Supplementary Online Content

Gordon M, Sinopoulou V, Tabbers M, et al. Psychosocial interventions for the treatment of functional abdominal pain disorders in children: a systematic review and meta-analysis. *JAMA Pediatr*. Published online April 11, 2022. doi:10.1001/jamapediatrics.2022.0313

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Included Studies Characteristics

Study ID	Intervention	Control	Protocol or trial registration	Disease type	Diagnostic criteria	Age group (years)	Sex (M/F)	Length of follow-up	Number randomised (IG/CG)	Author contacted
Afvlen 2007	CBT psychological treatment + physiotherapy	physiotherapy	NR	RAP	Walker and von Baeyer criteria	6-15 range IG: 9.1(6-15); CG: 9.8(6-14)	IG: 4/21 CG: 8/15	2 treatment sessions	25/23	Y
Bonnert 2017	internet CBT	waitlist	NCT02306369 (retrospectively registered)	IBS-M, IBS-D, IBS-C	Rome III	13-18 range IG:15.5(1.36); CG:15.5(1.74)	IG: 16/29 CG: 21/33	10 weeks	47/54	Author responded on 27-4-2021
Cunningham 2020	CBT (blend of in person and remote) + medical care	medical care	NCT03134950 (retrospectivelly registered)	FAPD/IBS/FD/AM	Rome IV	9-14 range	32/47	4-6 weeks (study completers completed it in 8 weeks)	44/45	Author responded on 26-4-2021
DRKS00015706	visceral osteopathy	"normal osteopathy"	DRKS00015706 (retrospectively registered)	IBS, Adominal migraine, FAP-NOS, Functional Dyspepsia	Rome IV	6-18 range IG: 12.4 (3.3) CG: 12,5(3.1)	12/20	4 weeks	16/16	The author provided the thesis that had the data for this study

Duarte 2006	in person CBT + education support	education support	NR	RAP	Apley criteria	5-14 range IG: 9.9(2.2) CG: 8.4 (2.0)	IG: 4/11 CG: 6/11	4 months	15/17	Y
Evans 2014	yoga	waitlist	NCT01107977 (retrospectively registered). Protocol published in 2011.	RAP or IBS	Rome III	14-17 range	5/25	6 weeks	18/12	Author responded on 29-4-2021
Gross 2013	In person CBT	Standard medical care waitlist	NR	FAP	Rome III	7-12 range IG: 9.15(1.54) CG: 10.1(1.4)	IG: 2/13 CG: 2/12	6 weeks	15/14	Author responded on 26-4-2021
Gullewitsch 2013	Hypnotherapy	Waitlist	NR	FAP and IBS	Rome III	6-12 range IG: 9.11 (1.65) CG: 9.66 (1.79)	IG: 9/11 CG: 5/13	4 weeks	20/18	Y
Gullewitsch 2017	Gut-directed hypnotherapy (self-help)	Unspecified hypnotherapy	NR	FAP and IBS	Rome III	6-17 range IG: 12.33(2.70) CG: 11.36(2.57)	IG: 2/12 CG: 8/10	12 weeks	21/24	Y
Hicks 2006	online CBT	standard medical care waitlist	NR	RAP	At least three episodes of head or abdominal pain within a 3-month	9-16 range	IG: 9/16 CG: 8/14	7 months	25/22	Author responded on 10-5-2021

					period, severe enough to affect activities as per youth and parent report					
Humphreys 2000	1: increased dietary fiber, biofeedback-assisted cultivated low arousal, cognitive–behavioral interventions, and parental support (4 components) 2: increased dietary fiber, biofeedback-assisted cultivated low arousal, cognitive–behavioral interventions (3 components) 3: increased dietary fiber and biofeedback-assisted, cultivated low	increased dietary fiber only (>10+ g per day per child)	NR	RAP	medically diagnosed RAP	4-18 range whole group: 9.75(2.46)	26/38	8 weeks	16/16/17/15	Author responded on 26-4-2021

