	0 (low)
Ross 2015	Stratified	Yes	No	Yes	Yes	28	Yes	L	L	L	H	L	L	L	0 (low)

Study														
Rustaden 2017	Block	Yes	No	Nil stated	No	16	Yes	L	L	H	H	H	H	L	3 (moderate)
Sarsan 2006	Nil stated	No	No	Nil stated	No	21	Yes	H	H	H	H	H	L	H	4 (moderate)
Schroeder 2019	Stratified	Yes	No	Yes	No	<5	No	L	L	L	H	L	L	L	0 (low)
Sheikholeslami-Vatani 2015	Nil stated	No	No	Nil stated	Unclear	not reported	No	H	H	H	H	H	H	H	6 (high)
Soori 2017	Nil stated	No	No	Nil stated	Unclear	Not reported	No	H	H	H	H	H	H	H	6 (high)
Stensvold 2010	Block	No	No	Yes	Unclear	not reported	No	L	H	L	H	H	H	H	4 (moderate)
Tjonne 2008	Stratified	No	No	Yes	No	13	Yes	L	H	L	H	H	H	L	3 (moderate)
Tong 2018	Stratified	No	No	Nil stated	No	15	Yes	L	H	H	H	H	H	H	6 (high)
Tseng 2013	Nil stated	No	No	Nil stated	No	9	Yes	H	H	H	H	H	H	H	6 (high)
Tumiati 2008	Block	No	No	Yes	No	31	Yes	L	L	L	H	H	H	L	2 (low)
Van-Aggel Leijssen 2001	Stratified	No	No	Nil stated	Unclear	not reported	Yes	L	H	H	H	H	H	H	5 (high)

Van-Aggel Leijssen 2002	Nil stated	No	No	Nil stated	Unclear	not reported	No	H	H	H	H	H	H	H	6 (high)

± same study

Supporting file S4: Individual study data (pre-post intervention) for all outcome measures included in NMA

Pre-Post Outcomes Measures: mean (SD)

Authors	Exercise category	Body Weight (kg)			Body Mass Index (BMI)			Waist Circumference (cm)			Percentage Body Fat (%)			Fitness (VO$_2$ max L/min)		
		pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	% change
Alizadeh 2013	CON	84.1 (15.6)		1.8	32.2 (5.3)		0.7									
	AE-M	77.6 (17.3)		1.6	31.6 (4.8)		0.6									
	AE-M	69.1 (15.4)		1.8	29.9 (2.3)		0.7									
Alves 2009	CON	74.5 (1.1)	74.9 (11.3)	0.4 (2.4)	30.3 (3.4)	30.4 (3.5)	0.1 (0.1)									
	AE-M	71.2 (7.8)	69.9 (8.2)	-1.3 (2.4)	29.7 (3.1)	29.1 (3.5)	-0.6 (0.1)									
Arad 2015	CON	85.5 (10.7)	84.4 (10.6)	-1.1 (1.2)	32.1 (3.2)	31.6 (3.6)	-0.5 (1.8)				45.4 (5.0)	44.5 (8.1)	-0.9 (2.5)	1.68 (0.4)	1.76 (0.5)	4.75
	AE-V	90.1 (12.0)	90.2 (14.5)	0.1 (1.5)	32.5 (3.6)	32.7 (3.8)	0.2 (2.1)				54.4 (3.7)	44.5 (4.1)	-9.9 (1.5)	2.08 (0.4)	2.25 (0.5)	8.17
Arslan 2011	CON	84.5 (10.2)	84.8 (10.7)	0.3 (1.0)	32.3 (2.1)	32.4 (2.3)	0.1 (0.7)				39.3 (2.6)	37.6 (2.5)	-1.7 (0.8)			
	AE-V	86.1 (9.6)	83.3 (10.2)	-2.8 (1.2)	34.1 (3.9)	32.9 (3.9)	-1.2 (1.2)				38.8 (3.4)	38.8 (3.4)	0.01 (0.9)			
Bonfante 2017	CON	91.9 (5.5)	90.9 (5.9)	-1.0 (2.2)	30.9 (1.8)	30.5 (1.6)	-0.4 (0.8)	101.4 (4.2)	103.3 (4.9)	1.9 (2.0)	32.7 (5.4)	32.5 (6.3)	-0.2 (2.6)	2.5 (0.4)	2.5 (0.4)	0
	COM-LM															

		93.7 (9.2)	94.5 (9.7)	0.8 (2.2)	30.9 (1.8)	31.2 (1.9)	0.3 (0.8)	102.3 (5.3)	99.6 (4.9)	-2.7 (2.1)	35.3 (5.2)	28.6 (6.9)	-6.7 (2.5)	2.5 (0.4)	2.8 (0.4)	12
Borg 2002	CON	92.3 (10.5)	93.9 (11.1)	1.6 (2.0)				98.6 (7.5)	99.5 (8.7)	0.9 (2.2)	33.2 (1.1)	33.4 (1.2)	0.2 (0.3)			
	AE-M	91.9 (9.3)	93.7 (10.7)	1.8 (2.2)				98.3 (8.3)	99.1 (9.1)	0.8 (2.3)	34.5 (1.8)	30.1 (1.6)	-4.4 (0.5)			
	R-LM	90.8 (8.6)	91.1 (8.1)	0.3 (2.2)				98.1 (8.1)	97.3 (8.7)	-0.8 (2.2)	38.6 (2.1)	35.7 (1.9)	-2.9 (0.5)			
Chih-Hui 2017	CON	89.8 (4.4)	90.5 (4.4)	0.7 (1.2)	30.9 (0.9)	30.6 (0.9)	-0.3 (0.3)	98.5 (2.9)	99.3 (2.8)	0.8 (1.2)						
	AE-M	92.1 (3.9)	87.2 (3.5)	-4.9 (1.2)	31.8 (0.9)	30.1 (0.9)	-1.7 (0.3)	102.1 (2.7)	95.9 (2.2)	-6.2 (1.1)						
	AE-M	84.4 (2.7)	77.7 (2.3)	-6.7 (1.2)	29.6 (0.6)	27.1 (0.4)	-2.5 (0.2)	97.4 (2.1)	88.1 (1.9)	-9.3 (0.8)						
	AE-V	87.5 (4.6)	84.6 (4.5)	-2.9 (1.5)	30.7 (0.9)	29.7 (0.9)	-1.1 (0.3)	99.4 (2.5)	94.1 (2.4)	-5.3 (1.1)						
Church 2007	CON	85.9 (12.4)	83.7 (11.2)	-2.2 (2.2)				102.6 (11.9)	101.2 (9.7)	-1.4 (1.5)	30.7 (5.4)	29.8 (5.5)	-0.9 (0.8)	1.34 (0.3)	1.30 (0.1)	-2.98
	AE-M	85.1 (12.6)	82.9 (11.3)	-2.2 (2.2)				101.5 (12.4)	98.6 (8.7)	-2.9 (1.5)	29.1 (4.8)	28.3 (4.5)	-0.8 (0.6)	1.27 (0.2)	1.36 (0.1)	7.10
	AE-M	83.9 (11.2)	83.3 (11.7)	-0.6 (2.2)				99.6 (11.7)	98.2 (9.7)	-1.4 (1.5)	28.6 (4.8)	28.6 (4.5)	0.01 (0.6)	1.35 (0.2)	1.40 (0.2)	3.71
	AE-M	83.7 (11.3)	83.3 (10.3)	-0.4 (2.2)				100.1 (11.1)	98.1 (8.5)	-2.0 (1.1)	27.5 (4.1)	28.1 (4.4)	0.6 (0.5)	1.30 (0.2)	1.42 (0.2)	9.23
Croymans 2014	CON	98.5 (14.2)	98 (15.1)	-0.5 (1.2)	33.6 (3.2)	33.2 (3.3)	-0.4 (2.5)	106.5 (7.3)	106.7 (9.3)	0.2 (4.2)	26.2 (6.6)	27.9 (8.4)	1.7 (3.8)			
	R-HI	96.6 (12.2)	97.1 (13.2)	0.5 (1.2)	30.9 (3.0)	31.1 (2.4)	0.2 (0.8)	103.3 (7.5)	101.4 (5.4)	-1.9 (1.7)	28.6 (5.1)	26.2 (5.1)	-2.4 (1.4)			
Dengel 1996	CON	90.1 (4.1)	89.9 (4.0)	-0.2 (1.5)							30.4 (1.5)	30.1 (1.5)	-0.3 (0.8)	2.68 (0.2)	2.61 (0.2)	-2.68
	AE-V	94.8 (4.8)	94.3 (4.9)	-0.5 (1.5)							31.0 (1.2)	30.8 (1.6)	-0.2 (0.6)	2.58 (0.19)	2.91 (0.18)	12.79
Donges 2013	CON	96.4 (1.7)	95.7 (1.7)	-0.7 (1.2)							23.6 (1.4)	22.2 (1.5)	-1.4 (0.6)	2.07 (0.2)	2.06 (0.2)	-0.48
	AE-V															18.94

