

Group arts interventions for depression and anxiety among older adults: a systematic review and meta-analysis

In the format provided by the
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Supplementary Materials

Appendix A

Study Summary Table

Table 1. Characteristics of Extracted Studies

Study	Design	Outcome	Outcome Measure	Demographics	Intervention Type	Intervention length and dose	Setting Information	Art Information	Post Intervention Results Summary
Adam et al. 2016	Non-Randomised Control group type= active control	Depression	HADS-D	N = 84	Non-Therapy	Length in weeks= 6	Intervention setting = care-home Country = Malaysia	Engagement Type= participatory Art Type = dance	Repeated ANOVA (No test statistics reported); Significantly lower depression ($p<.001$; $\eta^2=.35$) and anxiety ($p<.001$; $\eta^2=.29$) scores in int group compared with ctrl
		Anxiety	HADS-A	Mean Age = 70.89 (8.19)		No. of sessions = 12			
				Sex = 50% F		Length of session (mins) = 60			
				Ethnicity/Race = no info					
Ahessy 2016	Randomised Control group type: usual activities	Depression	Cornell Scale for Depression in Dementia	N = 36	Therapy	Length in weeks= 12	Intervention setting = care-home Country = Ireland	Engagement type= participatory Art type = music	Paired and unpaired t-tests (No test statistics reported); Significantly lower depression scores in int group compared with ctrl group ($p=.003$).
				Mean Age = 83.5		No. of sessions = 12			
				Sex = 86.12% F					
				Race = White 100%		Length of session (mins) = 60			

Alves 2013	Randomised Control group type: Combined (usual activities and active)	Anxiety	Becks Anxiety Inventory	N = 65 Mean Age = 68.37 (7.36) Sex = 92.31% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 16 No. of sessions = 32 Length of session (mins) = 120	Intervention setting = community Country = Brazil	Engagement type= participatory Art type = dance	Group x Time Interaction: F(2,62)=21.15, p<.001, η^2 =.41. Significantly lower anxiety scores in int group compared with usual activities control (p=.001) and active control (p=.005).
Ayari et al., 2023	Randomised Control group type: Active	Depression	GDS-15	N = 23 Mean Age = 78 (range +/- 7 years) Sex = 69.5% F Ethnicity/Race = No info MCI population	Non-Therapy	Length in weeks= 16 No. of sessions = 16 Length of session (mins) = 60	Intervention setting = Community Country = France	Engagement type = participatory Art type = dance	Repeated ANOVA (No test statistics reported); Time main effect (η^2_p = 0.75). Depression scores were significantly lower post-intervention for both the intervention (p<.001) and control groups (p<.001), but no significant difference between the groups.
Berrol et al., 1997	Non-Randomised Control group type:	Depression*	Geriatric Depression Scale	N = 134 Mean Age = 74 Sex = 77% F	Therapy	Length in weeks= 21	Intervention setting = Mixed (care-home and	Engagement type= participatory	MANCOVA (No test statistics reported); No significant difference in depression scores

* Outcome results not included in meta-analysis

	usual activities			Ethnicity/Race = No info		No. of sessions = 42 Length of session (mins) = 45	community) . Country = USA	Art type = dance	between int and ctrl group (p=.435).
Blumen et al. 2023	Randomised Control group type: Active	Depression*	Geriatric Depression Scale	N= 25 Mean Age = 76.45 (5.79) Sex = 56% F Ethnicity/Race (%) Native American 4; Black/African American 24; White 48; Mixed race 8; Unknown/not reported 16 MCI Population	Non-Therapy	Length in weeks= 24 No. of sessions = 48 Length of session (mins) = 90	Intervention Setting = Community Country = USA	Engagement type = Participatory Art Type = dance	Linear mixed effects models. No significant difference in depression scores between the intervention and control groups (b=1.08, SE _b =1.11; 95%CI -1.30-3.46).
Chang et al. 2021	Randomised Control group type: usual activities	Depression	GDS – 15	N = 109 Mean Age = 76.29 (3.6) Sex = 100% F	Non-Therapy	Length in weeks= 18 No. of sessions = 54	Intervention setting = care-home Country = China	Engagement Type = participatory Art type = dance	Group x Time effect. Significantly lower depression scores in int group compared with ctrl group (B=.416, p<.001;

				Ethnicity/Race: No info		Length of sessions (mins) = 30			95%CI .228-.604; d=-.88)
				MCI population					
Ching-Teng et al. 2019	Randomised	Depression	Geriatric Depression Scale (SF)	N = 55 Mean Age = 76.93 (8.33) Sex = 62.1% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 12 No. of sessions = 12 Length of session (mins) = 90 - 100	Intervention setting = care home Country = Taiwan	Engagement type= participatory Art type = visual art	Significant within group reduction in depression in int group (t=11.927, p<.001). No within group change in ctrl group (t=.466, p=.524). No dfs reported.
Chippendale & Bear-Lehman. 2012	Randomised	Depression	Geriatric Depression Scale (SF)	N = 45 Mean Age = 84.04 (7.56) Sex = 68.9% F Race = 75.6% white 11.1% black 4.4% Hispanic 9.9% Asian	Non-Therapy	Length in weeks= 8 No. of sessions = 8 Length of session (mins) = 90	Intervention setting = supported living Country = USA	Engagement type= participatory Art type = Creative writing	Significant Time x Group interaction with depression scores lower in int group compared with ctrl group (F(1,43)=5.10,p=.029)
Ciasca et al. 2018	Randomised	Depression	Geriatric Depression Scale	N = 56 Mean Age = 67.8 (6.2)	Therapy	Length in weeks= 20	Intervention setting = Community	Engagement type= participatory	Age-adjusted logistic regression (No test statistics reported). Significantly lower depression scores in