	arousal (2 components)									
Kortenink 2016	yoga	standard medical care	NTR3286 (propsectively registered)	AP-FGIDs	Rome III	8-18 range IG: 12.2(2.9 CG: 12.2(2.7)	IG: 6/29 CG: 9/25	10 weeks	35/34	Y
Kovacic 2017	electrical neurostimulation	placebo (sham stimulation)	NCT02367729 (prospectively registered)	abdominal pain-related FGIDs	Rome III	11-18 range IG: 15.3 CG: 15.6	IG: 6/51 CG: 4/43	4 weeks	60/55	Not needed
Kuttner 2006	yoga	waitlist	NR	IBS	Rome I	11-18 range IG: 14.4(2.1) CG: 13.8(1.9)	IG: 2/12 CG: 6/8	4 weeks	14/14	Author responded on 11-5-2021
Lalouni 2019	internet CBT	treatment as usual (treatments within the health care and school systems, including medications and visits to doctors and other health care professionals)	NCT02873078 (prospectively registered)	IBS/FD/FAP	Rome IV	8-12 range IG: 10.1(1.2) CG: 10.4(1.5)	IG: 18/28 CG: 10/34	10 weeks	46/45	Y

Levy 2010	CBT - social learning and cognitive-behavioral therapy (SLCBT)	education support (ES)	NCT00494260 (retrospectively registered)	FAPDs	Rome III	7-17 range IG: 11.2(2.6) CG: 11.3(2.5)	IG: 29/71 CG: 26/74	3 weeks	100/100	Y
Levy 2017	1: in person CBT to parents - Social learning and cognitive-behavioral therapy (SLCBT) 2: remote CBT to parents - Social learning and cognitive-behavioral therapy (SLCBT)	remote education support (ES) to parents	NCT01620606 (rertrospectively registered)	FAPDs	Rome III	7-12 range IG: 9.4(1.6) CG: 9.3(1.6)	IG1: 37/70 IG2: 36/64 CG: 39/70	3 weeks	IG1: 107 IG2: 100 CG: 109	Y
Nieto 2019	internet-based CBT, self-directed psychosocial intervention	waitlist	NCT02676232 (prospectively registered)	RAP	Apley criteria	9-15 range IG: 11.28(1.9) CG: 11(1.47)	IG: 25/32 CG: 27/30	7 weeks	57/57	Author responded on 28-4-2021
Pas 2020	hypnotherapy + education on pain	hypnotherapy	NCT02880332 (prospectively registered)	FAPDs	Rome III	6-12 range IG: 9.21(1.53) CG: 8.71(1.73)	IG: 5/9 CG: 5/9	3 weeks	14/14	Y
Robins 2005	in person CBT + standard care	standard care	NR	RAP	Apley criteria	6-16 range IG: 10.83(2.5)	IG: 18/22 CG: 12/17	10 weeks	46/40	Y

						CG: 11.85(2.3)				
Rutten 2017	home-based (CD) hypnontherapy	individual hypnotherapy (iHT)	NTR2725 (prospectively registered) Protocol published as Rutten 2014	IBS/FAP/FAPS	Rome III	8-18 range IG: 13.4(2.9) CG: 13.3(2.8)	IG: 34/94 CG: 47/85	3 months	128/132	Author responded on 5-5-2021
Sanders 1989	in person CBT	waitlist + usual care	NR	RAP	Apley criteria	6-12 range IG: 9.1 CG: 9.9	NR	8 sessions	6/6	Y
Sanders 1994	in person CBT	standard gastroenterology care	NR	RAP	Apley criteria	7-14 range IG: 8.95(1.6) CG: 9.5(2.$)	IG: 9/13 CG: 7/15	8 weeks	22/22	Y
Schurman 2010	biofeedback-assisted relaxation training (BART) + SMC	standardised medical care (SMC)	NR	FD	Presence of duodenal eosinophilia on biopsy	8-17 range whole group: 12.2(2.8)	7/13	6 weeks	10/10	Y
van der Veek 2013	CBT	visits to paediatrician (intensive medical care, IMC)	NTR1613 (retrospectively registered)	AP-FGIDs	Rome III	7-18 range IG: 1.94 (2.61) CG: 11.87(2.93)	IG:15/37 CG: 14/38	6 weeks	52/52	Authors responded on 5-5-2021