Study	Group															
	R-HI	96.4 (3.3)	96.6 (3.4)	0.2 (1.2)							27.6 (1.4)	26.8 (1.3)	-0.8 (0.6)	2.31 (0.1)	2.89 (0.2)	13.41
	COM-HI	103.1 (4.6)	101.1 (4.4)	-2.0 (1.2)							27.8 (1.3)	27.3 (1.3)	-0.8 (0.5)	1.94 (0.1)	2.20 (0.2)	34.83
		92.2 (6.9)	92.3 (7.2)	0.1 (1.2)							23.9 (2.2)	24.3 (2.3)	0.4 (0.9)	2.01 (0.2)	2.71 (0.1)	
Donnelly 2013 (men)	CON	96.2 (11.1)	96.7 (12.5)	0.5 (1.5)	30.6 (4.2)	30.7 (4.4)	0.1 (3.0)				36.9 (4.4)	35.8 (5.6)	-1.1 (2.2)	3.30 (0.2)	3.10 (0.4)	-6.45
	AE-V	102.1 (11.7)	96.2 (14.2)	-5.9 (1.5)	32.1 (3.5)	30.2 (4.3)	-1.9 (1.3)				37 (5.1)	32.5 (6.8)	-4.5 (1.6)	3.72 (0.5)	4.12 (0.7)	10.75
	AE-V	99.9 (19.4)	96.1 (19)	-3.8 (1.5)	32.1 (5.5)	30.8 (5.5)	-1.3 (2.5)				35.4 (6.8)	32.8 (7.5)	-2.6 (2.2)	3.71 (0.7)	4.21 (0.5)	13.48
Donnelly 2013 (women)	CON	78.7 (12.6)	79.2 (14.1)	0.5 (1.5)	29.9 (3.4)	29.1 (4.4)	-0.8 (2.2)				45.1 (4.6)	45.0 (5.5)	-0.1 (1.9)	2.38 (0.2)	2.30 (0.3)	-3.36
	AE-V	81.3 (13)	76.9 (12.8)	-4.4 (1.5)	29.8 (3.8)	27.5 (3.7)	-2.3 (1.1)				43.5 (5.7)	39.4 (6.8)	-4.1 (1.6)	2.48 (0.2)	2.84 (0.3)	12.01
	AE-V	83.3 (18.9)	79.2 (18.1)	-4.1 (1.5)	30.4 (5.6)	28.9 (5.4)	-1.5 (1.9)				43.6 (5.8)	40.5 (7.2)	-3.1 (1.7)	2.57 (0.4)	2.67 (0.4)	3.95
Foster-Schubert 2012	CON	84.2 (12.5)	83.5 (12.3)	-0.7 (1.2)	30.7 (3.9)	30.5 (4.1)	-0.2 (0.6)	94.8 (10.2)	95.7 (9.6)	0.9 (1.5)	47.3 (4.4)	47.1 (5.2)	-0.2 (0.7)	1.93 (0.4)	1.90 (0.3)	-1.55
	AE-V	83.7 (12.3)	81.7 (12.4)	-2.0 (1.2)	30.7 (3.9)	29.9 (3.8)	0.8 (0.5)	95.1 (10.1)	93.1 (9.8)	-2.0 (1.3)	47.3 (4.1)	45.7 (4.9)	-1.6 (0.6)	1.85 (0.3)	2.02 (0.3)	9.19
Frank 2005	CON				30.5 (3.7)						47.4 (4.8)					
	AE-M				30.4 (4.1)						47.3 (4.1)					
Gram 2018	CON				30.2 (2.6)	30.9 (3.2)	0.7 (1.2)							2.80	2.70	-.3.57
	AE-M				29.5 (1.4)	28.9 (1.2)	-0.6 (0.3)							2.70	3.10	14.82
	AE-M				30.4 (3.2)	29.8 (3.2)	-0.6 (0.8)							2.70	2.90	7.47
	AE-V				30.1 (1.3)	29.3 (2.3)	-0.8 (0.4)							2.70	3.10	14.82

