Supplementary Material

Exercise as Medicine for Depressive Symptoms?
A Systematic Review and Meta-analysis with Meta regression

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Supplementary Text 1. Full search terms

MeSH terms

((exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR physical medicine OR resistance OR lift*) AND (depression OR dysthymia) AND (randomized controlled trial OR clinical trial))

Cochrane/ Embase

(exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR "physical medicine" OR resistance OR lift*):ti,ab,kw AND (depression OR dysthymia):ti,ab,kw AND (randomized control trial" OR "randomized clinical trial):ti,ab,kw in Trials (Word variations have been searched)

PubMed

((exercis*[Title/Abstract] OR aerobic*[Title/Abstract] OR running[Title/Abstract] OR jogging[Title/Abstract] OR walk*[Title/Abstract] OR hiking[Title/Abstract] OR swim*[Title/Abstract] OR aquatic*[Title/Abstract] OR cycling[Title/Abstract] OR bicycl*[Title/Abstract] OR strength*[Title/Abstract] AND activit*[Title/Abstract] OR fitness[Title/Abstract] OR train*[Title/Abstract] OR physical medicine[Title/Abstract] OR resistance[Title/Abstract] OR lift*[Title/Abstract]) AND (depression[Title/Abstract] OR dysthymia[Title/Abstract])) AND (randomized controlled trial[Title/Abstract] OR clinical trial[Title/Abstract])

PsychINFO

(exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR physical medicine OR resistance OR lift*) AND (depression OR dysthymia) AND (randomized controlled trial OR clinical trial)

SPORTDiscus

(exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR physical medicine OR resistance OR lift*) AND (depression OR dysthymia) AND (randomized controlled trial OR clinical trial)

Medline

((TS=(exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR physical medicine OR resistance OR lift*)) AND TS=(depression OR dysthymia)) AND TS=(randomized controlled trial OR clinical trial)

Scopus

TITLE-ABS-KEY ((exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* AND activit* OR fitness OR train* OR physical AND medicine OR resistance OR lift*) AND (depression OR dysthymia) AND (randomized AND controlled AND trial OR clinical AND trial))

Web of Science

(exercis* OR aerobic* OR running OR jogging OR walk* OR hiking OR swim* OR aquatic* OR cycling OR bicycl* OR strength* and activit* OR fitness OR train* OR physical medicine OR resistance OR lift*) AND (depression OR dysthymia) AND (randomized controlled trial OR clinical trial) (Topic)

Heissel A, *et al. Br J Sports Med* 2023; 57:1025–1033. doi: 10.1136/bjsports-2022-106282

Supplementary Table 1. Data of Studies Included in Systematic Review

Study	Sample size (n)		Outcome[a]	Pre (mean (SD))		Post (mean (SD))		Intervention			Control group condition	Diagnosis
	Exercise	Control		Exercise	Control	Exercise	Control	Type of intervention	Wks	Sessions per wk/ time per session		
Abdelbasset et al,[45] 2019	23	23	PHQ-9	16.12 (3.10)	15.95 (3.14)	3.65 (1.21)	8.54 (2.14)	Aerobic exercise	12	3/30-60 min[b]	Usual care (standard medical treatment)	Depressive symptoms
Blumenthal et al,[66] 2007 (supervised exercise)	51	49	HAM-D, BDI-II	16.40 (3.70)	17.20 (4.30)	9.20 (6.10)	11.00 (7.00)	Aerobic exercise	16	3/45 min	Placebo	MDD
Blumenthal et al,[66] 2007 (homebased exercise)	53	49	HAM-D, BDI-II	17.30 (4.60)	17.20 (4.30)	10.20 (6.70)	11.00 (7.00)	Aerobic exercise	16	3/45 min	Placebo	MDD
Brenes et al,[46] 2007	14	12	HAM-D, GDS	12.70 (3.40)	9.50 (3.70)	7.80 (4.30)	10.90 (5.80)	Mixed exercise	16	3/60 min	Usual care (phone calls to discuss health status)	Depressive symptoms
Carneiro et al,[67] 2015	9	10	BDI-II, DASS-21	45.56 (9.65)	46.10 (11.52)	34.89 (10.56)	49.40 (16.72)	Aerobic exercise	16	3/45 min	Usual care (pharmacological therapy)	MDD & Dysthymia
Chau et al,[68] 2020	42	42	HAM-D, DASS-21	25.93 (6.59)	25.62 (8.03)	12.57 (8.06)	25.58 (7.81)	Mixed exercise	12	3/60 min	Wait-list	MDD
Cheung et al,[48] 2018	17	17	HAM-D	18.50 (3.20)	19.40 (3.60)	9.80 (5.60)	14.50 (5.30)	Aerobic exercise	12	3/40 min	Usual care (usual psychiatric care)	MDD

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Danielsson et al,[70] 2014	22	20	MADRS	24.60 (4.10)	23.40 (5.00)	-10.30[c] (1.60)	-4.60[c] (1.70)	Aerobic exercise	10	2/60 min	Usual care (standard care)	MDD
Doose et al,[71] 2015	30	16	HAM-D, BDI-II	13.97 (2.58)	14.67 (3.91)	-9.48[d] (11.38-7.58)	-1.24[d] (-3.85-1.37)	Aerobic exercise	8	3/60 min	Wait-list	MDD
Doyne et al,[47] 1987 (running condition)	14	11	HAM-D, BDI, DACL	13.36 (4.43)	12.58 (4.58)	6.64 (3.61)	13.58 (5.14)	Aerobic exercise	8	4/25 min	Wait-list	Depressive symptoms
Doyne et al,[47] 1987 (weightlifting)	15	11	HAM-D, BDI, DACL	13.80 (7.78)	12.58 (4.58)	5.13 (3.44)	13.58 (5.14)	Resistance exercise	8	4/45 min	Wait-list	Depressive symptoms
Epstein,[72] 1986	7	10	BDI, SDS	25.29 (6.52)	22.00 (7.16)	9.00 (10.94)	16.30 (7.44)	Aerobic exercise	8	3/30 min	Wait-list	MDD
Gao et al,[48] 2016	26	24	SDS	0.58 (0.10)	0.59 (0.11)	0.43 (0.09)	0.57 (0.10)	Aerobic exercise	12	5/60-90 min[b]	Usual care (lived normally without intervention)	Depressive symptoms
Gary et al,[73] 2010	20	17	HAM-D	15.40 (3.40)	15.20 (3.60)	8.40 (5.60)	9.30 (4.90)	Aerobic exercise	12	3/weekly increase by 5 min to 60 min[b]	Usual care (usually provided health care)	MDD
Hallgren et al,[49] 2015	317	312	MADRS	22.20 (6.80)	20.90 (7.50)	11.30 (7.90)	13.80 (8.90)	Mixed exercise	12	3/60 min	Usual care (treatment as usual)	Depressive symptoms
Hemat-Far et al,[50] 2012	10	10	BDI	25.00 (5.30)	23.80 (4.70)	16.60 (6.90)	22.80 (4.90)	Aerobic exercise	8	3/40-60 min[b]	Usual care (pursue normal live)	Depressive symptoms
Huang et al,[51] 2015	19	20	GDS-15	8.63 (3.56)	7.20 (2.19)	4.63 (2.49)	5.20 (1.69)	Mixed exercise	12	3/50 min	Usual care	Depressive symptoms