	usual activities		Becks Depression Inventory	Sex = 100% F Ethnicity/Race = N/A		No. of sessions = 20	Country = Brazil	Art type = Visual Art	int group for both GDS (p=.007) and BDI (p=.025) measures and anxiety scores (p=.032) in int group compared with ctrl group
			Becks Anxiety Inventory			Length of session (mins) = 90			
Cohen et.al. 2006	Randomised	Depression	Geriatric Depression Scale (SF)	N = 166 Mean Age = 79.3 Sex = 79% F Race = 92.5% white	Non-Therapy	Length in weeks= 30	Intervention setting = Community	Engagement type= participatory	ANCOVA (No test statistics reported). No significant differences between groups after controlling for pre-intervention depression score (No p-values reported).
	Control group type: usual activities					No. of sessions = 30	Country = USA	Art type = music	
						Length of session (mins) = no info			
Coulton et al. 2015	Randomised	Depression	HADS-D	N = 258	Non-Therapy	Length in weeks= 14	Intervention setting = community	Engagement type= participatory	ANCOVA (No test statistics reported). Significantly lower depression (p<.01) and anxiety (p<.01) int group compared with ctrl group at intervention end.
	Control group type: usual activities	Anxiety	HADS-A	Mean Age = 69.2 (7.14) Sex = 83.9% F Race = 98% white		No. of sessions = No info	Country = UK	Art type = music	No significant differences between groups found at 6 months after intervention for
						Length of session (mins) = 90			

									depression (p=.14) or anxiety (p=.13).
De Medeiros et al. 2009	Randomised Control group type: active	Depression	Geriatric Depression Scale (SF)	N =36 Mean Age = 80.7 (5.4) Sex = 60.8% F Ethnicity = 100% European Americans	Non-Therapy	Length in weeks= 8 No. of sessions = 8 Length of session (mins) = 90	Intervention setting = Supported Living Country = USA	Engagement type= participatory Art type = creative writing	Mixed ANOVA (No test statistics reported). No significant main effects or interactions between groups either post intervention or at 34 week follow-up.
Dominguez et al. 2018	Non-Randomised Control group type: usual activities	Depression	Geriatric Depression Scale (SF)	N = 171 Mean Age = 69.1 (5.85) Sex = 84.2% F Ethnicity/Race = no info MCI population	Non-Therapy	Length in weeks= 48 No. of sessions = 96 Length of session (mins) = 60	Intervention setting = community Country = Philippines	Engagement type= participatory Art type = dance	Independent t-test. Significantly lower depression in the int group compared to the ctrl group (t(169)=-2.3, p=.02; 95%CI=-1.5 to -0.1).
Ellis-Hill et al. 2017	Randomised Control group type: usual activities	Depression Anxiety	HADS -D HADS-A	N = 47 Mean Age = 69.8 (12.13) Sex = 43% F Race = 96% white	Non-Therapy	Length in weeks= 14 No. of sessions = 10 Length of session (mins) = 120	Intervention setting = community Country = UK	Engagement type= participatory Art type = visual art	ANCOVA used to estimate effect size (Cohen's d; No other test statistics reported). Effect size for depression: d=-.14 and anxiety: Cohen's d=-.45 in favour of int group.

				2% mixed white and Asian 2% black or black British African					
Esmail et al. 2020	Randomised Control group type: waiting list	Anxiety*	STAI-State	N = 62 Mean Age = 67.48 (5.37) Sex = 77.92% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 12 No. of sessions = 36 Length of session (mins) = 60	Intervention setting = community Country = Canada	Engagement type= participatory Art type = dance	Mixed ANOVA. Group x Time interaction. Significant reduction in anxiety score in int group compared with ctrl (F (2,37)=5.01, p=.01)
Eyigor et al. 2009	Randomised Control group type: usual activities	Depression*	Geriatric depression scale	N = 40 Mean Age = 72.4 (6.7) Sex = 100% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 8 No. of sessions = 24 Length of session (mins) = 60	Intervention setting = community Country = Turkey	Engagement type= participatory Art type = dance	Paired t-test (No test statistics reported). No significant difference between int and ctrl group (p>.05).
Fausto et al. 2022	Non-Randomised	Depression	Becks Depression Scale II	N= 64	Non-Therapy	Length in weeks = 20	Intervention setting = community	Engagement type = participatory	Repeated ANCOVA. Significant Group x Time interaction

* Outcome results not included in meta-analysis

	Control group type: Usual activities			Mean Age = 68.9 (6.7) Sex = 88.7% F Ethnicity = 100% African Americans		No. of sessions = 40 Length of session (mins) = 60	Country = USA	Art type = dance	(F(1,53)=7.42, p=.009) with depression scores reducing in the int group while remaining stable in the ctrl group.
Galinha et al. 2021	Randomised Control group type: waiting list	Depression	DASS 21 Depression	N = 149 Mean Age = no info Sex = no info Ethnicity/Race = no info	Non-Therapy	Length in weeks = 16 No. of sessions = 34 Session length (mins) = 120	Intervention setting = community Country = Portugal	Engagement type = participatory Art type = music	Mixed ANOVA. Group x Time interaction. No significant differences between groups for depression (F=0, p=.95) and anxiety (F=1.20, p=.276). No dfs reported.
Gök Ugur et al. 2017	Randomised Control group type: usual activities	Depression	Geriatric Depression Scale (SF)	N = 64 Mean Age = 76.8 (7.8) Sex = 34.4% F Ethnicity/Race = no info	Therapy	Length in weeks = 8 No. of sessions = 24 Length of session (mins) = 50	Intervention setting = care-home Country = Turkey	Engagement type = receptive Art type = music	Independent t-test. Significantly lower depression scores in int group compared with ctrl group (t=-2.861, p=.006). No dfs reported.
Ilali et al. 2018	Randomised Control group type: usual activities	Depression	Geriatric Depression Scale	N = 54 Mean Age = 70 Sex = 64.8 %	Non-Therapy	Length in weeks = 6 No. of sessions = 6	Intervention setting = community Country = Iran	Engagement type = participatory Art type = visual art	t-tests and Mixed ANOVA (t-statistics not reported). Significantly reduced depression in the int group compared to