Study	Group															
Herring 2014	CON				48.6	48.3	-0.3	133.8	132.4	-1.4				3.3	3.4	3.13
					(7.8)	(7.8)	(7.9)	(14.7)	(13.5)	(6.0)				(0.9)	(0.6)	
	R-LM				41.5	40.5	-1	123.7	120	-3.7				4.1	4.30	
					(5.2)	(5.4)	(4.2)	(16.5)	(16)	(6.9)				(0.2)	(0.1)	4.88
	AE-M				44.4	42.6	-1.8	124.9	120.6	-4.3				3.4	3.6	
					(4.4)	(3.9)	(2.7)	(18.2)	(13.3)	(6.8)				(0.3)	(0.3)	5.88
Hintze 2018	CON	79.1	80	0.9	30.1	30.5	0.4									
		(14.1)	(14.3)	(1.2)	(4)	(4.2)	(1.2)									
	R-HI	76.9	78.2	1.3	29.9	31.4	1.5									
		(14.1)	(15.3)	(1.2)	(4.2)	(4.9)	(1.4)									
Ho 2012	CON	85.1	85.1	0	32.4	32.4	0.01	100.3	99.1	-1.2	46.5	46.7	0.2	2.31	2.12	-8.25
		(4.2)	(4.3)	(1.2)	(1.4)	(1.5)	(0.4)	(3.6)	(3.6)	(1.1)	(1.7)	(1.8)	(0.5)	(0.12)	(0.11)	
	AE-M	91.1	91	-0.1	32.7	32.4	-0.3	103.7	101.6	-2.1	44.6	44.1	-0.5	2.26	2.38	6.20
		(4.1)	(4.0)	(1.2)	(1.3)	(1.2)	(0.3)	(2.6)	(2.9)	(0.8)	(1.9)	(1.8)	(0.5)	(0.11)	(0.12)	
	R-ML	89.3	89.2	-0.1	33.0	33 .0	0.01	104.0	101.4	-2.6	43.7	43.2	-0.5	2.21	2.39	8.14
		(4.5)	(4.4)	(1.2)	(1.3)	(1.3)	(0.3)	(3.2)	(3.3)	(0.9)	(1.3)	(1.4)	(0.4)	(0.2)	(0.12)	
	COM-ML	90 .0	88.4	-1.6	33.3	32.8	-0.5	102.2	99.6	-2.6	45.8	44.8	-1.0	2.34	2.49	6.41
		(4.1)	(3.6)	(1.2)	(1.2)	(1.1)	(0.3)	(3.2)	(3.0)	(0.9)	(1.6)	(1.8)	(0.5)	(0.2)	(0.1)	
Irving 2008	CON	89.6	88.7	-0.9	32.7	32.4	-0.3	98.2	97.5	-0.7	45.1	45	-0.1	1.94	1.85	-4.64
		(11.2)	(10.6)	(1.2)	(3.8)	(3.8)	(2.9)	(10)	(8.0)	(4.3)	(3.3)	(3.7)	(1.7)	(0.41)	(0.11)	
	AE-V	97.2	95.1	-2.1	34.7	33.9	-0.8	103.8	102.6	-1.2	44.0	43.6	-0.4	2.03	2.22	9.36
		(22)	(19.3)	(1.2)	(7.5)	(6.5)	(4.8)	(10.6)	(10.4)	(3.8)	(4.9)	(4.1)	(1.6)	(0.41)	(0.4)	
	AE-M	93.5	90.0	-3.5	34.7	33.4	-1.3	103.7	98.1	-5.6	43.5	41.8	-1.7	2.04	2.20	7.84
		(18.3)	(15.6)	(1.2)	(6.8)	(5.6)	(4.6)	(16.8)	(13.3)	(6.2)	(4.8)	(5.4)	(2.1)	(0.32)	(0.12)	
Irwin 2003	CON	81.7		0.7	30.8		0.3				47.4		0.4			
		(12)			(0.8)						(2.1)					
	AE-M	81.6		0.7	30.5		0.3				47.6		0.3			
		(14)			(1.0)						(1.1)					
Jabbour 2015	CON	99.5	100.5	1	33.3	33.7	0.4									
		(24.1)	(21.1)	(0.5)	(4.8)	(3.8)	(2.1)									
	AE-V	101.1	99.9	-1.2	33.2	33.1	-0.1									
		(21.1	(9.1)	(0.5)	(2.8)	(3.7)	(1.5)									
Jabbour 2017	CON	99.5	100.5	1	33.3	33.7	0.4							2.33	2.23	0
		(24.1)	(21.1)	(0.5)	(4.8)	(3.8)	(2.1)							(0.2)	(0.1)	
	AE-V															1.76

Study	Group															
		101.1 (21.1)	99.9 (9.1)	-1.2 (0.5)	33.2 (2.8)	33.1 (3.7)	-0.1 (1.5)							2.28 (0.3)	2.32 (0.3)	
Keating 2015	CON	90.7 (4.9)	91.5 (5.0)	0.8 (0.45)	32.2 (1.4)	32.9 (1.4)	0.7 (2.32)	93.7 (1.5)	94.5 (1.6)	0.8 (0.63)				1.97 (0.16)	1.95 (0.15)	-1.15
	AE-V	103.1 (5.6)	101.8 (5.7)	-1.3 (1.2)	36.3 (1.7)	35.8 (1.7)	-0.5 (0.73)	106.6 (4.7)	104.1 4.5	-2.5 (1.88)				2.26 (0.11)	2.53 (0.15)	11.95
	AE-M	88.1 (3.8)	88.9 (3.9)	0.1 (1.2)	31.3 (0.8)	31.5 (1.0)	0.2 (0.31)	95.1 (2.9)	94.1 (2.9)	-1.0 (1.18)				2.39 (0.11)	2.59 (0.09)	8.37
	AE-M	96.1 (5.5)	94.7 (18.9)	-1.4 (1.2)	33.9 (0.9)	33.4 (0.9)	-0.5 (0.32)	104.5 (2.9)	102 (3.0)	-2.5 (1.2)				1.99 (0.10)	2.19 (0.13)	10.52
Keating 2017	CON	85.5 (3.6)	85.7 (3.8)	3.8 (0.2)	30.8 (1.0)	31.3 (1.3)	0.5 (0.38)	92.3 (2.2)	92.9 (2.4)	0.6 (0.87)				1.84 (0.15)	1.85 (0.15)	0.55
	R-HI	86.5 (4.9)	86.6 (4.3)	4.3 (0.1)	32.2 (1.2)	32.2 (1.2)	0.01 (0.40)	97.6 (3.3)	96.3 (3.2)	-1.3 (1.19)				2.04 (0.11)	2.11 (0.12)	3.44
Kline 2011	CON	99.3 (5.1)	98.7 (5.0)	-0.6 (1.2)				104.4 (3.8)	105.8 (3.9)	1.4 (1.36)	40.6 (1.9)	40.8 (1.9)	0.2 (0.67)			
	COM-LM	105.6 (3.0)	104.7 3.3	-0.9 (1.2)				110.8 (2.3)	110.2 (2.3)	-0.6 (0.63)	42.1 (1.9)	41.1 (1.9)	1.1 (0.45)			
Mengistie 2013	CON	86.1 (1.8)		1.0 (0.5)	30.3 (0.6)		0.4 (0.4)	110.5 (2.5)		1.6 (0.8)	37.5 (2.2)		1.1 (0.6)			
	COM-LM	86.3 (3.1)		-5.3 (1.2)	30.4 (0.7)		-1.9 (0.5)	111.0 (2.7)		-4.2 (1.2)	37.2 (3.3)		-4.3 (1.1)			
Moghasdasi 2012	CON	90.46 (13.9)	90.66 (14.1)	0.2 (1.5)	32.1 (5.3)	32.1 (5.3)	0.01 (5.4)				31.4 (5.5)	31.4 (5.5)	0 (2.75)	2.89 (0.7)	2.89 (0.7)	0
	AE-V	87.8 (8.5)	85.1 (8.8)	14.1 (0.2)	30.9 (2.1)	29.9 (2.2)	-1.0 (1.35)				29.6 (3.1)	27.3 (3.7)	-2.3 (1.7)	2.82 (0.35)	3.17 (0.40)	12.42
Mohanka 2006	CON	81.7 (12)												2.64 (0.26)	2.63 (0.25)	-0.38
	AE-M	81.6 (14)												2.64 (0.14)	2.97 (0.15)	12.5
Mora-Rodriguesz 2017	CON							107 (5.8)	107 (5.6)	0 (1.8)				1.49 (0.43)	1.5 (0.46)	0.67
	AE-V	92.6	90.7	-1.9	32.9	31.9		107	105	-2.0				1.4	1.5	7.14