van Tilburg 2009	audio- recorded guided imagery treatment + standard care	standard medical care	NR	IBS/FD/FAP /AM	Rome II	6-15 range IG: 10.6(3.0) CG: 9.9(2.2)	IG: 4/14 CG: 5/9	4 weeks	19/15	Y
Vlieger 2007	hypnotherapy	standard care (consisting of education, dietary advice, extra fibers, and pain medication or proton-pump inhibitors if considered necessary. Moreover, they received 6 half-hour sessions of supportive therapy)	ISRCTN26628553 (retrospectively registered) NTR35 (rertrospectively registered)	FAP/IBS	Rome II	8-18 range IG: 13.2(2.5) CG: 13.4(2.9)	IG: 9/18 CG: 4/21	3 months	28/25	Author responded on 5-5-2021
Walker 2021	internet-delivered CBT	Iinternet-delivered pain education	NCT02327377 (retrospectively registered)	FAPDs	Rome IV	11-17 range whole group: 14.62	94/184	8 weeks	152/148	Author responsive to multiple requests for data
Wallander 2011	Written self-disclosure + standard medical treatment	standard medical treatment	NR	RAP	Apley criteria	11-18 range whole group: 13.6(1.9)	19/44	5 days	36/27	Author responded on 26-4-2021

Warschburger 2021	CBT	healthy lifestyle prevention program for school children	NCT02030392; DRKS00005038 (both prospectively registered)	RAP	Rome III	7-12 range IG: 9.71(1.7) CG: 9.94(1.75)	IG: 28/35 CG: 27/37	6 weeks	63/64	Author responded on 27-4-2021
Wassom 2013	"Gutstrong" remote CBT + education	standard medical care and waitlist	NR	FGIDs	Rome III	12-17 range Whole group: 15.16(1.14)	IG: 3/4 CG: 1/7	4 weeks	9/11	Y
Weydert 2006	guided imagery with progressive muscle relaxation	breathing techniques	NR	RAP	A history of at least 3 episodes of abdominal pain over the previous 3 months severe enough to affect their normal activity	5-18 range IG:11 CG: 11	IG: 3/11 CG: 4/4	4 weeks	16/11	Y
Youssef 2009	remote guided imagery	rest and relaxation	NR	RAP	3 episodes of pain interfering with activity for 3 months	8-11 range	5/6	1 week	6/5	Y