				Ethnicity/Race = no info		Length of session (mins) = 60			the ctrl group both at one week post intervention (p<.001; 95%CI=1.098-3.098) and at one month post intervention (p<.001; 95%CI=2.531-4.653); F(2,156)=7.18, p=.001.
Johnson et al. 2018	Randomised Control group type: waiting list control	Depression	PHQ-8	N = 390 Mean Age = 71.3 (7.2) Sex = 76% F Race = 35% non-Latino white, 26% Non-Latino black, 20% Asian, 18.5% Latino	Non- Therapy	Length in weeks= 44 No. of sessions = 44 Length of session (mins) = 90	Intervention setting = community Country = USA	Engagement type = participatory Art type = music	Linear mixed models. Group x Time effect. No significant difference between groups (β =-.19, p=.62)
Kaasgaard et al. 2022	Randomised Control Group Type: Active	Depression Anxiety	HADS HADS	N=270 Mean Age = 69.55 (8.4) Sex = 62.22 % F Ethnicity/ Race = no info	Non- Therapy	Length in weeks= 10 No. of sessions = 20	Intervention setting = Community Country = Denmark	Engagement Type = Participatory Art Type = music	t-tests (No test statistics reported). No significant between group differences for either depression (p=.19; 95%CI=-.1 to .7) or anxiety (p=.33; 95%CI=-.9 to.3)

						Length of session (mins) = 90			
Kim 2013	Randomised	Anxiety	STAI 1 (state)	N = 50	Therapy	Length in weeks= 4	Intervention setting = community	Engagement type= participatory	Independent t-test. Significant decrease in anxiety in int group compared with ctrl (t(47)=-10.81, p=.001)
	Control group type: usual activities			Mean Age = 78.76 (4.02) Sex = 78% Ethnicity = 100% Korean American		No. of sessions = 12	Country = USA	Art type = visual art	
						Length of session (mins) = 60 - 75			
Kim & Kang 2021	Randomised	Depression*	Geriatric Depression Scale SF	N = 40	Non-Therapy	Length in weeks =12	Intervention setting = care-home	Engagement Type = participatory	ANCOVA. Significantly lower depression (F=9.52, p<.001) and anxiety (F=18.21, p<.001) in int group compared to ctrl. dfs not reported.
	Control group type: Active	Anxiety*	Geriatric Anxiety Index	Mean Age = 81.6 Sex = 77.5% F Ethnicity/Race = no info		No. of sessions = 24	Country = South Korea	Art Type = music and movement	
						Length of session (mins) = 50			
Lazarou et al., 2017	Randomised	Depression	Geriatric Depression Scale	N = 129	Non-Therapy	Length in weeks= 40	Intervention setting = community	Engagement type= participatory	Independent t-tests (No test statistics reported). Significantly lower
	Control group type:			Mean Age = 66.8 (10.1)					

* Outcome results not included in meta-analysis

	usual activities			Sex = no info		No. of sessions = 80	Country = Greece	Art type = dance	depression in the int group compared with the ctrl group (p=.022).
				Ethnicity/Race = no info		Length of session (mins) = 60			
				MCI population					
Lin et al. 2022	Randomised	Depression*	GDS	N = 135	Non-Therapy	Length in weeks= 24	Intervention setting = community	Engagement type = Participatory	Linear mixed models (No test statistics reported). Depression scores fell significantly for participants in the intervention group compared with the control group post-intervention at 24 weeks (Int v. A-control: 95%CI=.699-5.104, p=.011; Int v. W-control: 95%CI=1.594-6.109, p=.001). No significant difference was found at the 48-week follow-up (No statistics reported).
	Control group type: Active control & Waitlist Control	Anxiety*	SAS	Mean Age = 70.93 (6.91)		No. of sessions = 24	Country = China	Art Type = visual arts & storytelling	
				Sex = 62.22% F					
				Ethnicity/Race = no info		Length of session (mins) = 90			
				MCI population					
Liu et al. 2013	Randomised	Depression	Hamilton depression scale	N = 50	Therapy	Length in weeks= 8	Intervention setting = care-home	Engagement type= receptive	Independent t-test (No test statistics reported). Significant reduction in depression scores in int group compared
	Control group type: no info			Mean Age = no info		No. of sessions = 8	Country = China	Art type = music	
				Sex = no info					

				Ethnicity/Race =no info		Length of session (mins) = 60- 120			with ctrl group (p<.05). Significant difference maintained at 8 week follow-up (p<.05)
Mahendran et al. 2018	Randomised Control group type: usual activities	Depression* Anxiety*	Geriatric Depression Scale Geriatric Anxiety Inventory	N = 68 Mean Age = 71.1 (5.3) Sex = 82.4% F Ethnicity/Race =no info MCI population	Therapy	Length in weeks= 36 No. of sessions = 24 Length of session (mins) = 60	Intervention setting = Community Country = Singapore	Engagement type= participatory Art type = visual art & music	Linear mixed models (No test statistics reported). No significant difference between int and ctrl groups on depression at 3 months or at 6 months (all ps >=.431) or on anxiety at 3 months or at 6 months (all ps >=.444).
Masika et al. 2021	Randomised Control group type: active	Depression	Geriatric Depression Scale (SF)	N = 39 Mean Age = 72.7 (7.1) Sex = 87.2% F Ethnicity/Race = no info	Therapy	Length in weeks= 6 No. of sessions = 12 Length of session	Intervention setting = community Country = Tanzania	Engagement type= participatory Art type = visual art	Generalised Estimating Equation (Group effect test statistic not reported). Significant reduction in depression in int group compared with ctrl group (Group

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				MCI population		(mins) = no info			effect: p=.027) and between groups over time (Group × time interaction effect: $\beta=-3.0$, SE=.822], p<.001).
Masika et al. 2022	Randomised Control group type: active	Depression	Geriatric Depression Scale	N = 127 Mean Age = 73.8 (8) Sex = 78% F Ethnicity/Race = no info	Therapy	Length in weeks = 6 No. of sessions = 12 Length of session (mins) = 120	Intervention setting = community Country = Tanzania	Engagement type = participatory Art type = visual art	Generalised Estimating Equation. Significantly reduced depression in int compared to control group ($\beta=-2.01$, 95% CI=-3.09-0.93, p<.001) post intervention. Significant differences not maintained at 3 month ($\beta=-0.9$, 95% CI:-2.1-0.3, p=.141) or 6 month ($\beta=-1.3$, 95% CI:-2.3-0.3, p=.116) follow-up.
Mastel-Smith et al. 2007	Randomised Control group type: waiting list	Depression	Brief symptom inventory (Depression Subscale)	N = 33 Mean Age = 71.4 (8.8) Sex = 81% F	Non-Therapy	Length in weeks= 10 No. of sessions = 10	Intervention setting = community Country = USA	Engagement type= participatory Art type = dance	Independent t-test. Significantly lower depression scores in int group compared to ctrl group (t (19.26)=-2.277, p=.036).