Study	Group															
		(13.1)	(11.2)	(2.2)	(8.1)	(8)		(7.3)	(6.3)	(2.15)				(0.5)	(0.41)	
Nunes 2016	CON				32.4 (8.1)			91.5 (13.2)	95.5 (12.8)	4.0 (5.09)	38.2 (4.1)	37.3 (5.4)	-0.9 (1.88)			
	R-ML				29.4 (9.8)			88.0 (13.4)	84.0 (13.7)	-4.0 (5.5)	36.9 (6.8)	32.7 (5.3)	-4.2 (2.5)			
	R-ML				29.4 (4.1)			90.0 (5.2)	88.0 (11)	-2.0 (3.37)	36.8 (3.9)	33.7 (3.3)	-3.1 (1.42)			
Quist 2018	CON	93.2 (11.8)		0.3	30.1 (2.6)									2.55 (0.8)	2.52 (0.7)	-1.18
	AE-M	90.7 (12.7)		-0.3	30.4 (3.1)									2.68 (0.5)	2.98 (0.6)	11.19
	AE-M	89.5 (11.1)		-0.3	29.2 (1.9)									2.68 (0.5)	2.91 (0.6)	8.58
	AE-V	92.4 (14.1)		-0.8	30.1 (2.4)									2.68 (0.6)	3.10 (0.7)	15.67
Ross 2015	CON	94.2 (17.1)			33.1 (4.6)			109.5 (10.5)						2.7 (0.8)		
	AE-M	95.8 (17.9)			33.5 (4.9)			111.1 (11.2)						2.6 (0.7)		
	AE-M	94.0 (15.2)			33.7 (4.4)			110.7 (11.3)						2.7 (0.7)		
	AE-V	97.0 (16.4)			33.4 (4.3)			111.3 12.1						2.7 (0.7)		
Rustaden 2017	CON	86.4 (14.5)		0.1 (0.8)	30.8 (5.1)		-0.4 (0.7)				30.8 (6.1)		-0.8 (1.5)			
	R-HI	86.2 (14.1)		0.3 (0.8)	30.8 (4.9)		-0.3 (0.8)				38.7 (6.3)		-0.8 (1.5)			
	R-HI	93.3 (21.1)		0.9 (0.2)	32.2 (6.1)		-0.2 (0.8)				41.1 (6.2)		-1.5 (1.7)			
	R-HI	84.4 (14.3)		0.1 (0.8)	30.2 (5.4)		-0.3 (0.6)				38.4 (6.5)		-1.1 (2.2)			
Sarsan 2006	CON	86.6 (11.3)	86.4 (11.5)	-0.2 (1.2)	35.4 (3.7)	35.4 (3.7)	0.01 (1.5)	99.7 (8.2)	99.7 (8.7)	0.01 (2.7)				2.18 (0.4)	2.17 (0.3)	-0.45
	AE-M	87.5 (11.7)	84.1 (12)	-3.4 (1.2)	35.4 (4.9)	33.9 (5.0)	-1.5 (2.4)	99.0 (8.7)	93.2 (8.7)	-5.8 (2.7)				2.38 (0.5)	2.76 (0.4)	15.2

Study	Group															
	R-ML	83.8 (9.5)	80.1 (9.5)	-3.7 (1.2)	33.7 (2.9)	32.6 (2.9)	-1.1 (1.1)	93.5 (6.4)	93.5 (6.4)	-2.3 (2.0)				2.27 (0.4)	2.49 (0.4)	8.5
Schroeder 2019	CON	91.4 (16)		0.1	32.4 (3.7)		0.0	106.0 (10.0)		0.5	41.4 (5.7)		0.2	2.73 (0.7)		6.22
	AE-V	97.1 (20.7)		-1.0	32.4 (5.2)		-0.3	103.0 (14.0)		0.4	39.1 (8.6)		-0.5	2.89 (0.9)		25.25
	R-HI	93.6 (18.9)		-0.2	32.5 (5.9)		-0.1	106 (17.0)		-1.7	39.4 (8)		-0.2	2.91 (0.8)		5.15
	COM-HI	95.8 (21.2)		0.9	31.9 (5.5)		0.2	104 (13.0)		0.9	40.6 (10)		-0.5	3.26 (1.1)		13.19
Sheikholeslami-Vatani 2015	CON	98.5 (5.9)	98.8 (6.1)	0.3 (1.2)	32.1 (1.2)	32.2 (1.3)	0.1 (0.55)				30.9 (3.5)	31.2 (3.7)	0.3 (1.6)			
	COM-HI	97.5 (5.3)	93.5 (4.9)	-4 (1.2)	31.4 (1.1)	30.1 (0.7)	-1.3 (0.39)				28.5 (3.2)	23.6 (2.8)	-4.9 (1.3)			
	COM-HI	96.6 (4.8)	93.1 (3.8)	-3.5 (1.2)	31.9 (0.9)	30.8 (0.7)	-1.1 (0.33)				30.7 (4.3)	26.3 (3.7)	-4.4 (1.8)			
Soori 2017	CON	76.5 (2.4)	76.8 (2.5)	0.3 (0.5)	30.7 (1.0)	30.9 (1.1)	0.2 (0.5)				40.1 (1.2)	40.1 (1.1)	0.01 (0.58)			
	AE-M	77.3 (1.3)	74.8 (1.9)	-2.5 (1.2)	31.0 (1.7)	29.9 (1.3)	-1.1 (0.81)				40.2 (2.4)	39.9 (2.4)	-0.3 (1.2)			
	R-ML	76.0 (2.8)	75.8 (2.8)	-0.2 (0.5)	30.1 (1.4)	30 (0.5)	-0.1 (0.47)				40.1 (1.5)	40.1 (1.5)	0.00 (0.75)			
	COM-ML	75.8 (2.7)	73.3 (2.6)	-2.5 (1.1)	30.7 (1.1)	29.5 (0.8)	-1.2 (0.53)				39.2 (1.8)	38.7 (2.0)	-0.5 (0.95)			
Stensvold 2010	CON	100.9 (9.4)	101.6 (10.2)	0.7	31.9 (4.1)	32 (4.2)	0.1	108.7 (9.3)	110.4 (9.0)	1.7				3.4 (1.02)	3.3 (0.9)	-2.94
	AE-V	99.7 (18.7)	98.3 (18.3)	-1.4	31.3 (4.3)	30.9 (4.6)	-0.4	109.6 (10.0)	108.3 (10.7)	-1.3				3.4 (0.91)	3.8 (0.9)	11.76
	R-HI	91.7 (14.7)	92.4 (14.8)	0.7	30.3 (3.5)	30.4 (3.6)	0.1	106.2 (8.6)	105.5 (8.2)	-0.7				2.7 (1.1)	2.9 (0.9)	7.41
	COM-HI	103.4 (17.1)	102.5 (17.2)	-0.9	32.2 (4.2)	32.2 (4.4)	0.01	111.5 (10.8)	110.1 (11)	-1.4				3.3 (0.45)	3.5 (0.5)	6.06
Tjonne 2008	CON	96.4 (12.1)	96.2 (4.9)	-0.2 (1.2)	32.1 (1.1)	32.1 (1.3)	0 (0.6)	114.3 (2.7)	112 (3.4)	-2.3 (1.44)				3.1 (0.33)	3.2 (0.33)	3.22
	AE-M	91.2 (19.5)	87.6 (6.5)	-3.6 (1.2)	29.4 (1.7)	28.2 (1.5)	-1.2 (0.88)	105.1 (5.3)	99.1 (5)	-6.0 (2.57)				3.3 (0.32)	3.7 (0.33)	12.12