La Rocque et al,[74] 2020	20	15	HAM-D	12.00 (3.77)	13.93 (3.71)	6.75 (6.05)	16.33 (5.84)	Aerobic exercise	8	2/50-60 min[b]	Wait-list	MDD
Legrand et al,[52] 2014	22	22	BDI-II	21.67 (6.78)	19.25 (9.34)	12.80 (4.38)	19.67 (8.17)	Aerobic exercise	7	2/30 min	Wait-list	Depressive symptoms
Lok et al,[53] 2017	40	40	BDI	17.46 (8.07)	19.89 (5.00)	11.89 (4.23)	17.71 (4.61)	Aerobic exercise	10	4/70 min	Wait-list	Depressive symptoms
Makizako et al,[55] 2019	30	29	GDS-15	7.10 (2.50)	6.40 (2.50)	5.30 (2.50)	5.10 (3.10)	Mixed exercise	20	1/90 min	Health education	Depressive symptoms
Mather et al,[44] 2002	43	43	HRSD	16.70 (10.83)[e]	17.40 (10.83)[e]	12.60 (7.02)	13.70 (6.02)	Mixed exercise	10	2/55-65 min[b]	Health education	Depressive symptoms
McNeil et al,[54] 1991	10	10	BDI	16.60 (3.10)	15.20 (2.40)	11.10 (3.00)	14.70 (3.70)	Aerobic exercise	6	3/20-40 min[b]	Wait-list	Depressive symptoms
Mota-Pereira et al,[75] 2011	19	10	HAM-D, BDI	19.32 (1.69)	13.00 (1.42)	12.48 (1.74)	13.60 (1.34)	Aerobic exercise	6	5/30-45 min[b]	Usual care (pharmacothe rapy)	MDD
Mutrie,[56] 1986 (aerobic exercise)	9	7	BDI, POMS	22.44 (6.82)	23.00 (5.80)	9.46 (4.28)	21.42 (5.26)	Aerobic exercise	4	3/20 min	Wait-list	Depressive symptoms
Mutrie,[56] 1986 (strength & stretching)	8	7	BDI, POMS	21.86 (4.21)	23.00 (5.80)	14.63 (7.63)	21.42 (5.26)	Mixed exercise	4	3/20 min	Wait-list	Depressive symptoms
Nabkasorn et al,[57] 2006	28	31	CES-D	20.10 (0.90)	18.80 (7.00)	14.40 (4.12)	17.50 (4.23)	Aerobic exercise	8	5/50 min	Usual care (usual daily routine)	Depressive symptoms

Oertel-Knöchel et al,[76] 2014	8	8	BDI-II	26.25 (10.21)	25.50 (11.83)	18.75 (9.50)	24.00 (13.09)	Aerobic exercise	4	3/75 min	Wait-list	MDD
Orth,[58] 1979	3	2	DACL, MMPI	14.00 (3.60)	19.50 (7.00)	7.00 (6.50)	16.50 (2.12)	Aerobic exercise	4	5/30 min	Self-monitoring	Depressive symptoms
Pfaff et al,[65] 2014	108	92	SIGMA	21.02 (9.4)	21.66 (8.4)	14.43 (9.8)	14.32 (9.3)	Mixed exercise	12	5/30 min + 3x resistance training	Usual care (usual medical care)	MDD
Pilu et al,[77] 2007	10	20	HAM-D	20.50 (7.10)	19.30 (5.70)	8.10 (5.20)	16.70 (9.10)	Resistance exercise	32	2/60 min	Usual care (pharmacothe rapy)	MDD
Prakhinkit et al,[59] 2014 (traditional walking)	15	15	TGDS-30	17.30 (1.00)	17.90 (0.70)	15.50 (0.90)	18.60 (0.60)	Aerobic exercise	12	3/20-30 min[b]	Usual care (sedentary control group)	Depressive symptoms
Prakhinkit et al,[59] 2014 (Buddhism walking)	15	15	TGDS-30	16.08 (0.90)	17.90 (0.70)	8.60 (0.60)	18.60 (0.60)	Aerobic exercise	12	3/20-30 min[b]	Usual care (sedentary control group)	Depressive symptoms
Roy et al,[78] 2018	23	23	HAM-D, DSSS	19.30 (4.83)	16.55 (4.14)	15.00 (4.93)	13.85 (3.16)	Aerobic exercise	1.5	7/20 min	Usual care (treatment as usual)	MDD
Schneider et al,[79] 2016	15	14	HAM-D, BDI-II	15.70 (4.60)	17.40 (4.30)	10.60 (6.10)	5.80 (5.41)	Mixed exercise	24	Biweekly 2/20-65 min[b]	Usual care (enhanced usual care condition)	MDD
Schuch et al,[80] 2015	25	25	HAM-D	26.52 (1.80)	26.96 (2.70)	7.42 (4.47)	11.12 (4.47)	Aerobic exercise	12	3/unclear	Usual care (treatment as usual)	MDD
Setaro,[60] 1985	25	25	MMPI	68.92 (5.27)	68.56 (3.87)	62.00 (6.51)	69.88 (3.96)	Aerobic exercise	10	2/unclear	Usual care (no activity or treatment)	Depressive symptoms