				Race = 94% white		Length of session (mins) = 120			
Matto et al. 2015	Randomised Control group type: active	Depression	Geriatric Depression Scale (SF)	N = 19 Mean Age = no info Sex = 45% F Ethnicity/Race = no info	Non- Therapy	Length in weeks= 10 No. of sessions = no info Length of session (mins) = 50- 60	Intervention setting = care-home Country = USA	Engagement type= participatory Art type = music, imagery, and movement	Mixed ANOVA. Significantly lower depression scores in int group compared to ctrl group (F=4.534, p<.05). No dfs reported. At 6 week follow up scores regressed slightly back to pre- treatment scores with int group showing less regression than ctrl group.
Mohammadi et al. 2011	Randomised Control group type: no info	Depression* Anxiety	DASS-21 Depression DASS-21 Anxiety	N = 19 Mean Age = 69.47 Sex = 47.37% F Ethnicity/Race = no info	Therapy	Length in weeks= 10 No. of sessions = 10 Length of session (mins) = 90	Intervention setting = care-home Country = Iran	Engagement type= participatory Art type = music	Mann-Whitney U. Significant decrease in depression (U=.50, p<.001) and anxiety (U=9.00, p=.004) in int group compared to ctrl.

* Outcome results not included in meta-analysis

Moore et al. 2017	Randomised Control group type: active	Depression Anxiety	Geriatric Depression Scale Becks Anxiety Inventory	N = 13 Mean Age = 76.7 (6.4) Sex = 76.92% F Race = 92.3 white	Non-Therapy	Length in weeks= 6 No. of sessions = 6 Length of session (mins) = 90	Intervention setting = community Country = USA	Engagement type= participatory Art type = drama	Mixed ANOVA. No significant difference between groups for depression (F=.53, p=.48, d=.03) or anxiety (F=.06, p=.82, d=.04). No dfs reported.
Roswiyani et al. 2020	Randomised Control group type: usual activities	Depression	Becks Depression Index	N = 267 Mean Age = 73.82 (9.61) Sex = 68.50% F Ethnicity = Javanese 50.2%, Sumatra 10.1% Sulawesi 3.4% Kalimantan 1.1% Madura 33% Maluku 2.2%	Non-Therapy	Length in weeks= 8 No. of sessions = 16 Length of session (mins) = 90	Intervention setting = care home Country = Indonesia	Engagement type= participatory Art type = visual art	MANOVA. Significantly lower depression in both int groups (art group, art & Qiong group) compared with ctrl group (F(3, 263)= 3.523, p=.016; 95%CI=-3.20 to -1.19).
Sangvanich et al., 2023	Randomised Control group type: Active	Depression	Thai GDS	N= 30 Mean Age = 71.40 (6.28)	Non-Therapy	Length in weeks= 6 No. of sessions = 6	Intervention setting = Community	Engagement Type = Participatory	No test statistics reported. No significant difference was found in depression scores

				Sex = 83.33 Ethnicity/Race = No info MCI population		Length of session (mins) = 60	Country = Thailand	Art Type = visual arts	between the intervention and control group. Sad mood scores of both the int and ctrl groups were lower but not significantly different after the intervention (Art: p=.304, Control: p=.769)
Supiano et al. 1989	Non-Randomised Control group type: usual activities	Depression*	Geriatric Depression Scale	N = 116 Mean Age = 83.4 Sex = 75% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 8 No. of sessions = 8 Length of session (mins) = 60	Intervention setting = care-home Country = USA	Engagement type= participatory Art type = creative writing	Paired t-tests (No test statistics reported). Some decline in depression scores in int group approaching significance (p<.08).
Vankova et al. 2014	Randomised Control group type: usual activities	Depression	Geriatric Depression Scale (SF)	N = 162 Mean Age = 83.11 (7.98) Sex = 92% F Ethnicity/Race = no info	Non-Therapy	Length in weeks= 12 No. of sessions = 12 Length of session (mins) = 60	Intervention setting = care-home Country = Czech Republic	Engagement type= participatory Art type = dance	Paired t-tests (No test statistics reported). Significantly lower depression scores within int group (p=.005) compared to within ctrl group (p=.081). 2x2 GLM group: ctrl vs int; test: pretest vs post-

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									test (Wilks lambda F=10.97, p=.001).
Vrinceanu et al.2019	Randomised Control group type: waiting list	Depression	Geriatric Depression Scale	N = 62 Mean Age = 67.45 (5.32) Sex = 75% Ethnicity/Race = no info	Non-Therapy	Length in weeks= 12 No. of sessions = 36 Length of session (mins) = 60	Intervention setting = community Country = Canada	Engagement type= participatory Art type = dance	Mixed ANOVA. No significant differences between the int group and the active ctrl or the usual activities ctrl (Group x Time Interaction: F=.56, p=.58). No dfs reported.
Wang et al. 2020	Non-Randomised Control group type: usual activities	Depression	Geriatric Depression Scale	N = 66 Mean Age = 81.08 (6.36) Sex = 71.21% F Ethnicity/Race = no info MCI population	Non-Therapy	Length in weeks= 12 No. of sessions = 36 Length of session (mins) = 40	Intervention setting = care-home Country = China	Engagement type= participatory Art type = dance	Linear mixed effects model (No test statistics reported). Significantly lower depression scores in the int group compared with the control group (p<.001).
Wang et al., 2023	Randomised Control group type: Usual Activities	Depression	GDS-15	N=38 Mean Age = 71.95 (6.7) Sex= 71.05% F	Non-Therapy	Length in weeks= 6 No. of sessions = 12	Intervention Setting = Community Country = Taiwan	Engagement type = Participatory Art Type = magic & visual arts	Repeated ANOVA. Group x Time interaction: F(1, 36)=7.35, p=.010. Post intervention depression scores were significantly