					in the past year					

eTable 2. Study Sponsor Details

Study ID	Study sponsor
Afvlen 2007	NR
Bonnert 2017	The study was supported by grants from the Jan and Dan Olsson Foundation (4-1559/2013), the Swedish Research Council (521-2013-2846), the Kempe-Carlgren Foundation, the Ruth and Richard Julin Foundation (2012Juli0048), the Majblomman Foundation, the Ishizu Matsumurais Donation, the Ihre Foundation (SLS-331861), the Ihre fellowship in Gastroenterology, the Gadelius Foundation, the Samariten Foundation, the Värkstadsstift elsen Foundation, the Swedish Research Council for Health, Working life and Welfare (2014-4052), the Swedish Society of Medicine (SLS-331681 SLS-410501), and the Stockholm County Council (ALF). Financial support was also provided through the regional agreement on medical training and clinical research between Stockholm County Council and Karolinska Institutet (20130129). None of the funding bodies had any infl uence on study design, implementation, data analysis, or interpretation
Cunningham 2020	All phases of this study were supported by the Sharon S. Keller American Pain Society Grant and the Cincinnati Children's Hospital Place Outcomes Award (both awarded to N.C.).
DRKS00015706	NR
Duarte 2006	NR
Evans 2014	National Center for Complementary and Alternative Medicine grant K01AT005093, an Oppenheimer Seed Grand for Complementary, Alternative and Integrative Medicine, and by the University of California, Los Angeles Clinical and Translational Research Center, Clinical and Translational Sciene Institute Grand UL1TR000124.
Gross 2013	Grant from Potsdam Graduate School
Gullewitsch 2013	NR
Gullewitsch 2017	Marco Daniel Gulewitsch and Angelika Anita Schlarb received a funding for this project by the Milton-Erickson- Stiftung (Milton-Erickson-Foundation, Munich). The Milton-Erickson-Stiftung was not involved in the planning, realization, or analysis of the study.
Hicks 2006	NR
Humprheys 2000	NR
Kortenink 2016	This trial is partially financed by an unrestricted grant from VGZ Health Care Insurance, The Netherlands. Another trial the authors worked on is partially financed by an unrestricted grant fromWinclove Probiotics Bio Industries BV, Amsterdam, The Netherlands, and MCO Health BV, Almere, the Netherlands.
Kovacic 2017	American Neurogasterenterology and Motility Society
Kuttner 2006	Personal grants from Britisch Columbia Research Institute, Canadian Institutes of Health Research, ant he Michael Smith Foundation for Health Research
Lalouni 2019	This study was supported by grants from the Jan and Dan Olsson Foundation(4-1559/2013), the Swedish Research Council (521-2013-2846), the Kempe-Carlgrenska Foundation, the Ruth and Richard Julin Foundation(2012Juli0048), the Majblomman Foundation, a donation from Ishizu Matsu-murais, the Bengt Ihre Foundation (SLS-331861), the Bengt Ihre research fellowship in Gastroenterology, the Swedish Society of Medicine (SLS331681,SLS-410501), the Swedish Research Council for Health, Working life, andWelfare (2014-4052), and the Centre for Psychiatry Research. Financial supportalso was provided through the regional agreement on medical training andclinical research between Stockholm County Council and Karolinska Institutet(20130129 and 20150414). None of the funding bodies had any influence onthe study design, implementation, data analysis, or interpretation.

Levy 2010	Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
Levy 2017	This study was supported by award R01HD36069-0981 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (Dr. Levy).
Nieto 2019	This work was supported by Fundació La Caixa (RecerCaixa, 2012-2013) and the Ministerio de Economía y Competitividad (Spanish Government, Ref: PSI2013-42413-R; 2014-2017).
Pas 2020	Grant support for as R. and Dra. Rheel E. was provided by a Chair funded by the Berekuyl Academy/European College for Decongestive Lymphatic Therapy, the Netherlands and awarded to the Vrije Universiteit Brussel, Belgium. Sophie Van Oosterwijck is a researcher supported by a research project grant from the Research Foundation-Flanders (FWO) (grant number G0B3718N). Kelly Ickmans is a postdoctoral research fellow partly funded by the Research Foundation-Flanders (FWO).
Robins 2005	Nemours Research Programs
Rutten 2017	This study was funded by grant 171102013 from the Netherlands Organisation for Health Research and Development (Dr Benninga).Role of the Funder/Sponsor: The funder of the study advised against a third study arm that included children receiving standard medical carewithout hypnotherapy. The funding source had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and the decision to submit the manuscript for publication.
Sanders 1989	NR
Sanders 1994	This study was supported by Grant 53091 from the National Health and Medical Research Council of Australia to Matthew R. Sanders, Ross W. Shepherd, and Geoffrey Cleghorn
Schurman 2010	Grant from the Children's Mercy Hospital Katharine B. Richardson Associates Endowment Fund (to J.V.S.).
van der Veek 2013	Emma Children's Hospital AMC (Amsterdam) - De Bascule, Academic Center for Child and Adolescent Psychiatry (Amsterdam)
van Tilburg 2009	National Institutes of Health grants R24 DK067674 and RR00046.
Vlieger 2007	There was no external funding source.
Walker 2021	This work was supported by grants from the National Institutes of Health (NIH) R01 HD076983 (PI: Walker), P30 HD15052 (Vanderbilt Kennedy Center), DK058404 (Vanderbilt Digestive Disease Research Center), T32 MH018921 (PI: Garber), and T32 GM 108554 (A.L.S.).
Wallander 2011	Part by National Institute of Diabets and Digestive and Kidney Diseases/National Institutes of Health grant RO3 DK61481-01A1
Warschburger 2021	The study was supported by the German Research Foundation to PW (DFG; WA 1143/9-1).
Wassom 2013	NR
Weydert 2006	This work was supported by National Center for Complementary and Alternative Medicine grant NIH: 5P50-AT00008.
Youssef 2009	Supported by R24DK067674