Study	Group															
	AE-V	91.8 (17.5)	89.5 (4.9)	-2.3 (1.2)	29.8 (1.7)	29.1 (1.5)	-0.7 (0.72)	105.5 (4.1)	100.5 (3.6)	-5.0 (1.64)				3.1 (0.23)	4.1 (0.32)	32.26
Tong 2018	CON	68.2 (9.9)	67.8 (10.4)	-0.4 (1.2)							40.5 (2.6)	40.5 (3.7)	0.01 (0.84)	1.95 (0.19)	1.91 (0.21)	-2.05
	AE-V	67.7 (6.4)	64.9 (6.2)	-1.8 (1.2)							38.4 (2.3)	38.2 (2.4)	-0.2 (0.83)	2.08 (0.28)	2.23 (0.23)	7.22
	AE-V	68.9 (12.1)	64.9 (10.2)	-4.0 (1.2)							38.2 (2.4)	38.2 (2.4)	0.01 (0.84)	2.05 (0.25)	2.50 (0.22)	21.95
Tseng 2013 (1)	CON	95.4 (3.3)	96.2 (3.4)	0.8 (1.5)	31.1 (1.1)	31.3 (1.1)	0.2 (0.43)	99.0 (2.6)	99.6 (2.6)	0.6 (1.16)						
	AE-M	94.3 (4.2)	85.8 (3.7)	-8.5 (1.2)	31.1 (1.1)	28.2 (0.9)	-2.9 (0.43)	101.9 (1.6)	92.6 (1.6)	-9.3 (0.71)						
	R-ML	90.2 (4.2)	84.6 (3.8)	-5.6 (1.2)	30.4 (1.1)	28.5 (1.1)	-1.9 (0.47)	100.8 (2.2)	94.4 (2.0)	-6.4 (0.94)						
	COM-ML	95.7 (4.4)	86.6 (3.8)	-9.1 (1.2)	31.2 (1.2)	28.2 (1.1)	-3 (0,5)	102.6 (2.9)	92.9 (2.6)	-9.7 (1.23)						
Tumiati 2008	CON	102.0 (28)	97.0 (22)	-5.0 (1.5)	39.0 (9.0)	39.0 (8)	0.01 (4.36)	107.0 (14.0)	103.0 (17.0)					3.5 (1.1)	3.3 (1.3)	-5.72
	COM-LM	107.0 (2.07)	96.0 (19.0)	-11.0 (1.5)	38.0 (7.0)	34.0 (9.4)	-4.0 (1.9)	111.0 (16.0)	100.0 (11.0)					3.8 (1.2)	4.6 (1.3)	21.05
Van-Aggel Leijssen 2001	CON	94.7 (14)	94.5 (14.5)	-0.2 (1.2)	32.1 (2.9)	32.4 (3.1)	0.3 (2.47)				44.4 (3.1)	44.8 (3.2)	0.4 (1.81)	2.6 (0.25)	2.5 (0.17)	-3.84
	AE-M	86.5 (10.2)	87.1 (10.1)	0.6 (1.2)	32.8 (3.9)	32.9 (3.6)	0.1 (2.99)				45.0 (4.4)	45.9 (4.3)	0.9 (2.2)	1.9 (0.46)	2.1 (0.41)	10.52
	AE-M	91.2 (9.7)	91.2 (9.3)	0.01 (1.2)	33.3 (3.8)	33.1 (3.9)	-0.22 (4.08)				42.6 (3.1)	42.8 (2.4)	0.2 (0.9)	2.2 (0.19)	2.3 (0.3)	4.53
Van-Aggel Leijssen 2002	CON	96.5 (10.3)	95.9 (9.6)	0.6 (1.2)	31.5 (2.4)	31.4 (2.5)	-0.1 (1.63)				31.3 (4.3)	31.8 (94.)	0.5 (2.5)	2.9 (0.4)	3.03 (0.6)	3.48
	AE-M	102.7 (10.8)	103.1 (11.4)	0.4 (1.2)	31.6 (3.1)	31.7 (3.1)	0.1 (2.3)				31.9 (2.4)	31.5 (2.2)	-0.4 (1.15)	3.2 (0.5)	3.5 (0.5)	9.38
	AE-V	105.5 (6.6)	105.1 (6.2)	-0.4 (1.2)	32.2 (1.6)	32.1 (1.3)	-0.1 (1.6)				31.6 (5.1)	31.7 (5.0)	0.1 (2.52)	3.3 (0.4)	3.8 (0.5)	15.15

Supporting file S5: Individual study data (pre-post intervention) for all outcome measures not included in NMA

Pre-Post Outcomes Measures: mean (SD)

Authors	Exercise category	High-density lipoprotein (HDL) mmol/L			Triglycerides (TG) mmol/L			Fasting blood glucose (FBG) mmol/L			Systolic Blood Pressure (SBP) mmHg			Diastolic Blood Pressure (DBP) mmHg		
		pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	Mean difference (SD)	pre	post	Mean difference (SD)
Bonfante 2017	CON	1.12 (0.29)	1.16 (0.19)		2.51 (1.51)	2.49 (1.82)		5.3 (0.5)	5.3 (0.6)							
	COM-LM	1.08 (0.14)	1.06 (0.23)		2.72 (2.19)	2.72 (2.21)		5.2 (0.6)	4.8 (0.6)							
Church 2007	CON	1.50 (0.40)	1.50 (0.30)		1.53 (0.75)	1.52 (0.71)		5.3 (0.6)	5.3 (0.4)							
	AE-M	1.48 (0.31)	1.45 (0.33)		1.51 (0.81)	1.49 (0.68)		5.3 (0.4)	5.2 (0.3)							
	AE-M	1.52 (0.38)	1.45 (0.36)		1.43 (0.65)	1.42 (0.68)		5.2 (0.5)	5.2 (0.6)							
	AE-M	1.41 (0.37)	1.48 (0.31)		1.38 (0.66)	1.38 (0.55)		5.2 (0.5)	5.1 (0.4)							
Croymans 2014	CON										128 (7)	128 (6)		88 (8)	75 (4)	
	R-HI										127 (7)	124 (5)		81 (5)	76 (6)	
Dengel 1996	CON							5.6 (0.2)	5.7 (0.2)							
	AE-V							5.6 (0.2)	5.7 (0.1)							
Frank 2005	CON				1.33 (0.29)	1.34 (0.36)		5.4 (0.5)	5.5 (0.4)							
	AE-M				1.36 (0.22)	1.32 (0.28)		5.6 (0.4)	5.5 (0.4)							