Shahidi et al,[61] 2011	20	20	GDS-30	15.30 (5.40)	15.20 (3.90)	11.10 (6.20)	15.20 (6.10)	Aerobic exercise	N/A	Unclear/30 min	Unclear	Depressive symptoms
Sims et al,[62] 2006	14	18	GDS	12.64 (3.61)	12.22 (3.51)	12.23 (5.22)	12.00 (4.26)	Resistance exercise	10	3/unclear	Information and advice for local options of exercise	Depressive symptoms
Sims et al,[63] 2009	23	22	CES-D	15.43 (7.49)	23.27 (8.86)	15.13 (8.49)	20.62 (11.79)	Resistance exercise	10	2/unclear	Wait-list	Depressive symptoms
Singh et al,[81] 1997	17	15	HAM-D, DSM-IV, BDI, GDS	12.30 (0.90)	11.40 (1.00)	5.30 (1.30)	8.90 (1.30)	Resistance exercise	10	3/50 min	Health education	MDD & Dysthymia
Singh et al,[82] 2005 (high intensity)	20	20	HAM-D, GDS	18.00 (4.50)	19.70 (3.90)	8.50 (5.50)	14.40 (6.00)	Resistance exercise	8	3/65 min	Usual care (usual care from GP)	MDD & Dysthymia
Singh et al,[82] 2005 (low intensity)	20	20	HAM-D, GDS	19.50 (5.30)	19.70 (3.90)	12.40 (6.30)	14.40 (6.00)	Resistance exercise	8	3/65 min	Usual care (usual care from GP)	MDD & Dysthymia
Veale et al,[83] 1992	48	35	CIS, BDI	35.87 (1.07)	37.57 (1.49)	16.80 (2.06)	26.39 (2.50)	Aerobic exercise	12	3/unclear	Usual care (usual psychiatric treatment)	MDD
Vieira et al,[84] 2007	9	9	HAM-D	30.22 (3.04)	31.11 (3.51)	24.88 (2.13)	32.66 (3.12)	Aerobic exercise	12	2/50 min	Usual care	MDD
Williams et al,[64] 2008 (mixed exercise)	16	12	CSDD	11.05 (2.79)	14.58 (5.75)	8.37 (5.78)	11.75 (8.10)	Mixed exercise	16	5/30 min	Social conversation	Depressive symptoms
Williams et al,[64] 2008 (supervised walking)	17	12	CSDD	12.18 (5.00)	14.58 (5.75)	9.68 (6.57)	11.75 (8.10)	Aerobic exercise	16	5/30 min	Social conversation	Depressive symptoms

Note. BDI=Beck Depression Inventory. CES=Centre for Epidemiologic Studies Depression. CIS=Clinical Interview Schedule. CSDD=Cornel Scale for Depression in Dementia. DACL=Depression Adjective Check Lists. DASS=Depression Anxiety Stress Scale. DSSS=Depression Somatic Symptom scale. GDS=Geriatric Depression Scale. HAM-D=Hamilton Depression Scale. MADRS=Montgomery-Asberg Depression Rating Scale. MDD=Major Depressive Disorder. MMPI=Minnesota Multiphasic Personality Inventory. PHQ-9=Patient Health Questionnaire. POMS=Profile of Mood States. TGDS=Thai Geriatric Depression Scale. SDS=Severity of Dependence Scale. HRSD=Hamilton Rating Scale for Depression. DACL=Depression Adjective Checklist. SIGMA=screening tool for the assessment and design of human-centered work activities. Usual care=no treatment but including psychiatric, pharmaco-, and psychotherapeutic treatment if required. Mixed exercise=aerobic and resistance exercise. Studies with two exercise groups were compared to the same control group. [a]In case of more than one outcome, mean and SD of the first named outcome are reported. Primary outcome as indicated by authors or, if not indicated, rated by a clinician were included in the main analyses. [b]For varying minutes per session, the average was used for calculations. [c]Values are presented as mean changes with standard errors. [d]Values are presented as least Square Means (95%CI). [e]Calculation of SDs from confidence intervals.

Supplementary Table 2. List of excluded studies at full-text screening stage, with brief reasons

	Author	Reason for exclusion
1.	Abdelbasset et al, 2021	Non depressed
2.	Abedi et al, 2015	Non depressed
3.	Abrahao et al, 2015	Ineligible patient population
4.	Abrantes et al, 2017	Ineligible intervention
5.	Aider et al, 2014	Ineligible patient population
6.	Akandere et al, 2011	Non depressed
7.	Almeida et al, 2022	Ineligible intervention
8.	Alves et al, 2013	Non depressed
8.	Ansai et al, 2015	Non depressed
9.	Antunes et al, 2005	Non depressed
10.	Armstrong et al, 2004	Non depressed
11.	Bang et al, 2016	Non depressed
12.	Belvederri Murri et al, 2015	Medication
13.	Bernard, Ninot, Cyprien et al, 2015	Ineligible outcome
14.	Bernard, Ninot, Bernard et al, 2015	Non depressed
15.	Blumenthal et al, 1999	Medication
16.	Blumenthal et al, 2012	Non depressed
17.	Bolier et al, 2013	Ineligible intervention
18.	Bonnet, 2005	Ineligible intervention
19.	Bosscher, 1993	Ineligible comparator
20.	Boström et al, 2015	Non depressed
21.	Brinsley et al, 2022	Non depressed
21.	Brittle et al, 2009	Non depressed
22.	Brown et al, 2009	Non depressed
23.	Buettner, 2002	Non depressed
24.	Buschert et al, 2019	Ineligible comparator
25.	Callaghan et al, 2011	Ineligible comparator
26.	Carneiro et al, 2016	Non depressed
27.	Carta et al, 2022	Non depressed
28.	Carter et al. 2022	Ineligible age
29.	Chalder et al, 2012	Ineligible intervention
28.	Chan et al, 2012	Ineligible intervention
29.	Chen et al, 2017	Non depressed
30.	Chu et al, 2008	Ineligible comparator
31.	Ciccolo et al, 2022	Ineligible intervention
31.	Conradsson et al, 2010	Non depressed
32.	Courneya et al, 2007	Ineligible patient population
33.	Craft et al, 2007	Ineligible comparator
34.	de la Cerda et al, 2011	Medication
35.	de Lima et al, 2016	Non depressed
36.	Dalgas et al, 2010	Ineligible patient population
37.	Damush et al, 1999	Non depressed