eTable 3. Primary Outcomes

Study ID	Treatment success	API index	Pain frequency	Pain intensity	Withdrawals due to adverse effects
Afvlen 2007	NR	NR individually Pain scores were calculated at the first consultation and after 1 year, based on ordinal data concerning frequency, intensity and duration Overall pain score IG mean(range): 3.3(0-9) Overall pain score CG mean(range): 3.5(0-9)	NR	NR	NR
Bonnert 2017	NR	No	Number of days with pain or discomfort during the past week IG: 3.19(0.31) CG: 3.66(0.29)	Worst pain intensity during last week measured with FACES IG: 4.53(0.37) CG: 5.53 (0.33)	NR
Cunningham 2020	Average pain over the past two weeks was assessed via a Visual Analog Scale (VAS) anchored with the words, “no pain,” and “worst pain,”. A ≥ 3/10 is clinically significant . IG: 12.3% average VAS pain reduction (n=5) CG: 5.5% average VAS pain reduction (n=2)	No	NR	*Average pain over the past two weeks was assessed via a Visual Analog Scale (VAS) anchored with the words, “no pain,” and “worst pain,”. A ≥ 3/10 is clinically significant* *IG: 12.3% average VAS pain reduction (n=5)* *CG: 5.5% average VAS pain reduction (n=2*	0

	A defintion of "A Functional Disability Index (FDI) score decrease of ≥ 7.8 points denotes a clinically meaningful treatment response" was also given but we did not use it"				
DRKS00015706	NR	No	NR	Bieri Revised faces- scale (6 point scale, 0: freedom from pain, 10: greatest pain imaginable). Patient scored 1) pain of the last week and 2) pain at the day of treatment. Bieri current pain in the day of treatment IG T1: 1.8(2.0); CG T1: 2.5(2.0) IG T2: 1.6(2.1); CG T2: 2.2(2.1) IG T3: 1.6(2.6); CG T3: 2.2(2.7) IG T4: 0.5(0.8); CG T4: 2.1(2.4) Bieri strongest pain of the last week (Mean, SD) when did they report last week's pain? IG T1: 8.3(1.5); CG T1: 7.7(1.7) IG T2: 4.7(1.5); CG T2: 4.9(2.3) IG T3: 2.4(2.3); CG T3: 5.0(2.9)	0

				IG T4: 2.7(1.7); CG T4: 5.4(2.7)	
Duarte 2006	NR	No	Median frequency of pain crises per month. Only Median infromation presented. IG 1 month: 15 CG 1 month: 12 IG 2 month: 5 CG 2 month: 8 IG 3 month: 2 CG 3 month: 10 IG 4 month: 2 CG 4 month: 8	Pain intensity was measured as number of crises per month on the 2-4th sessions only. IG 1 month: NR CG 1 month: NR IG 2 month: 1.8 CG 2 month: 1.7 IG 3 month: 1.5 CG 3 month: 1.7 IG 4 month: 1.5 CG 4 month: 1.9	NR
Evans 2014	a reduction of at least 1 point on the Numeric Rating Scale for abdominal pain (Minimal Clinically Statistical Differences) : IG: 44% (n=8) CG: 5/12 (author response)	No	NR	*Estimated marginal means, change scores (95% CI)* *IG: 4.42 (variance?), Change -0.62 (-1.28 to 0.04)* *CG: 5.19 (variance?), Change -0.15(-1.01 to 0.71)*	0
Gross 2013	NR	No	Rated once a day Pain frequency (per day) at the study end IG mean(SD) = 0.05(0.09) CG = 0.68(0.37) Pain frequency (per day) at 3 months follow-up IG mean(SD) = 0.24(0.09) CG = 0.62(0.56)	The intensity of pain is measured using a visual analogue scale score (00 no pain, 10 0 unbearable pain) Pain intensity (per day) at the study end IG mean(SD) = 0.16(0.32) CG = 1.93(1.64) Pain Intensity (per day) at 3 months follow-up	0