Study	Group											
Gram 2018	CON	1.18 (0.30)	1.12 (0.23)	1.10 (0.80)	1.10 (0.60)							
	AE-M	1.31 (0.37)	1.32 (0.36)	1.10 (0.70)	1.20 (0.80)							
	AE-M	1.23 (0.23)	1.30 (0.31)	1.20 (0.70)	1.10 (0.60)							
	AE-V	1.23 (0.29)	1.28 (0.31)	1.30 (0.40)	1.00 (0.50)							
Ho 2012	CON	1.42 (0.11)	1.35 (0.10)	1.25 (0.17)	1.48 (0.23)	5.4 (0.1)	5.36 (0.2)	117 (12)	116 (13)	66 (2)	63 (2)	
	AE-M	1.38 (0.09)	1.28 (0.07)	1.36 (0.19)	1.40 (0.16)	5.8 (0.2)	5.7 (0.1)	122 (14)	120 (14)	67 (2)	68 (2)	
	R-ML	1.34 (0.08)	1.44 (0.08)	1.27 (0.12)	1.38 (0.18)	5.7 (0.5)	5.8 (0.2)	124 (15)	124 (15)	71 (2)	70 (3)	
	COM-ML	1.42 (0.11)	1.41 (0.11)	1.10 (0.10)	1.36 (0.17)	5.7 (0.1)	5.6 (0.1)	115 (13)	113 (14)	66 (2)	64 (2)	
Irving 2008	CON	1.18 (0.11)	1.32 (0.23)	2.43 (1.31)	2.71 (1.53)	5.9 (0.8)	6.1 (0.9)	126 (17)	124 (10)	82 (12)	78 (10)	
	AE-V	1.14 (0.21)	1.82 (0.11)	2.13 (0.86)	2.21 (1.11)	5.9 (0.8)	5.7 (0.7)	131 (12)	127 (11)	75 (7)	76 (7)	
	AE-M	1.21 (0.22)	1.34 (0.20)	1.41 (0.55)	1.43 (0.45)	6 (1.4)	6.3 (1.4)	126 (16)	123 (15)	76 (8)	74 (8)	
Keating 2015	CON	1.40 (0.13)	1.40 (0.12)	1.61 (0.32)	1.51 (0.31)	4.0 (0.2)	4.0 (0.2)	119 (4)	119 (13)	78 (2)	76 (8)	
	AE-V	1.20 (0,11)	1.30 (0.12)	1.53 (0.21)	1.52 (0.22)	4.5 (0.3)	4.3 (0.3)	123 (5)	123 (4)	83 (2)	80 (2)	
	AE-M	1.40 (0.14)	1.30 (0.12)	1.80 (0.31)	1.80 (0.30)	4.3 (0.2)	4.4 (0.2)	125 (5)	123 (4)	77 (3)	76 (3)	
	AE-M	1.50 (0.12)	1.40 (0.11)	1.40 (0.20)	1.41 (0.21)	4.4 (0.2)	4.3 (0.1)	116 (4)	116 (2)	79 (2)	73 (3)	
Keating 2017	CON	1.80 (0.30)	1.50 (0.20)	1.40 (0.20)	1.40 (0.20)	4 (0.1)	4 (1.2)	118 (4)	117 (2)	78 (2)	76 (2)	
	R-HI	1.50 (0.10)	1.70 (0.20)	1.24 (0.10)	1.20 (0.20)	4.1 (0.2)	4.2 (0.2)	117 (3)	117 (2)	77 (2)	76 (2)	

Study	Group										
Mengistie 2013	CON					5.9 (0.36)	0.2 (0.1)	112 (5)	-3 (2)	81 (4)	2 (1)
	COM-LM					5.7 (0.36)	-0.3 (0.2)	112 (5)	-3 (2)	0 (3)	-2 (1)
Moghasdasi 2012	CON					5.7 (0.47)	5.6 (0.4)				
	AE-V					5.3 (0.4)	4.7 (0.3)				
Mohanka 2006	CON	1.36 (0.40)	1.33 (0.34)	1.51 (0.80)	1.50 (0.90)						
	AE-M	1.34 (0.29)	1.34 (0.31)	1.57 (0.66)	1.46 (0.92)						
Mora-Rodriguesz 2017	CON	0.83 (0.14)	0.86 (0.18)	1.65 (1.20)	1.50 (0.73)						
	AE-V	0.91 (0.18)	0.94 (0.24)	1.54 (0.81)	1.51 (0.92)						
Nunes 2016	CON	1.61 (0.29)	1.57 (0.22)	2.77 (1.10)	2.71 (0.91)						
	R-ML	1.55 (0.20)	1.49 (0.31)	2.98 (1.17)	2.99 (0.91)						
	R-ML	1.72 (0.22)	1.69 (0.30)	2.57 (0.98)	2.54 (0.72)						
Ross 2015	CON	1.21 (0.30)		1.80 (1.0)		5.4 (0.7)		114 (13)	-1 (5)	79 (8)	1 (3)
	AE-M	1.22 (0.30)		1.90 (1.10)		5.4 (0.6)		112 (11)	-5 (8)	80 (8)	-4 (5)
	AE-M	1.20 (0.40)		1.50 (0.81)		5.5 (0.6)		114 (13)	-3 (7)	80 (8)	-2 (4)
	AE-V	1.23 (0.40)		1.60 (0.73)		5.5 (0.5)		114 (16)	-2 (6)	80 (9)	-2 (2)
Sarsan 2006	CON							127 (17)	127 (15)	78 (9)	77 (8)
	AE-M							121 (20)	120 (20)	80 (10)	73 (9)
	R-ML									80 (5)	73 (9)

Study	Group													
									117 (12)	117 (13)				
Schroeder 2019	CON	1.39 (0.34)		-0.05	1.37 (0.67)		0.57	5.33 (0.33)		129 (12)		-1	81 (8)	0
	AE-V	1.42 (0.34)		0.00	1.71 (0.77)		-0.28	5.29 (0.4)		131 (10)		0	81 (12)	-2
	R-HI	1.26 (0.33)		0.00	1.88 (1.05)		-0.67	5.67 (0.4)		131 (14)		-1	81 (11)	0
	COM-HI	1.35 (0.38)		-0.05	1.64 (0.38)		0.08	5.44 (0.4)		115 (16)		0	81 (10)	-4
Soori 2017	CON	1.44 (0.19)	1.42 (0.19)		1.36 (0.58)	1.33 (0.54)								
	AE-M	1.32 (0.17)	1.32 (0.15)		1.29 (0.57)	1.21 (0.28)								
	R-ML	1.32 (0.22)	1.39 (0.27)		1.15 (0.22)	1.15 (0.21)								
	COM-ML	1.21 (0.28)	1.43 (0.38)		1.00 (0.31)	0.98 (0.11)								
Stensvold 2010	CON	1.29 (0.35)	1.27 (0.63)		1.81 (0.81)	1.70 (1.00)		6.2 (2.1)	6.1 (2.3)	141 (12)	142 (24)		90 (7)	90 (14)
	AE-V	1.17 (0.35)	1.23 (0.41)		1.92 (1.00)	1.80 (0.80)		6.0 (1.1)	5.9 (0.8)	136 (15)	134 (12)		89 (8)	85 (6)
	R-HI	1.38 (0.38)	1.49 (0.64)		2.31 (1.40)	2.30 (1.10)		5.9 (2.4)	5.6 (1.8)	144 (14)	145 (15)		89 (7)	90 (6)
	COM-HI	1.15 (0.18)	1.23 (0.24)		2.00 (0.90)	1.90 (1.20)		6.1 (2)	6.6 (1.5)	141 (14)	140 (17)		91 (11)	89 (11)
Tjonne 2008	CON	0.62 (0.05)	0.58 (0.08)							140 (6)	141 (5)		95 (5)	96 (4)
	AE-M	0.69 (0.07)	0.84 (0.10)							133 (5)	135 (5)		95 (3)	89 (4)
	AE-V	0.74 (0.09)	0.81 (0.08)							122 (6)	121 (5)		88 (4)	82 (5)

Tseng 2013	CON	1.21 (0.44)	1.13 (0.40)	4.9 (0.2)	4.8 (0.2)	127 (8)	126 (8)	82 (8)	82 (9)
	AE-M	1.01 (0.21)	0.95 (0.24)	5.0 (0.6)	4.5 (0.4)	120 (10)	120 (10)	76 (10)	76 (10)
	R-ML	1.10 (0.31)	1.05 (0.32)	4.9 (0.9)	4.5 (0.9)	118 (9)	119 (9)	73 (8)	73 (8)
	COM-ML	1.10	1.03	4.8	4.7	123 (9)	123 (9)	78 (10)	78 (10)

Supporting file S6: Additional information relating to exercise intervention type contributing to each network meta-analysis