38.	Deschamps et al, 2015	Ineligible comparator
39.	Dorscht et al, 2019	Ineligible comparator
40.	Dunn et al, 2002	No control group
41.	Dunn et al, 2005	Ineligible comparator
42.	Ellard et al, 2014	Non depressed
43.	Euteneuer et al, 2017	Ineligible intervention
44.	Eyigor et al, 2010	Ineligible comparator
45.	Fang et al, 2013	Ineligible comparator
46.	Foley et al, 2008	Ineligible comparator
47.	Forsyth et al, 2015	Ineligible patient population
48.	Geliebter et al, 1997	Non depressed
49.	Gerber et al, 2013	Non depressed
50.	Gerber et al, 2020	Ineligible comparator
51.	Goldfield et al, 2015	Ineligible patient population
52.	Greer et al, 2015	No control group
53.	Guifeng et al, 2015	Ineligible comparator
54.	Gujral et al, 2019	Medication
55.	Häkkinen et al, 2001	Ineligible patient population
56.	Hanssen et al, 2018	Ineligible comparator
57.	Haussleiter et al, 2020	Ineligible comparator
58.	He et al, 2022	Ineligible comparator
58.	Helgadottir et al, 2018	Secondary data
59.	Herman et al, 2002	Duplicate
60.	Herring et al, 2011	Ineligible patient population
61.	Hess-Homeier, 1981	Ineligible intervention
62.	Ho et al, 2014	Ineligible comparator
63.	Hoffmann et al, 2008	Duplicate
64.	Hoffmann et al, 2010	Ineligible patient population
65.	Holmgren et al, 2010	Non depressed
66.	Huipeng et al, 2013	Ineligible comparator
67.	Imboden et al, 2019	Ineligible comparator
68.	Isaksen et al, 2016	Non depressed
69.	Jaggers et al, 2015	Non depressed
70.	Jin et al, 2019	Non depressed
71.	Jinchun et al, 2015	Ineligible comparator
72.	Kahl et al, 2015	Ineligible outcome
73.	Karahan et al, 2017	Ineligible patient population
74.	Karg et al, 2020	Ineligible comparator
75.	Kekäläinen et al, 2018	Non depressed
76.	Kerling et al, 2015	Ineligible comparator
77.	Kerr et al, 2008	Non depressed
78.	Kerse et al, 2010	Non depressed
79.	Kim et al, 2019	Non depressed
80.	Klein et al, 1985	Ineligible comparator
81.	Knapen et al, 2003	Ineligible patient population
82.	Knubben et al, 2007	Ineligible intervention
83.	Kraepelien et al, 2015	Secondary data
84.	Kratz et al, 2014	Ineligible intervention

85. Krogh et al, 2007	Ineligible comparator
86. Krogh et al, 2009	Ineligible comparator
87. Krogh et al, 2012	Ineligible comparator
88. Krogh et al, 2013	Ineligible outcome
89. Kruisdijk et al, 2012	Ineligible patient population
90. Kruisdijk et al, 2019	Ineligible patient population
91. Kruisdijk et al, 2020	Ineligible patient population
92. Lau et al, 2004	Ineligible patient population
93. Le Cheminant et al, 2014	Non depressed
94. Legrand et al, 2007	Medication
95. Legrand et al, 2015	Medication
96. Levinger et al, 2011	Non depressed
97. Li et al, 2019	Ineligible intervention
98. Lincoln et al, 2011	Ineligible patient population
99. Lopez-Torres Hidalgo et al, 2019	No RCT
100. Mailey et al, 2010	Ineligible patient population
101. Majumder et al, 2015	Ineligible patient population
102. Martins et al, 2011	Non depressed
103. Martinsen et al, 1985	Ineligible comparator
104. Martiny et al, 2015	Ineligible comparator
105. Mata et al, 2012	Non depressed
106. Matthews et al, 2011	Non depressed
107. Mendham et al, 2021	Non depressed
108. Meyer et al, 2022	Ineligible intervention
108. Midtgaard et al, 2012	No control group
109. Moraes et al, 2022	Ineligible comparator
109. Nasstasia et al, 2019	Ineligible patient population
110. Naumann et al, 2020	Ineligible comparator
111. Neidig et al, 2003	Non depressed
112. Neviani et al, 2017	Secondary data
113. Ng et al, 2017	Non depressed
114. Niederer et al, 2017	Ineligible comparator
115. Nordbrandt et al, 2015	Non depressed
116. Norvell et al, 1993	Non depressed
117. Nyberg et al, 2015	Ineligible patient population
118. Oeland et al, 2010	Ineligible patient population
119. Ökzan et al, 2020	Non depressed
120. Olson et al, 2017	Ineligible comparator
121. O'Reilly et al, 1999	Non depressed
122. Palmer et al, 1995	Non depressed
123. Patten et al, 2017	Ineligible intervention
124. Payne et al, 2008	Non depressed
125. Penninx et al, 2002	Non depressed
126. Pentecost et al, 2015	Ineligible intervention
127. Pereira et al, 2013	Ineligible comparator
128. Perna et al, 2010	Non depressed
129. Peterson et al, 2014	Non depressed
130. Philippot et al, 2022	Ineligible comparator