				Ethnicity/Race = no info		Length of session (mins) = 90			lower than pre- intervention scores for the intervention group (p=.004).
Watson et al. 2023	Randomised Control group type: Usual Activities	Depression*	GDS-15	N=252 Mean Age = 71.44 (5.29) Sex= 82% F Ethnicity/Race = no info	Non- Therapy	Length in weeks= 64 No. of sessions = 64 Length of session (mins) = 120	Intervention Setting = community Country = Canada	Engagement type = Participatory Art Type = Visual Arts & Drama	Ordinary Least Squares regression. A trend in the time x treatment interaction for the arts intervention group and depression (b=- 1.263, SE _b =.770, p=0.10) with depression approaching reduction over time. This reduction was most notable in participants with higher pre- intervention depression scores.
Xue et al., 2023	Randomised Control group type: Usual Activities	Depression	GDS-15	N=80 Mean Age = 75.43 (4.75) Sex = 77.50% F Ethnicity/Race = no info	Therapy	Length in weeks= 8 No. of sessions = 32 Length of session (mins) = no info	Intervention Setting = care-home Country = China	Engagement type = non- participatory Art Type = music	Multiple linear regression. Post- intervention depression scores were significantly lower for the intervention group compared with the control group (95%CI=-3.28 to -1.79, p<.001).

Yan et al. 2020	Non-Randomised Control group type: waiting list	Depression* Anxiety	Geriatric Depression Scale Zung Self Rating Anxiety Scale	N= 48 Median Age = 68 Sex = 60.4% F Ethnicity/Race = No info MCI population	Non-Therapy	Length in weeks = 6 No. of sessions = 12 Length of session (mins) = 60-90	Intervention setting = Community Country = China	Engagement type = participatory Art Type = visual art	Independent samples t-test. Significant reduction in depression (t=-2.15, p=.037) and anxiety (t=-3.15, p=.003) scores in int group compared with ctrl
Yap et al. 2017	Randomised Control group type: usual activities	Depression*	Geriatric Depression Scale	N = 54 Mean Age = 74.65 (6.4) Sex = 94% F Ethnicity = 100% Chinese	Non-Therapy	Length in weeks= 11 No. of sessions = 10 Length of session (mins) = 60	Intervention setting = community Country = Singapore	Engagement type= participatory Art type = music	Non-significant difference in depression scores between groups either post intervention (11 weeks) or at follow-up (22 weeks; Coefficient=-.479, p=.245; 95%CI= -1.287 to 0.329)
Yu et al., 2022	Randomised Control Group Type: Usual Activities	Depression	GDS-15	N = 63 Mean Age = 79.68 (7.27) Sex = 71.42% F	Non-Therapy	Length in weeks= 10 No. of sessions = 20	Intervention Setting = Care-home Country = Taiwan	Engagement Type = non-participatory Art Type = music	Generalised Estimating Equation. Post-intervention depression scores were significantly lower for the

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				Ethnicity/Race = no info		Length of session (mins) = 30			intervention group compared with the control group (Group x Time effect: Wald $\chi^2(1)=-.78, p<.0001$)
Zhang et al. 2023	Randomised Control Group Type: Usual Activities	Depression	GDS-15	N = 72 Mean Age = 64.75 (4.35) Sex = 63.88% F Ethnicity/Race = no info	Non- Therapy	Length in Weeks = 16 No. of sessions = 80 Length of session = 60	Intervention setting= Community Country = China	Engagement type = Participatory Art type = dance	Mixed ANOVA. Post- intervention depression scores were significantly lower for the intervention group compared with the control group (Group x Time interaction: F= 29.634, p<.001). No dfs reported.
Zhao et al. 2021	Non- Randomised Control group type: usual activities	Depression	Geriatric Depression Scale	N= 63 Mean age = 72.29 (6.03) Sex = 82.5 % F Ethnicity/Race = No information MCI population	Non- Therapy	Length in weeks = 12 No. of sessions = 36 Length of session (mins) = 60	Intervention setting = community Country = China	Engagement type = participatory Art type = dance	Linear mixed effects modelling. Significantly lower depression scores in the int group compared with the control group both post intervention (12 weeks; p<.001) and at 3-month post intervention follow- up (24 weeks; p<.001). Group x Time effect: F= 25.73, p<.001).

Zhu et al. 2018	Randomised Control group type: usual activities	Depression	Geriatric Depression Scale (SF)	N = 60 Mean Age = 69.6 (7) Sex = 60% F Ethnicity = no info MCI population	Non- Therapy	Length in weeks= 12 No. of sessions = 36 Length of session (mins) = 35	Intervention setting = community Country = China	Engagement type= participatory Art type = dance	Linear mixed effects modelling (No test statistics reported). No significant difference between groups for depression. Either immediately post intervention (95%CI=-1.3 to 4.1) or at follow-up (95%CI=-1.9 to 4.2). The control group had significant within group reduction of depression scores (95%CI=-5.2 to -1.5).
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ANCOVA=Analysis of covariance; ANOVA=Analysis of variance; b=unstandardized beta; β =standardized beta; CI=confidence interval; d=Cohen's d (effect size); df=Degrees of freedom; F=F-statistic; GLM=General Linear Model; p=p-value (where p<.05 is statistically significant); SE=standard error; t=t-statistic

