

Supplementary Table 2. Data used to produce meta-analysis

Factor	Primary study author	Year	Meta-analysis source	Measure	Value	CI_lo	CI_up	Experimental cases	Control cases
Pain									
VR_pain_procedural	Akarsu	2023	Lin 2026	SMD	-2.4	-2.91	-1.9	53	53
VR_pain_procedural	Atzori et al. (a)	2022	Cáceres-Matos 2024	SMD	-0.65	-1.09	-0.2	41	41
VR_pain_procedural	Atzori et al. (b)	2022	Cáceres-Matos 2024	SMD	-0.39	-0.83	0.05	41	41
VR_pain_procedural	Aydin et al.	2019	Cáceres-Matos 2024	MD	-0.34	-0.97	0.29	60	60
VR_pain_procedural	Aydin et al.	2019	Cáceres-Matos 2024	SMD	-0.05	-0.41	0.3	60	60
VR_pain_procedural	Babaie	2019	Saliba 2021	SMD	-8.55	-10.1	-7.0	32	30
VR_pain_procedural	Caruso	2020	Czech 2021	MD	-0.17	-0.57	0.23	106	114
VR_pain_procedural	Chan (ED)	2019	Wang 2022	MD	-1.78	-3.24	-0.3	64	59
VR_pain_procedural	Chan (Pathology)	2019	Wang 2022	MD	-1.39	-2.67	-0.1	63	66
VR_pain_procedural	Chen	2020	Lin 2026	SMD	-0.37	-0.71	0	68	68
VR_pain_procedural	Czub et al. (a)	2024	Cáceres-Matos 2024	SMD	-1.47	-1.78	-1.2	105	97
VR_pain_procedural	Czub et al. (b)	2024	Cáceres-Matos 2024	SMD	-1.27	-1.58	-1.0	102	97
VR_pain_procedural	Diaz-Hennessey et al.	2019	Lluesma-Vidal 2022	MD	-2.68	-4.57	-0.8	8	7
VR_pain_procedural	Dumoulin	2019	Wei 2024	SMD	-0.15	-0.82	0.52	20	15
VR_pain_procedural	Erdogan	2021	Wei 2024	SMD	-0.88	-1.37	-0.4	37	34
VR_pain_procedural	Gerçeker et al.	2018	Cáceres-Matos 2024	MD	-3.6	-3.74	-3.5	40	40
VR_pain_procedural	Gerçeker et al. (Ocean Rift)	2020	Niaz 2023	SMD	-1.3	-1.85	-0.8	45	23
VR_pain_procedural	Gerçeker et al. (Rollercoaster)	2020	Niaz 2023	SMD	-1.06	-1.6	-0.5	45	23
VR_pain_procedural	Gerçeker	2021	Wang 2022	MD	-2.9	-3.99	-1.8	21	21
VR_pain_procedural	Goktas & Avci	2023	Cáceres-Matos 2024	MD	-2.3	-2.78	-1.8	36	36
VR_pain_procedural	Gold	2006	Wei 2024	SMD	0	-0.88	0.88	10	10
VR_pain_procedural	Gold	2018	Cáceres-Matos 2024	SMD	-0.32	-0.65	0.01	70	73
VR_pain_procedural	Gold	2021	Gao 2022	SMD	-0.54	-0.93	-0.2	53	54
VR_pain_procedural	Goldman	2021a	Gao 2022	SMD	0.06	-0.42	0.54	35	31
VR_pain_procedural	Goldman	2021b	Gao 2022	SMD	-0.04	-0.54	0.46	32	30
VR_pain_procedural	Hsu	2022	Cáceres-Matos 2024	MD	-0.73	-1.35	-0.1	69	65
VR_pain_procedural	Hundert	2021	Gao 2022	SMD	-0.2	-0.83	0.43	20	19
VR_pain_procedural	Koç Özkan	2019	Wei 2024	SMD	-0.61	-1.03	-0.2	46	46
VR_pain_procedural	Lee	2021	Lin 2026	SMD	-0.39	-1.59	0.8	9	4
VR_pain_procedural	Litwin	2021	Lin 2026	SMD	-0.56	-1.09	0	31	27
VR_pain_procedural	Mohanasundari	2021	Gao 2022	SMD	-0.69	-1.18	-0.2	35	35
VR_pain_procedural	Orhan & Gozen	2023	Cáceres-Matos 2024	MD	-2.98	-3.73	-2.2	52	50
VR_pain_procedural	Osmanliu et al.	2021	Cáceres-Matos 2024	SMD	-1.39	-1.95	-0.8	31	31
VR_pain_procedural	Piskorz	2018	Wei 2024	SMD	-0.83	-1.3	-0.4	38	38
VR_pain_procedural	Sander Wint	2002	Gao 2022	SMD	-0.14	-0.87	0.58	17	13
VR_pain_procedural	Semerci	2021	Gao 2022	SMD	-0.8	-1.29	-0.3	35	36
VR_pain_procedural	Thybo et al.	2022	Cáceres-Matos 2024	MD	0	-0.83	0.83	52	54
VR_pain_procedural	Top & Ayyildiz	2021	Cáceres-Matos 2024	SMD	-1.81	-2.35	-1.3	37	40
VR_pain_procedural	Tork et al.	2020	Niaz 2023	SMD	-0.97	-1.32	-0.6	72	72
VR_pain_procedural	Walther-Larsen et al.	2019	Cáceres-Matos 2024	SMD	0.64	0.12	1.16	28	31
VR_pain_procedural	Windich-Biermeier et al.	2007	Lluesma-Vidal 2022	MD	-0.56	-1.4	0.28	22	28
VR_pain_procedural	Wolitzky et al.	2005	Lluesma-Vidal 2022	MD	-3.4	-5.01	-1.8	10	10
VR_pain_procedural	Wong and Choi	2023	Niaz 2023	SMD	-0.8	-1.13	-0.5	75	74
VR_pain_procedural	Yıldırım	2023	Lin 2026	SMD	-0.39	-0.79	0.01	51	49