130. Pibernik-Okanovic et al, 2011	Ineligible patient population
131. Piette et al, 2011	Ineligible intervention
132. Porter et al, 2011	Non depressed
133. Puterman et al, 2021	Non depressed
134. Putiri et al, 2012	Ineligible patient population
135. Prakhinkit et al, 2014	No control group
136. Rantakokko et al, 2015	Non depressed
137. Razazian et al, 2016	Non depressed
138. Reuter, 1984	Ineligible intervention
139. Rueter, 1980	Ineligible comparator
140. Sadeghi et al, 2016	Ineligible comparator
141. Salehi et al, 2016	Medication
142. Sarsan et al, 2006	Non depressed
143. Schmitter et al, 2020	Study protocol
144. Scholz et al, 2006	Non depressed
145. Sherwood et al, 2016	Ineligible outcome
146. Singh et al, 2001	Secondary data
147. Siqueira et al, 2016	Medication
148. Sparrow et al, 2011	Non depressed
149. Steiner, Bigatti, Ang et al, 2015	Non depressed
150. Steiner, Richardson, Himle et al, 2015	Ineligible intervention
151. Ström et al, 2013	Ineligible intervention
152. Tapps et al, 2013	Non depressed
153. Teychenne et al, 2019	Non depressed
154. Teychenne et al, 2021	Ineligible patient population
155. Toni et al, 2016	Secondary data
156. Trivedi et al, 2011	Ineligible comparator
157. Van der Kooi et al, 2007	Ineligible patient population
158. Van der Waerden et al, 2013	Non depressed
159. Vankova et al, 2014	Non depressed
160. Verhoeven et al. 2022	Ineligible comparator
160. Verrusio et al, 2014	Ineligible intervention
161. Vieira et al, 2018	Non depressed
162. Vizza et al, 2016	Ineligible patient population
163. Wang et al, 2022	Ineligible intervention
163. Zanetidou et al, 2017	Secondary data
164. Zanuso et al, 2012	Non depressed
165. Zeibig et al, 2021	Ineligible patient population
166. Zeng et al, 2020	Ineligible intervention

Note. Of the k=218 papers reviewed in full-text, k=177 were excluded.

Supplementary Table 3. Risk of Bias Assessment (RoB2)

Study	Intervention group	Comparator	D1	D2	D3	D4	D5	Overall
Abdelbasset et al,[42] 2019	Aerobic exercise	Usual care	!	+	+	+	+	!
Blumenthal et al,[63] 2007	Aerobic exercise	Placebo	+	+	+	+	+	+
Brenes et al,[43] 2007	Mixed exercise	Usual care	!	+	+	-	!	-
Carneiro et al,[64] 2015	Usual care*aerobic exercise	Usual care	+	!	+	-	!	-
Chau et al,[65] 2020	Mixed exercise	Wait-list	+	+	+	+	+	+
Cheung et al,[48] 2018	Aerobic exercise	Usual care	+	+	+	+	+	+
Danielsson et al,[67] 2014	Usual care*aerobic exercise	Usual care	+	+	+	+	+	+
Doose et al,[68] 2015	Aerobic exercise	Wait-list	!	+	+	-	+	-
Doyne et al,[44] 1987	Mixed exercise	Wait-list	+	+	-	+	+	-
Epstein,[69] 1986	Aerobic exercise	Wait-list	!	-	!	!	!	-
Gao et al,[45] 2016	Aerobic exercise	Usual care	+	!	+	!	+	!
Gary et al,[70] 2010	Aerobic exercise	Usual care	!	!	+	+	+	!
Hallgren et al,[46] 2015	Mixed exercise	Usual care	+	+	+	+	+	+
Hemat-Far et al,[47] 2012	Aerobic exercise	Usual care	-	!	+	-	+	-

Huang et al,[48] 2015	Mixed exercise	Usual care	
La Rocque et al,[71] 2020	Aerobic exercise	Wait-list	
Legrand et al,[49] 2014	Aerobic exercise	Wait-list	
Lok et al,[50] 2017	Aerobic exercise	Wait-list	
Makizako et al,[52] 2019	Mixed exercise	Health education	
Mather et al,[41] 2002	Mixed exercise	Health education	
McNeil et al,[51] 1991	Aerobic exercise	Wait-list	
Mota-Pereira et al,[72] 2011	Usual care*aerobic exercise	Usual care	
Mutrie,[53] 1986	Mixed exercise	Wait-list	
Nabkasorn et al,[54] 2006	Aerobic exercise	Usual care	
Oertel-Knöchel et al,[73] 2014	Aerobic exercise	Wait-list	
Orth,[55] 1979	Aerobic exercise	Self-monitoring	
Pfaff et al,[62] 2014	Mixed exercise	Usual care	
Pilu et al,[74] 2007	Usual care*resistance exercise	Usual care	
Prakhinkit et al,[56] 2014	Aerobic exercise	Usual care	
Roy et al,[75] 2018	Aerobic exercise	Usual care	

Schneider et al,[76] 2016	Mixed exercise	Usual care	+	+	+	+	+	+
Schuch et al,[77] 2015	Aerobic exercise	Usual care	+	+	+	+	+	+
Setaro,[57] 1985	Aerobic exercise	Usual care	+	+	+	+	+	+
Shahidi et al,[58] 2011	Aerobic exercise	Unclear	-	-	-	!	!	-
Sims et al,[59] 2006	Resistance exercise	Advise for activity	+	+	+	!	-	-
Sims et al,[60] 2009	Resistance exercise	Wait-list	+	+	+	!	-	-
Singh et al,[78] 1997	Resistance exercise	Health education	-	!	+	-	!	-
Singh et al,[79] 2005	Resistance exercise	Usual care	+	+	+	+	+	+
Veale et al,[80] 1992	Aerobic exercise	Usual care	-	-	+	!	!	-
Vieira et al,[81] 2007	Aerobic exercise	Usual care	!	+	+	-	!	-
Williams et al,[61] 2008	Mixed exercise	Social conversation	+	+	+	+	-	-

Note. + = low risk, ! = some concerns, - = high risk, D1 = Randomisation process, D2 = Deviations from the intended interventions, D3 = Missing outcome data, D4 = Measurement of the outcome, D5 = Selection of the reported result.

Supplementary Table 4. Descriptives of Included Studies

Author, year, country	Age (mean or range)		Gender (% females)		Antidepressant use (% taking)		Thesis or Peer-reviewed article
	Exercise	Control	Exercise	Control	Exercise	Control	
Abdelbasset et al,[42] 2019, Saudi-Arabia	52.60	52.90	31.00	26.00	N/A	N/A	Peer-reviewed
Blumenthal et al,[63] 2007, USA	52.00	52.00	75.00	77.00	0	0	Peer-reviewed
Brenes et al,[43] 2007, USA	73.50	73.90	64.00	50.00	0	0	Peer-reviewed
Carneiro et al,[64] 2015, Portugal	52.78	47.80	100	100	100	100	Peer-reviewed
Chau et al,[65] 2020, Hong Kong	N/A	N/A	74.00	86.00	83.00	83.00	Peer-reviewed
Cheung et al,[48] 2018, Hong Kong/ China	47.40	48.10	88.20	70.60	94.12	88.24	Peer-reviewed
Danielsson et al,[67] 2014, Sweden	44.70	46.30	73.00	80.00	100	100	Peer-reviewed
Doose et al,[68] 2015, Germany	46.10	51.25	60.00	68.80	50.00	75.00	Peer-reviewed
Doyne et al,[44] 1987, USA	28.58	29.46	100	100	0	0	Peer-reviewed
Epstein,[69] 1986, USA	24-60	24-60	N/A	N/A	N/A	N/A	Thesis
Gao et al,[45] 2016, China	54.50	53.50	100	100	0	0	Peer-reviewed
Gary et al,[70] 2010, USA	30-70	30-70	N/A	N/A	N/A	N/A	Peer-reviewed