Appendix B

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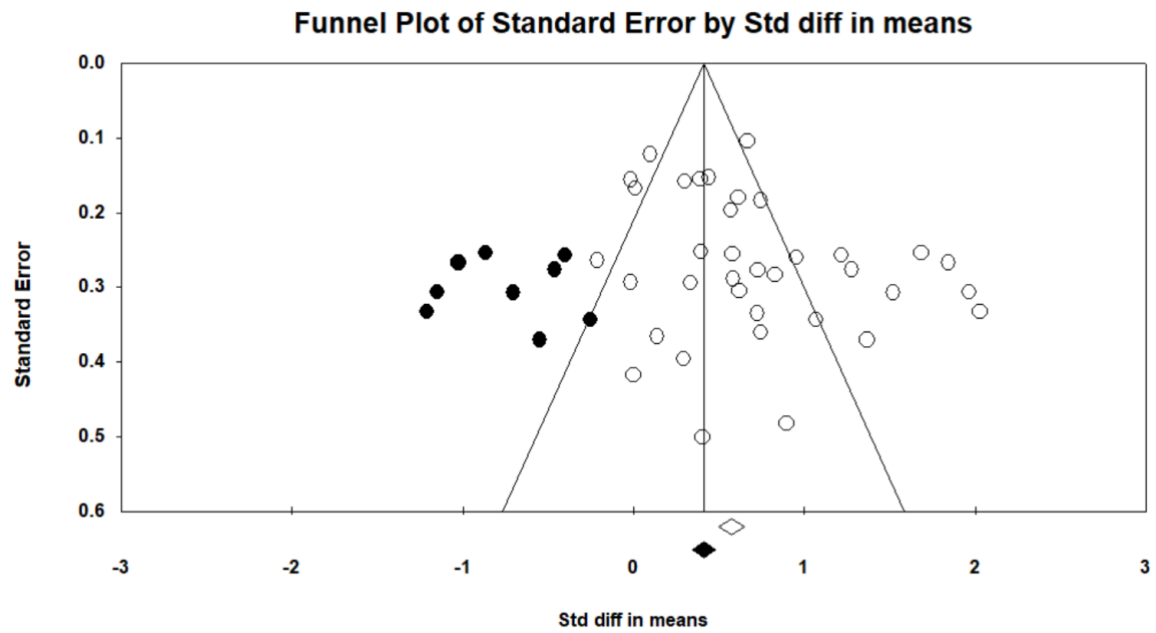
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Appendix C

Funnel Plot of the effect of group arts interventions on depression with imputed studies



Appendix D

Subgroup Analyses for Depression

Table 2. Subgroup analysis for categorical moderators of group arts interventions on depression

	Subgroup	Study N	SMD	95% CI	z Value	p Value	I ² (%)	BGE
All studies	-	36	.70	.52-.87	7.83	.000	80.57	-
Art type	Visual Art	8	.77	.43-1.10	4.49	.000	71.08	.736
	Dance	13	.64	.38-.91	4.71	.000	76.14	
	Music	10	.81	.41-1.21	4.01	.000	90.77	
	Writing	2	-	-	-	-	-	
	Drama	1	-	-	-	-	-	
	Mix	2	-	-	-	-	-	
Nature of Intervention	Non -Therapy	29	.63	.44-.83	6.46	.000	81.03	.102
	Therapy	7	.97	.62-1.32	5.38	.000	66.79	
Study Setting	Community	22	.51	.32-.70	5.32	.000	73.21	.005
	Care home	12	1.07	.72-1.42	6.04	.000	84.24	
	Senior retirement community	2	-	-	-	-	-	
Active/Receptive Engagement	Active	32	.63	.46-.80	7.28	.000	77.08	.120
	Receptive	4	1.24	.49-1.98	3.25	.000	86.64	
Country SES	High income	20	.61	.37-.85	5.02	.000	81.34	.301
	Low-Middle income	16	.80	.55-1.04	6.34	.000	77.22	
Control Type	Active	7	.71	.20-1.22	2.74	.000	84.66	.207
	Usual Activity	21	.83	.60-1.07	6.88	.000	80.54	
	Waiting List	5	.45	.11-.80	2.56	.010	66.68	
	Mixed	1	-	-	-	-	-	
	No Info	2	-	-	-	-	-	
Average Depression Score	Depression	23	.81	.56-1.06	6.40	.000	82.34	.063
	No Depression	13	.49	.27-.71	4.35	.000	71.39	

SMD = standardised mean difference; CI = Confidence Interval; I²= heterogeneity statistic; BGE = between group effect; All analyses were two-tailed. Adjusting for multiple comparisons using a Bonferroni Correction (alpha/number of tests, here .05/7) suggests that the any p-value less than .008 is statistically significant.

Appendix E

Meta-Regression Analyses for Depression

Table 3. Meta-regression analysis for continuous moderators of group arts interventions on depression

Depression Meta-Regression Results Table

Covariate	Study n	b	SE _b	Lower 95% CI	Higher 95% CI	z Value	p Value
Average Age	33	.01	.02	-.03	.04	.25	.800
Intervention length (weeks)	36	-.01	.01	-.02	.01	-1.22	.222
Length of Sessions (mins)	34	-.001	.004	-.008	.007	-0.25	.805
Number of sessions	33	-.003	.003	-.009	.004	-0.93	.354
Intervention intensity (number of minutes per week)	31	-.0004	.001	-.003	.003	-.24	.808

b = Unstandardised beta coefficient; SE_b = Standard error of b; CI = Confidence Interval

Appendix F

Subgroup Analyses for Anxiety

Table 4. Subgroup analysis for categorical moderators of group arts interventions on anxiety

	Subgroup	Study n	SMD	95% CI	z value	p value	I ² (%)	BGE
All studies		10	0.76					
Nature of Intervention	Non -Therapy	7	0.68	.20-1.15	2.76	.006	88.58	.459
	Therapy	3	0.98	.34-1.62	2.99	.003	61.61	
Country SES	High income	5	0.53	.07-1.12	1.12	.05	90.131	.169
	Mid/low income	5	1.00	.67-1.34	5.86	.000	38.42	
Average Anxiety Score	Anxiety	5	0.92	.49-1.35	4.19	.000	62.13	.436
	No Anxiety	5	0.63	.06-1.21	2.15	.032	89.65	

SMD = standardised mean difference; CI = Confidence Interval; I²= heterogeneity statistic; BGE = between group effect; All analyses were two-tailed; Adjusting for multiple comparisons using a Bonferroni Correction (alpha/number of tests, here .05/3) suggests that the any p-value less than .017 is statistically significant.

Appendix G

Meta-Regression Analyses for Anxiety

Table 5. Meta-regression analysis for continuous moderators of group arts interventions on anxiety

Covariate	Study n	b	SE _b	Lower 95% CI	Higher 95% CI	z-value	p value
Average Age	9	.030	.061	-.085	.155	.41	.684
Intervention length (weeks)	10	-.037	.042	-.012	-.046	-.88	.378
Length of Sessions (hours)	10	-.014	.012	-.034	.007	-2.48	.186
Number of Sessions	9	.007	.032	-.069	.057	-.21	.837
Intervention intensity (number of minutes per week)	9	.002	.005	-.006	.011	.51	.612

b = Unstandardised beta coefficient; SE_b = Standard error of b; CI = Confidence Interval

Appendix H

Search Strategy

This appendix details the search strategy used. Please note that only depression and anxiety outcomes are presented in this paper.