(continued)

Supplementary Table 2. Data used to produce meta-analysis (continued)

Factor	Primary study author	Year	Meta-analysis source	Measure	Value	CI_lo	CI_up	Experimental cases	Control cases
Fear									
VR_fear_procedural	Akarsu	2023	Lin 2026	SMD	-4.14	-4.82	-3.5	53	53
VR_fear_procedural	Caruso	2020	Czech 2021	SMD	-0.1	-0.37	0.16	106	114
VR_fear_procedural	Chan (ED)	2019	Saliba 2021	SMD	0.31	-0.04	0.66	64	59
VR_fear_procedural	Chan (Pathology)	2019	Saliba 2021	SMD	0.47	0.12	0.82	63	66
VR_fear_procedural	Chen	2020	Lin 2026	SMD	-0.35	-0.69	0	68	68
VR_fear_procedural	Dumoulin	2019	Lin 2026	SMD	-0.34	-1.01	0.34	20	15
VR_fear_procedural	Erdogan et al.	2021	Niaz 2023	SMD	-1.18	-1.68	-0.7	37	34
VR_fear_procedural	Gerçeker et al. (Ocean Rift)	2020	Niaz 2023	SMD	-1.99	-2.59	-1.4	45	23
VR_fear_procedural	Gerçeker et al. (Rollercoaster)	2020	Niaz 2023	SMD	-1.53	-2.1	-1	45	23
VR_fear_procedural	Gerçeker	2021	Wang 2022	MD	-1.2	-1.78	-0.6	21	21
VR_fear_procedural	Goktas & Avci	2023	Cáceres-Matos 2024	MD	-2.94	-3.85	-2.0	36	36
VR_fear_procedural	Gold	2006	Saliba 2021	SMD	0	-0.88	0.88	10	10
VR_fear_procedural	Hsu et al.	2022	Cáceres-Matos 2024	MD	-0.37	-0.63	-0.1	69	65
VR_fear_procedural	Hundert	2021	Gao 2022	MD	-0.4	-1.06	0.26	19	18
VR_fear_procedural	İnangil et al.	2020	Niaz 2023	SMD	-1.62	-2.13	-1.1	40	40
VR_fear_procedural	Litwin	2021	Lin 2026	SMD	0.37	-0.15	0.89	31	27
VR_fear_procedural	Osmanlıliu	2021	Gao 2022	MD	-0.64	-1.63	0.35	31	31
VR_fear_procedural	Koç Özkan	2019	Niaz 2023	SMD	-2.58	-3.14	-2	46	43
VR_fear_procedural	Piskorz active VR	2020	Lluesma-Vidal 2022	MD	-2.6	-3.76	-1.4	19	21
VR_fear_procedural	Piskorz passive VR	2020	Lluesma-Vidal 2022	MD	-1.07	-2.66	0.52	17	21
VR_fear_procedural	Tork et al.	2020	Niaz 2023	SMD	-1.42	-1.79	-1.1	72	72
VR_fear_procedural	Windich-Biermeier	2007	Lluesma-Vidal 2022	MD	-0.18	-0.82	0.46	22	28