Hallgren et al,[46] 2015, Sweden	18-71	18-71	N/A	N/A	31.00	24.00	Peer-reviewed
Hemat-Far et al,[47] 2012, Iran	18-25	18-25	100	100	N/A	N/A	Peer-reviewed
Huang et al,[48] 2015, Taiwan	76.42	75.85	57.90	55.00	0	0	Peer-reviewed
La Rocque et al,[71] 2020, Canada	34.85	29.40	100	100	20.00	46.70	Peer-reviewed
Legrand et al,[49] 2014, France	19 - 30	19-30	100	100	0	0	Peer-reviewed
Lok et al,[50] 2017, Turkey	≥65.00	≥65.00	42.50	47.50	0	0	Peer-reviewed
Makizako et al,[52] 2019, Japan	73.10	73.00	53.30	51.70	0	0	Peer-reviewed
Mather et al,[41] 2002, United Kingdom	63.70	66.20	84.00	53.00	100	100	Peer-reviewed
McNeil et al,[51] 1991, Canada	N/A	N/A	N/A	N/A	0	0	Peer-reviewed
Mota-Pereira et al,[72] 2011, Portugal	48.68	45.33	57.90	80.00	100	100	Peer-reviewed
Mutrie,[53] 1986, United Kingdom	45.70	41.10	N/A	N/A	0	0	Thesis
Nabkasorn et al,[54] 2006, Thailand	18.70	18.80	100	100	0	0	Peer-reviewed
Oertel-Knöchel et al,[73] 2014, Germany	36.60	42.20	50.00	37.50	100	100	Peer-reviewed
Orth,[55] 1979, USA	N/A	N/A	N/A	N/A	N/A	N/A	Thesis
Pfaff et al,[62] 2014, Australia	61.20	60.70	62.00	64.10	60.20	47.80	Peer-reviewed

Pilu et al,[74] 2007, Italy	40-60	40-60	100	100	100	100	Peer-reviewed
Prakhinkit et al,[56] 2014, Thailand	74.80	81.00	100	100	0	0	Peer-reviewed
Roy et al,[75] 2018, India	31.10	32.90	100	100	N/A	N/A	Peer-reviewed
Schneider et al,[76] 2016, USA	53.30	53.60	100	100	N/A	N/A	Peer-reviewed
Schuch et al,[77] 2015, Brazil	38.84	41.76	72.00	76.00	84.00	96.00	Peer-reviewed
Setaro,[57] 1985, USA	N/A	N/A	N/A	N/A	N/A	N/A	Thesis
Shahidi et al,[58] 2011, Iran	65.70	68.40	100	100	N/A	N/A	Peer-reviewed
Sims et al,[59] 2006, Australia	75.25	74.30	85.71	50.00	0	0	Peer-reviewed
Sims et al,[60] 2009, Australia	67.95	66.27	39.00	41.00	0	0	Peer-reviewed
Singh et al,[78] 1997, USA	70.00	72.00	70.60	53.30	0	0	Peer-reviewed
Singh et al,[79] 2005, Australia	69.00	69.00	55.00	50.00	0	0	Peer-reviewed
Veale et al,[80] 1992, United Kingdom	19-58	19-58	N/A	N/A	45.00	34.00	Peer-reviewed
Vieira et al,[81] 2007, Brazil	N/A	N/A	100	100	100	100	Peer-reviewed
Williams et al,[61] 2008, USA	71-101	71-101	N/A	N/A	36.00	36.00	Peer-reviewed

Note. Not available (N/A).

Supplementary Table 5. Characteristics of Included Studies

Study	Comorbidities	Group exercise	Setting	Intensity	Supervised	Type of supervision
Abdelbasset et al,[42] 2019	Yes	Unclear	Outpatient	Moderate	Supervised	Unclear
Blumenthal et al,[63] 2007 (supervised exercise)	No	Yes	Outpatient	Vigorous	Supervised	Unclear
Blumenthal et al,[63] 2007 (homebased exercise)	No	No	Outpatient	Vigorous	Unsupervised	None
Brenes et al,[43] 2007	No	Yes	Outpatient	Unclear	Supervised	Exercise professional (certified ACSM exercise leader)
Carneiro et al,[64] 2015	No	Yes	Outpatient	Moderate	Supervised	Exercise professional (physical training teacher)
Chau et al,[65] 2020	No	Yes	Inpatient	Moderate	Supervised	Exercise professional (physiotherapist)
Cheung et al,[48] 2018	No	No	Outpatient	Moderate	Supervised	Exercise professional (qualified personal trainer)
Danielsson et al,[67] 2014	No	No	Outpatient	Vigorous	Supervised	Exercise professional (physiotherapist)
Doose et al,[68] 2015	No	Yes	Outpatient	Light	Supervised	Other (teams of coaches and medical students)
Doyne et al,[44] 1987	No	No	Outpatient	Vigorous	Supervised	Other (trained undergraduate exercise