Population: older adult* OR over 55 OR over 65 OR senior* OR older population OR elderly OR geriatric*.

Intervention Delivery: social OR group OR club

Intervention Type: art* OR artistic OR creative OR dance OR music OR singing OR song-writing OR drumming OR theatre OR performing arts OR acting OR visual arts OR drawing OR painting OR pottery OR sculpture OR cultural OR museum* OR festival OR gallery* OR drama* OR writing* OR autobiographical OR film Or art therapy* OR music therapy Or dance movement therapy OR dramatherapy OR poetry OR creative writing

Comparison: Randomised controlled Trial OR RCT OR quasi experimental OR pre-post OR baseline AND/OR evaluation.

Outcome: wellbeing OR mood OR mental health OR depression OR anxiety OR quality of life OR life satisfaction OR cognitive OR cognitive function* OR MOCA OR MMSE OR Health OR Physical

Additional Outcome: social isolation, loneliness, social connection

Setting: community OR neighbourhood OR care home OR nursing home OR retirement home OR assisted living Or sheltered living

Appendix I

Risk of Bias

This appendix presents the risk of bias plots created using the Robvis tool (McGuinness & Higgins, 2021)

Figure 1. Summary Plot for Risk of Bias in Non-Controlled Trials

Study	Risk of bias domains						
	D1	D2	D3	D4	D5	D6	D7
Adam et al. 2016	⊗	⊕	⊕	⊕	⊕	⊗	⊕
Cohen et al. 2006	⊗	⊕	⊕	⊕	⊖	⊗	⊖
Berrol et al. 1997	⊗	⊕	⊕	⊖	⊕	⊗	⊕
Supiano et al. 1989	⊗	⊕	⊕	⊖	⊖	⊗	⊖
Dominguez et al. 2018	⊗	⊕	⊕	⊕	⊖	⊖	⊕
Yan et al. 2020	⊗	⊕	⊕	⊕	⊕	⊗	⊖
Zhao et al. 2021	⊗	⊕	⊕	⊕	⊕	⊖	⊖
Fausto et al. 2021	⊗	⊖	⊕	⊕	⊖	⊗	⊕
Wang et al. 2020	⊗	⊕	⊕	⊕	⊕	⊖	⊕

Domains:
D1: Bias due to confounding.
D2: Bias due to selection of participants.
D3: Bias in classification of interventions.
D4: Bias due to deviations from intended interventions.
D5: Bias due to missing data.
D6: Bias in measurement of outcomes.
D7: Bias in selection of the reported result.

Judgement
⊗ Serious
⊖ Moderate
⊕ Low

Figure 2. Traffic light plot for Risk of Bias in Non-Controlled Trials

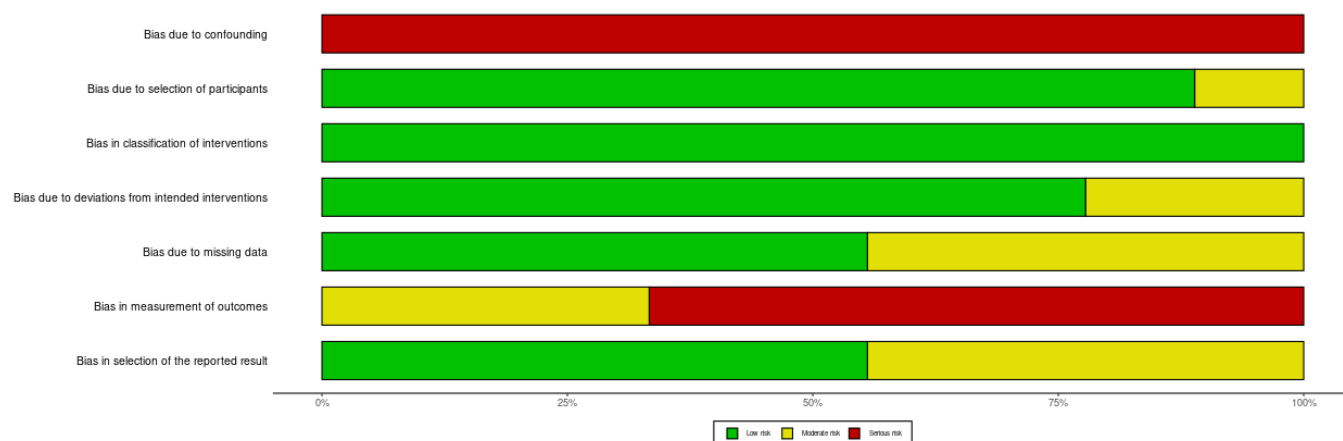


Figure 3. Summary Plot for Risk of Bias in RCTs

	Risk of bias domains				
	D1	D2	D3	D4	D5
Ahessy 2016	-	+	+	-	-
Alves 2013	-	-	+	-	-
Ayari et al.,	-	+	+	-	-
Blumen et al	+	+	-	-	-
Ching-Teng et al. 2019	-	-	+	-	-
Chippendale & Bear-Lehman 2012	+	+	+	-	-
Ciasca et al. 2018	-	+	+	-	-
Coulton et al. 2015	+	+	-	-	+
de Medeiros et al. 2011	-	+	+	-	-
Ellis-Hill et al. 2017	+	-	-	-	+
Esmail et al. 2020	+	-	+	-	+
Eyigor et al. 2009	-	+	+	-	-
Galinha et al. 2021	-	X	+	-	+
Ilali et al. 2018	-	+	+	-	-
Kim & Kang 2021	+	+	-	-	+
Kim 2013	-	-	+	-	+
Lazarou et al. 2017	+	-	-	-	-
Lin et al.	+	+	+	-	+
Liu et al. 2013	-	-	X	-	-
Mahendran et al.	+	+	+	-	-
Masika et al. 2020	+	-	+	-	-
Masika et al. 2021	+	+	+	-	-
Mastel-Smith et al. 2007	-	+	+	-	-
Matto et al. 2015	-	-	+	-	X
Mohammadi et al. 2011	-	-	+	X	-
Moore et al. 2017	-	-	+	-	-
Roswiyani et al. 2019	+	+	+	-	+
Sangvanich	-	-	+	-	-
Ugur et al.2016	+	-	+	-	-
Vankova et al. 2014	-	X	-	-	-
Vrinceanu et al. 2019	-	+	-	-	+
Wang et al.,	+	+	+	-	-
Watson et al.	-	+	-	-	-
Xue et al.	+	+	+	-	+
Yap et al. 2017	+	X	-	-	-
Yu et al.	+	+	+	-	-
Zhang et al.	+	+	+	-	+
Zhu et al. 2018	+	+	+	-	+