VR_fear_procedural	Wong and Choi (4-7y)	2023	Niaz 2023	SMD	-0.72	-1.15	-0.3	43	45
VR_fear_procedural	Wong and Choi (8-12y)	2023	Niaz 2023	SMD	-0.4	-0.91	0.1	32	29
VR_fear_procedural	Yildirim et al.	2023	Cáceres-Matos 2024	MD	-0.2	-0.44	0.04	51	49
Anxiety									
VR_anxiety_procedural	Canares	2021	Gao 2022	SMD	0,08	-0,59	0,75	15	20
VR_anxiety_procedural	Chan (ED)	2019	Wang 2022	MD	-1,75	-3,1	-0,4	64	59
VR_anxiety_procedural	Chan (Pathology)	2019	Wang 2022	MD	-1,56	-2,83	-0,3	63	66
VR_anxiety_procedural	Chen	2020	Wei 2024	SMD	-0,35	-0,69	0	68	68
VR_anxiety_procedural	Dumoulin	2019	Wei 2024	SMD	-0,51	-1,11	0,09	20	24
VR_anxiety_procedural	Gerçeker et al.	2019	Cáceres-Matos 2024	MD	-5,2	-6,49	-3,9	45	46
VR_anxiety_procedural	Gerçeker et al. (b)	2019	Cáceres-Matos 2024	MD	-5,8	-6,93	-4,7	45	46
VR_anxiety_procedural	Gerçeker	2020	Czech 2021	MD	-5,8	-6,93	-4,7	45	46
VR_anxiety_procedural	Gold	2021	Gao 2022	SMD	-0,68	-1,07	-0,3	53	54
VR_anxiety_procedural	Goldman	2021a	Gao 2022	SMD	0,06	-0,42	0,54	35	31
VR_anxiety_procedural	Goldman	2021b	Gao 2022	SMD	-0,04	-0,54	0,46	32	30
VR_anxiety_procedural	Hundert	2021	Gao 2022	SMD	-0,73	-1,39	-0,1	20	18
VR_anxiety_procedural	İnangil	2020	Gao 2022	SMD	-1,62	-2,13	-1,1	40	40
VR_anxiety_procedural	Koç Özkan	2020	Wang 2022	MD	-2,36	-2,75	-2	50	50
VR_anxiety_procedural	Litwin	2021	Gao 2022	SMD	-0,08	-0,59	0,44	31	27
VR_anxiety_procedural	Gerçeker et al.	2020	Gao 2022	SMD	-1,64	-2,12	-1,2	45	46
VR_anxiety_procedural	Gerçeker et al.	2021	Gao 2022	SMD	-1,23	-1,89	-0,6	21	21
VR_anxiety_procedural	Piskorz	2022	Wei 2024	SMD	-0,96	-1,43	-0,5	38	38
VR_anxiety_procedural	Yildirim et al.	2023	Cáceres-Matos 2024	MD	-0,3	-0,81	0,21	50	49

VR, virtual reality; MD, mean deviation; SMD, standardised mean deviation; CI, confidence interval