(running condition)						monitors)
Doyne et al,[44] 1987 (weightlifting)	No	No	Outpatient	Moderate	Supervised	Other (trained undergraduate exercise monitors)
Epstein,[69] 1986	No	Yes	Outpatient	Moderate	Supervised	Other (clinical graduate students)
Gao et al,[45] 2016	No	Yes	Outpatient	Moderate	Supervised	Exercise professional (professional coach and doctor)
Gary et al,[70] 2010	Yes	No	Outpatient	Moderate	Unsupervised	None
Hallgren et al,[46] 2015	No	Yes	Outpatient	Light to vigorous[b]	Supervised	N/A
Hemat-Far et al,[47] 2012	No	Unclear	Outpatient	Moderate	Supervised	Other (researcher)
Huang et al,[48] 2015	No	Yes	Outpatient	Moderate	Supervised	Exercise professional (trained physical fitness instructor)
La Rocque et al,[71] 2020	Yes	Yes	Outpatient	Moderate	Supervised	Exercise professional (professional exercise instructor)
Legrand et al,[49] 2014	No	Yes	Outpatient	Moderate	Supervised	Exercise professional (certified zumba instructor)
Lok et al,[50] 2017	Unclear	Yes	Outpatient	Moderate	Supervised	Other (researcher)
Makizako et al,[52] 2019	Yes	Yes	Outpatient	Moderate	Supervised	Exercise professional (trained instructors)
Mather et al,[41] 2002	No	Yes	Outpatient	Unclear	Supervised	Other (instructor)
McNeil et al,[51] 1991	No	No	Outpatient	Vigorous	66% supervised & 33% unsupervised[c]	Other (undergraduate psychology student)

Mota-Pereira et al,[72] 2011	No	No	Outpatient	Moderate	20% supervised & 80% unsupervised[c]	Exercise professional
Mutrie,[53] 1986 (aerobic exercise)	No	Unclear	Outpatient	Moderate	Unsupervised	None
Mutrie,[53] 1986 (strength & stretching)	No	Unclear	Outpatient	Vigorous	Unsupervised	None
Nabkasorn et al,[54] 2006	No	Yes	Outpatient	Moderate	Supervised	Exercise professional (physical fitness instructor)
Oertel-Knöchel et al,[73] 2014	No	Yes	Inpatient	Moderate	Supervised	Exercise professional (trained physical fitness instructor
Orth,[55] 1979	No	Unclear	Outpatient	Moderate	Unsupervised	None
Pfaff et al,[62] 2014	No	No	Outpatient	Moderate to vigorous	Unsupervised	None
Pilu et al,[74] 2007	No	Yes	Outpatient	Unclear	Supervised	Exercise professional (skilled instructor with isef (physical education) diploma, psychology degree and post-degree diploma in sport psychopathology (MS)
Prakhinkit et al,[56] 2014 (traditional walking)	No	Unclear	Outpatient	Moderate	Supervised	Other (researcher)
Prakhinkit et al,[56] 2014 (Buddhism walking)	No	Unclear	Outpatient	Moderate	Supervised	Other (researcher)
Roy et al,[75] 2018	Unclear	Yes	Inpatient	Moderate	Supervised	Other (registered nurse)
Schneider et al,[76] 2016	Yes	Yes[a]	Outpatient	Moderate	Supervised	Exercise professional (pilates/yoga

						instructor)
Schuch et al,[77] 2015	No	No	Inpatients	Unclear	Supervised	Exercise professional (researcher and sport-scientist)
Setaro,[57] 1985	No	Yes	Outpatient	Unclear	Supervised	Exercise professional (certified aerobic dance instructor)
Shahidi et al,[58] 2011	No	Yes	Outpatient	Unclear	Unclear	Unclear
Sims et al,[59] 2006	No	No	Outpatient	Vigorous	Supervised	Unclear
Sims et al,[60] 2009	Yes	Yes	Outpatient	Vigorous	Supervised	Exercise professional (accredited fitness trainer)
Singh et al,[78] 1997	No	Yes	Outpatient	Vigorous	Supervised	Other (researcher/principal investigator)
Singh et al,[79] 2005 (high intensity)	No	Yes	Outpatient	Vigorous	Supervised	Unclear
Singh et al,[79] 2005 (low intensity)	No	Yes	Outpatient	Light	Supervised	Unclear
Veale et al,[80] 1992	No	Yes	Outpatient	Unclear	Supervised	Unclear
Vieira et al,[81] 2007	No	Yes	Inpatient	Moderate	Supervised	Unclear
Williams et al,[61] 2008 (mixed exercise)	Yes	No	Outpatient	Unclear	Supervised	Other (graduate nursing or physical therapy students)
Williams et al,[61] 2008 (supervised walking)	Yes	No	Outpatients	Unclear	Supervised	Other (graduate nursing or physical therapy students)

Note. Not available (N/A). American College of Sports Medicine (ACSM). [a]Participants were asked to additionally train once a week at home. [b]Participants were randomized to light, moderate, and vigorous intensity exercise. In the subgroup analysis, this study was rated as moderate. [c]Study was rated as supervised in the subgroup analyses.

Supplementary Table 6. Subgroup Meta-analysis of Studies Included in the Quantitative Analyses with Low and Moderate Risk of Bias

Analysis	Number of RCTs	Meta analysis				Heterogeneity	Trim and fill effect size (95% CI) [adjusted studies]
		SMD	95% CI		p- value	I^2	
Main analysis	19	-0.717	-1.01	-0.43	**<.001**	82.372	-0.897 (-1.219; -0.575) [3]
Depression classification							
MDD[a]	11	-0.567	-0.94	-0.20	.003	78.114	Unchanged
Depressive symptoms	8	-0.951	-1.47	-0.43	**<.001**	87.373	-1.115 (-1.707; -0.523) [1]
Type of control condition							
Usual care	12	-0.763	-1.13	-0.40	**<.001**	83.728	-0.973 (-1.403; -0.543) [2]
Wait list	3	-1.315	-1.89	-0.74	**<.001**	46.548	-1.678 (-2.252; -1.105) [2]
Health education	2	-0.107	-0.44	0.23	.528	0.000	N/A
Intensity of exercise[b]							
Light	1	-0.293	-0.95	0.37	.383	0.000	N/A
Moderate	13	-0.775	-1.17	-0.38	**<.001**	85.562	-0.977 (-1.422; -0.532) [2]
Vigorous	4	-0.324	-0.61	-0.04	.028	28.767	-0.254 (-0.550; 0.043) [1, right of mean]
Exercise type[b]							
Aerobic	12	-0.891	-1.32	-0.46	**<.001**	81.277	-1.254 (-1.760; -0.747) [4]
Resistance	2	-0.508	-0.98	-0.04	.033	0.000	N/A
Mixed[c]	7	-0.396	-0.79	-0.00	.049	84.939	Unchanged
Group exercise[b]							
Yes	13	-0.646	-0.97	-0.38	**<.001**	80.129	Unchanged
No	6	-0.330	-0.58	-0.08	.010	33.470	-0.205 (-0.474; 0.063) [2, right of mean]
Supervision[b]							