Study

Domains:
D1: Bias arising from the randomization process.
D2: Bias due to deviations from intended intervention
D3: Bias due to missing outcome data.
D4: Bias in measurement of the outcome.
D5: Bias in selection of the reported result.

Judgement
X High
- Some concerns
+ Low

Figure 4. Traffic Light Plot for Risk of Bias in RCTs

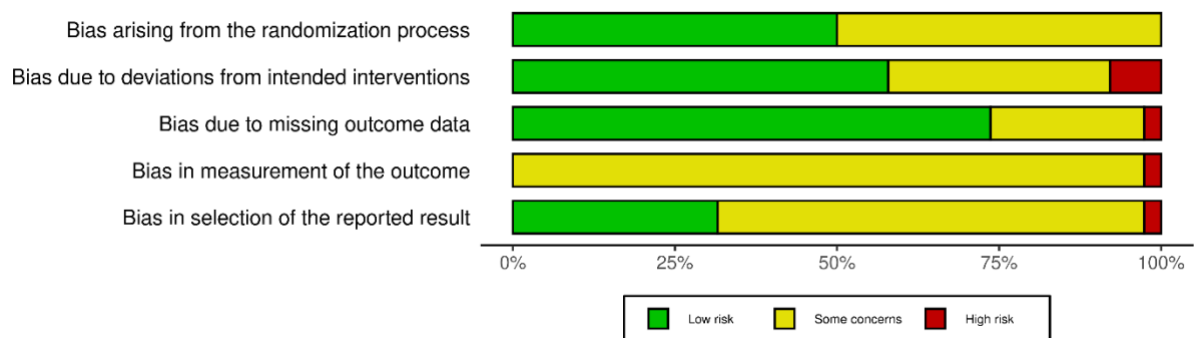
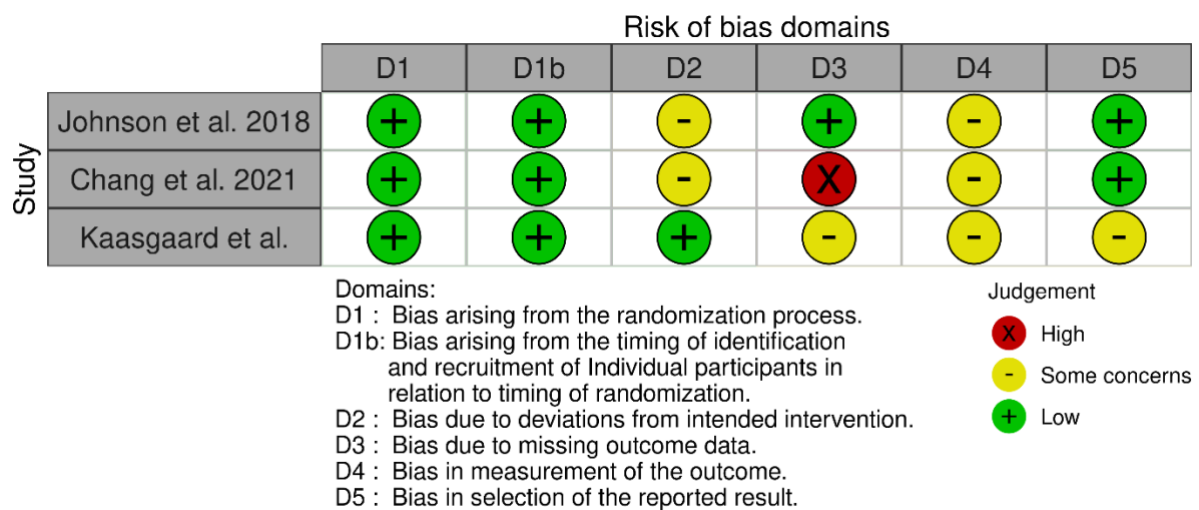


Figure 5. Summary Plot for Risk of Bias in Cluster RCTs



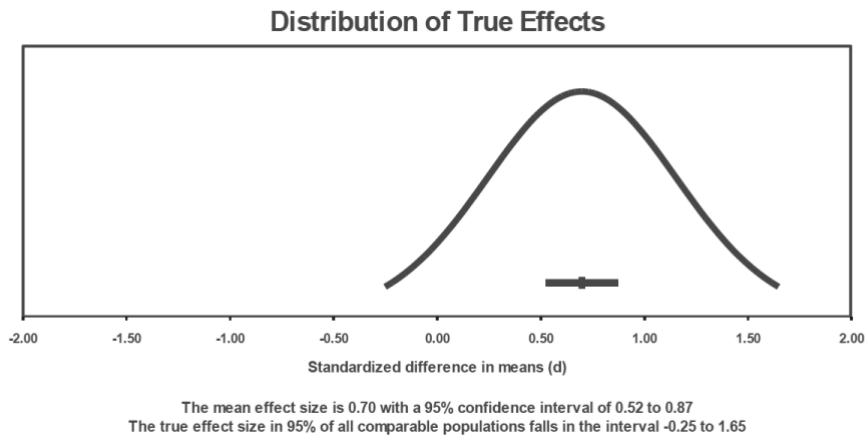
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Appendix J

Prediction Interval for the effects of group arts interventions on depression

Figure 6. Distribution of true effects for depression (36 studies; $n=3360$)



Appendix K

Prediction Interval for the effects of group arts interventions on anxiety

Figure 7. Distribution of True Effects for Anxiety (10 studies; n=949)