Weight Loss

Exercise Type	Freq.	Percent	Cum.
control	30	38.46	38.46
vigorous aerobic	16	20.51	58.97
moderate aerobic	13	16.67	75.64
high resistance	3	3.85	79.49
low-to-moderate resistance	7	8.97	88.46
high combined	2	2.56	91.03
low combined	7	8.97	100.00
Total	78	100.00	

Body Mass Index

Exercise Type	Freq.	Percent	Cum.
control	27	38.03	38.03
vigorous aerobic	15	21.13	59.15
moderate aerobic	13	18.31	77.46
high resistance	3	4.23	81.69
low-to-moderate resistance	6	8.45	90.14
high combined	1	1.41	91.55
low combined	6	8.45	100.00
Total	71	100.00	

Waist Circumference

Exercise Type	Freq.	Percent	Cum.
control	18	37.50	37.50
vigorous aerobic	7	14.58	52.08
moderate aerobic	10	20.83	72.92

```
      high resistance |          5          10.42          83.33
low to moderate resistance |     3           6.25          89.58
            low combined |       5          10.42         100.00
--------------------------+-----------------------------------
                   Total |      48         100.00
```

Percentage Body Fat
```
         Exercise Type    |      Freq.      Percent       Cum.
--------------------------+-----------------------------------
                 control |       20          40.82          40.82
        vigorous aerobic |       10          20.41          61.22
        moderate aerobic |        7          14.29          75.51
         high resistance |        3           6.12          81.63
low to moderate resistance |      3           6.12          87.76
           high combined |        2           4.08          91.84
            low combined |        4           8.16         100.00
--------------------------+-----------------------------------
                   Total |       49         100.00
```

Fitness
```
         Exercise Type    |      Freq.      Percent       Cum.
--------------------------+-----------------------------------
                 control |       21          37.50          37.50
        vigorous aerobic |       12          21.43          58.93
        moderate aerobic |       13          23.21          82.14
         high resistance |        3           5.36          87.50
low-to-moderate resistance |      2           3.57          91.07
           high combined |        3           5.36          96.43
            low combined |        2           3.57         100.00
--------------------------+-----------------------------------
                   Total |       56         100.00
```

Supporting file S7: Additional information pertaining to number of intervention arms contributing to direct/indirect analysis for each MNA

Weight Loss

Interventions	n=	Percent	Cumulative Percent
AE-V: CON	15	21.74	21.74
AE-M: CON	13	18.84	40.58
AE-V: AE-M	5	7.25	47.83
R-HI: CON	3	4.35	52.17
R-HI: AE-M	3	4.35	56.52
R-LM: CON	7	10.14	66.67
R-LM: AE-V	2	2.90	69.57
R-LM: AE-M	2	2.90	72.46
COM-LM: CON	2	2.90	75.36
COM-LM: AE-V	1	1.45	76.81
COM-LM: R-LM	1	1.45	78.26
COM-HI: CON	7	10.14	88.41
COM-HI: AE-M	1	1.45	89.86
COM-HI: R-HI	3	4.35	94.20
COM HI: R-LM	1	1.45	95.65
COM-HI: COM-LM	3	4.35	100.00

Body Mass Index

Interventions	n=	Percent	Cumulative Percent
AE-V: CON	14	22.22	22.22
AE-M: CON	13	20.63	42.86
AE-V: AE-M	6	9.52	52.38
R-HI: CON	3	4.76	57.14
R-HI: AE-M	3	4.76	61.90
R-LM: CON	6	9.52	71.43
R-LM: AE-V	1	1.59	73.02
COM-HI: CON	2	3.17	76.19
COM-LM: CON	1	1.59	77.78

COM-LM: AE-V	6	9.52	87.30
COM-LM: AE-M	4	6.35	93.65
COM-LM: R-HI	1	1.59	95.24
COM-LM: R-LM	3	4.76	100.00

Waist Circumference

Interventions	n=	Percent	Cumulative Percent
AE-V: CON	7	14.89	14.89
AE-M: CON	10	21.28	36.17
AE-V: AE-M	4	8.51	44.68
R-HI: CON	5	10.64	55.32
R-HI: AE-M	4	8.51	63.83
R-LM: CON	4	8.51	72.34
R-LM: AE-V	1	2.13	74.47
R-LM: AE-M	1	2.13	76.60
COM-LM: CON	5	10.64	87.23
COM-LM: AE-V	1	2.13	89.36
COM-LM: AE-M	2	4.26	93.62
COM-LM: R-HI	1	2.13	95.74
COM-LM: R-LM	2	4.26	100.00

Percentage Body Fat

Interventions	n=	Percent	Cumulative Percent
AE-V: CON	9	21.43	26.19
AE-M: CON	7	16.67	42.86
AE-V: AE-M	2	4.76	47.62
R-HI: CON	3	7.14	54.76
R-HI: AE-M	2	4.76	59.52
R-LM: CON	3	7.14	66.67
R-LM: AE-V	1	2.38	69.05
R-LM: AE-M	1	2.38	71.43

COM-LM: CON	2	4.76	76.19
COM-LM: AE-V	1	2.38	78.57
COM-LM: R-LM	1	2.38	80.95
COM-HI: CON	4	9.52	90.48
COM-HI: AE-M	2	4.76	95.24
COM-HI: R-HI	1	2.38	97.62
COM-HI: R-LM	1	2.38	100.00

Fitness

Interventions	n=	Percent	Cumulative Percent
AE-V: CON	10	21.74	21.74
AE-M: CON	12	26.09	47.83
AE-V: AE-M	5	10.89	58.70
R-HI: CON	2	4.35	63.04
R-HI: AE-V	2	4.35	67.39
R-HI: AE-M	1	2.17	69.57
R-LM: AE-V	1	2.38	69.05
R-LM: CON	3	6.52	82.61
COM-HI: CON	2	4.35	86.96
COM-HI: AE-V	1	2.17	89.13
COM-HI: R-HI	1	2.17	91.30
COM-LM: CON	2	4.35	95.65
COM-LM: AE-M	1	2.17	97.82
COM-LM: R-LM	1	2.17	100.00