Yes[d]	17	-0.769	-1.08	-0.46	**<.001**	82.500	-0.906 (-1.236; -0.576) [2]
No	4	-0.119	-0.34	0.10	.293	0.000	-0.098 (-0.308; 0.111) [2, right of mean]
Type of supervision[b]							
Exercise professional	11	-0.830	-1.22	-0.45	**<.001**	74.192	Unchanged
Other professional/ student	1	-0.061	-0.49	0.36	.778	0.000	N/A
Sample size intervention arm[b]							
n≥25	9	-0.516	-0.84	-0.19	**.002**	84.053	-0.576 (-0.890; -0.261) [1]
n<25	12	-0.801	-1.25	-0.35	**<.001**	76.648	-1.148 (-1.612; -0.683) [4]
n≥10	19	-0.665	-0.94	-0.39	**<.001**	83.059	Unchanged
n<10	2	-0.588	-1.52	0.34	.215	0.000	N/A

Note. See Supplement eTable 2, 3 and 4 for detailed categorization for each study. MDD=Major depressive Disorder; RCT=Randomized Controlled Trial, SMD=Standard mean difference. [a]Including 3 studies with MDD & Dysthymia[46,77,78]. [b]Data for a second intervention group within the same study were included for these analyses. [c]Mixed exercise=aerobic and resistance exercise. [d]Two studies were partly supervised, see Supplement Table 5.

Supplementary Table 7. Subgroup Analysis for Studies with MDD Diagnosis[a]

Analysis	Number of RCTs	Meta analysis				Heterogeneity	Trim and fill effect size (95% CI) [adjusted studies]
		SMD	95% CI		p- value	I^2	
Main analysis MDD	20	-0.998	-1.39	-0.61	**<.001**	85.746	-1.167 (-1.591; -0.742) [2]
Risk of bias							
Low risk of bias	9	-0.607	-1.03	-0.18	**.005**	82.240	-0.462 (-0.921; -0.003) [1, right of mean]
Some concerns	2	-0.300	-0.87	0.27	.302	0.000	N/A
High risk of bias	9	-1.687	-2.53	-0.84	**<.001**	89.056	Unchanged
Type of control condition							
Usual care	13	-0.762	-1.19	-0.34	**<.001**	81.767	-0.999 (-1.480; -0.518) [2]
Wait list	5	-1.443	-1.82	-1.07	**<.001**	18.443	-1.606 (-2.017; -1.195) [2]
Health education	1	-3.462	-4.56	-2.37	**<.001**	0.000	N/A
Intensity of exercise[b]							
Light	2	-1.041	-2.53	0.45	.170	88.867	N/A
Moderate	12	-1.012	-1.57	-0.45	**<.001**	86.889	-1.317 (-1.987; -0.639) [2]
Vigorous	5	-0.881	-1.62	-0.15	**.019**	88.544	-1.152 (-2.039; -0.265) [1]
Exercise type[b]							
Aerobic	15	-0.893	-1.29	-0.50	**<.001**	80.672	-1.084 (-1.535; -0.633) [2]
Resistance	4	-1.354	-2.48	-0.23	**.018**	87.859	-1.752 (-3.010; -0.499) [1]
Mixed[c]	3	-0.430	-1.62	0.77	.481	94.350	Unchanged
Group exercise[b]							
Yes	15	-0.985	-1.44	-0.53	**<.001**	84.222	Unchanged
No	7	-0.743	-1.29	-0.19	**.008**	85.582	-1.175 (-1.926; -0.424) [2]
Supervision[b]							
Yes	19	-1.066	-1.48	-0.66	**<.001**	84.441	-1.333 (-1.807; -0.860) [3]
No	3	-0.110	-0.33	0.11	.334	0.000	-0.078 (-0.265; 0.108) [2,

							right of mean]
Type of supervision[b]							
Exercise professional	10	-1.077	-1.64	-0.52	**<.001**	81.997	-1.450 (-2.037; -0.863) [3]
Other professional/ student	4	-1.664	-2.88	-0.45	**.007**	87.977	Unchanged
Sample size intervention arm[b]							
n≥25	6	-0.444	-0.91	0.02	.061	86.212	-0.530 (-0.969; -0.090) [1]
n<25	16	-1.144	-1.63	-0.66	**<.001**	82.403	-1.358 (-1.883; -0.834) [2]
n≥10	16	-0.671	-1.02	-0.32	**<.001**	83.953	-0.809 (-1.172; -0.447) [2]
n<10	6	-1.736	-2.70	-0.77	**<.001**	79.899	Unchanged

Note. [a]Including 3 studies with MDD & Dysthymia. [b]Data for a second intervention group within the same study were included for these analyses. [c]Mixed exercise=aerobic and resistance exercise.

Supplementary Table 8. Meta Regression of Moderators/Correlates of Effects of Exercise on Depression for Studies with Low and Moderate Risk of Bias

Moderator	Number of RCTs	β	95%CI		p-value	$R^{2\,c}$
Main exercise response						
Mean age exercise	16	0.013	-0.01	0.04	.272	0.00
Mean age control	16	0.015	-0.01	0.04	.206	0.00
Duration of trial (in weeks)[a]	21	0.064	0.00	0.13	**.039**	0.12
Weekly frequency[a]	21	-0.005	-0.18	0.17	.954	0.00
Minutes per session[a]	19	-0.004	-0.02	0.02	.707	0.00
Sample size[b]	19	0.001	-0.00	0.00	.483	0.00
MDD (+ Dysthymia) only						
Mean age exercise	10	0.021	-0.00	0.04	.078	0.39
Mean age control	10	0.022	-0.00	0.05	.052	0.46
Duration of trial (in weeks)[a]	13	0.070	0.01	0.14	**.034**	0.26
Weekly frequency[a]	13	0.049	-0.15	0.24	.623	0.00
Minutes per session[a]	12	-0.021	-0.05	0.00	.095	0.26
Sample size[b]	11	0.002	-0.01	0.01	.614	0.00

Note. [a]data for a second intervention group within the same study were included for these analyses. [b]Average sample size pre-post intervention. c R2 equal to R2 analog.

Supplementary Figure 1. Funnel Plot of Standard Error by SMD