Supporting File S8: Funnel Plots
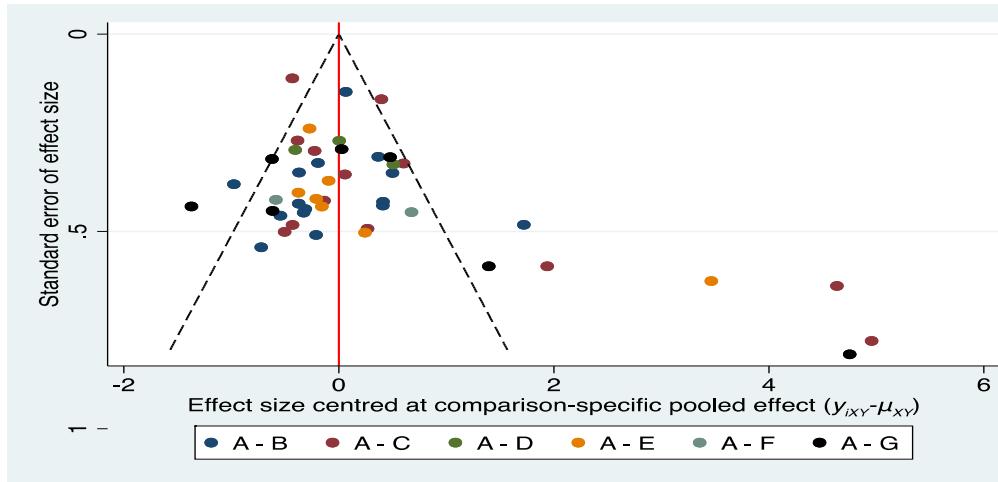

a) Weight loss
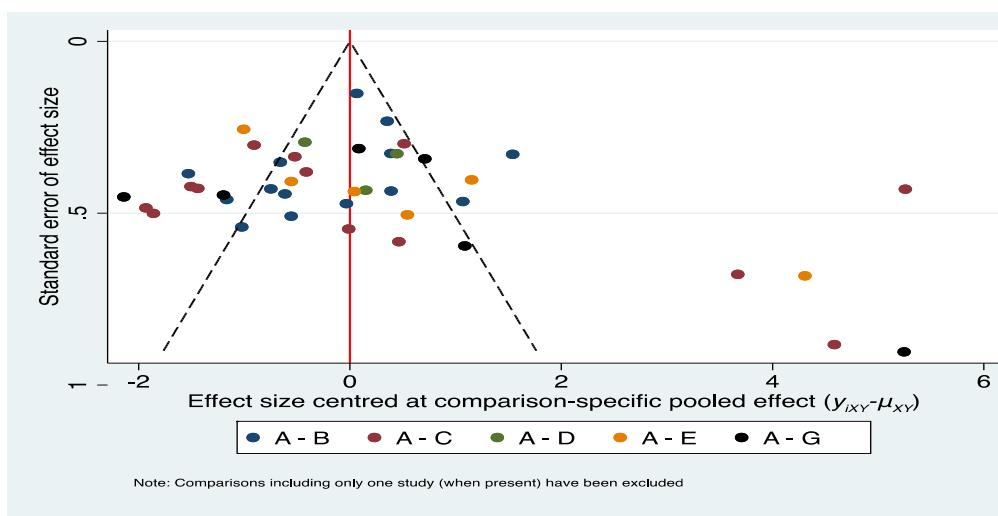
b) Body Mass Index (BMI)
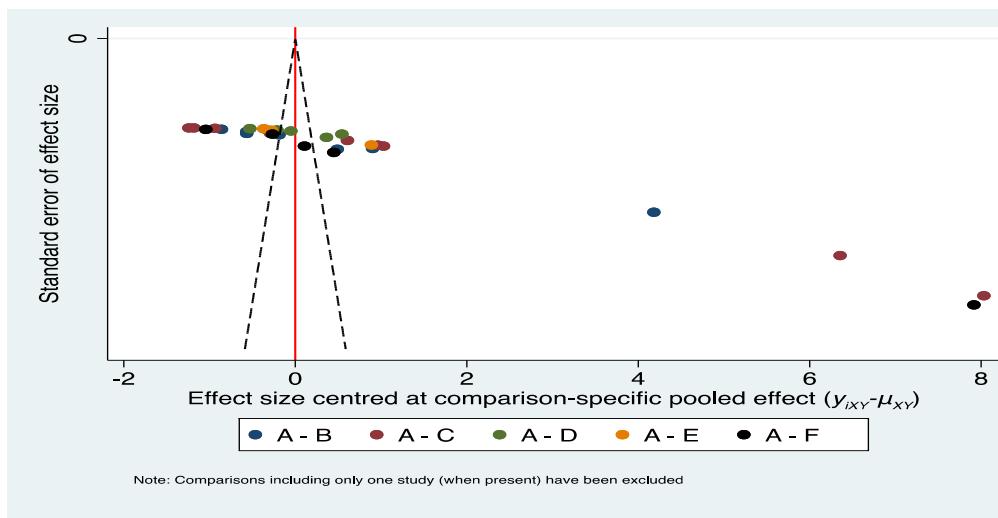
c) Waist circumference (WC)
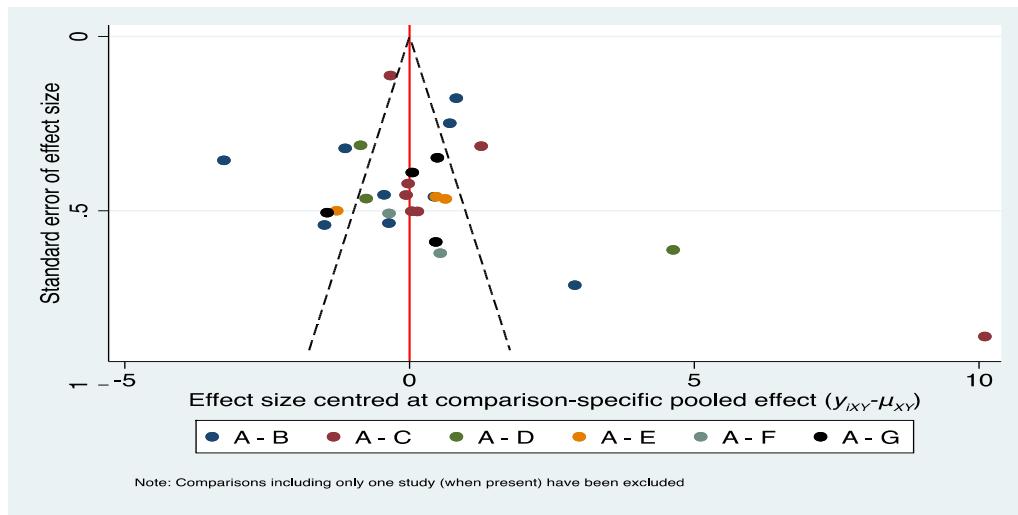
d) Percentage body fat (%)
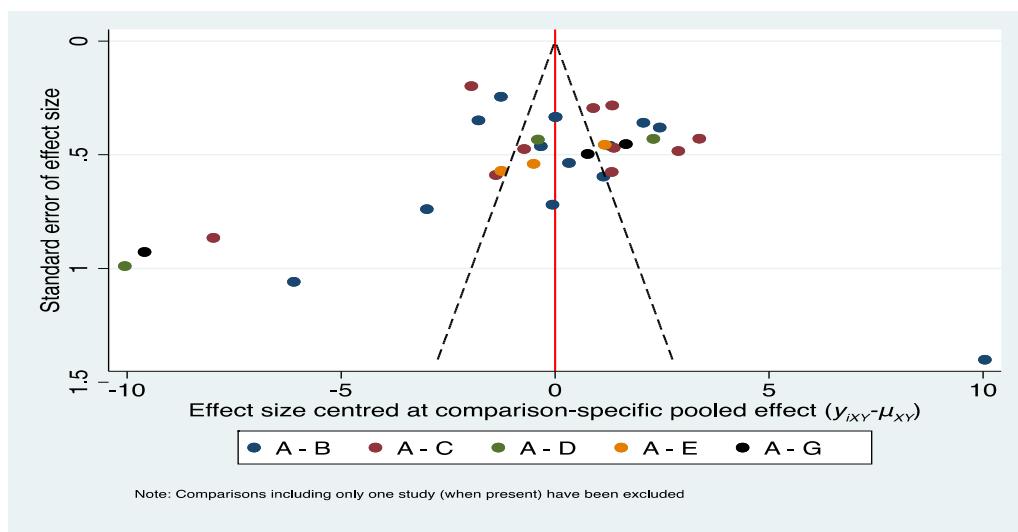
e) Fitness (maximal oxygen uptake)

Figure S8: Funnel plots to illustrate the presence or absence of publication bias in the network meta-analyses. The outer dashed lines indicate the triangular region within which 95% of studies are expected to lie in the absence of both biases and heterogeneity.