				IG mean(SD) = 1.54(0.77) CG = 1.55(1.49)	
Gullewitsch 2013	Participating children with >80 % improvement of the index were considered as responders with a clinical remission.An improvement between 30–80 % was defined as "significant improvement." IG: 11 of 20 children (55.0 %). Five children (25.0 %) showed a significant symptom improvement. Four children (20.0 %) did not improve or got worse. CG: One child (5.6 %). five children (27.8 %) showed a significant symptom improvement and 12 children (66.7 %) did not improve or got worse.	*API mean change in the two weeks(parent report)* *IG: -3.91(3.56)* *CG: 0.63(4.57)*	Days with pain in the last 2 weeks IG: 1.80 (2.95) CG:6.17 (4.55)	Mean pain intensity in the last 2 weeks per day IG: 1.60 (2.45) CG: 4.46 (2.33)	0
Gullewitsch 2017	Participating children with >80 % improvement of the index were considered as responders with a clinical remission. An improvement between 30–80 % was defined as "significant improvement."	Mean(SD) parental API for the last 2 weeks at end IG: 2.36(0.9) CG: 1.82(0.73)	Number of days with abdominal pain in the last 2 weeks (range: 0–14). IG: 4.21 (3.66) CG: 2.94 (2.65)	Mean pain intensity per day in the last 2 weeks IG: 1.14 (1.35) CG: 0.45 (0.48)	0

	IG: 2 (14%) out of 14. Seven (50%) of 14 participants in the GDHT improved significantly. Treatment was considered unsuccessful in five (36%) cases in the GDHT. CG: 9 (50%) out of 18. Six (33%) of 18 participants in the UHT condition improved significantly. Treatment was considered unsuccessful in three (17%) cases in the UHT condition.				
Hicks 2006	A reduction in the sum of pain intensity of at least 50% from baseline to over the two week period measured at 1 and 3 month follow up. IG n=15 of 21 met criteria at 1 month and n=13 of 18 met criteria at 3 months. CG n=3 of 16 met criteria at 1 month and n=2 of 14 met criteria at 3 months.	No	Daily pain diaries. Pain was recorded by the participant four times per day over a 2-week period, thus at 56 time intervals, using a 0 (no pain) to 10 (worst pain) Numeric Rating Scale (NRS) pain frequency (range 0–56) Pain frequency at 1month study end for IG mean(SD) = 11.6(19.1), for CG = 18.1(13.5)Pain frequency at 3months study end for IG mean(SD) = 13.1(20.4), for CG = 12.1(10.4)	NRS mean intensity of reported pain (range 0–10 Pain Intensity at 1 month for IG mean(SD) = 3.4(2.4), for CG = 4.7(2.2) Pain Intensity at 3 months for IG mean(SD) = 2.9(2.1), for CG = 4.9(1.3)	0
Humprheys 2000	For self-reported pain, 33 (72%) of 46 of treatment participants reported	No	NR	VAS was computed on a scale of 0-7. Time period is 7 days: 7 is extreme	0

	elimination of pain, whereas this was true for only 1 (7%) of the 14 fiber-only comparison group members. Decreased pain was seen in an additional 26% of treatment participants and in 79% of the fiber-only comparison group. Finally, 2 (4%) of the treated participants reported increased pain compared with 3 (21%) of the fiber-only comparison group.			pain for 7 days and 0 is total absence of pain for a period of 7 days IG1 end of study (days 43-49): 1.88(3.13) mean(SD) IG2 end of study (days 43-49): 0.28(0.61) mean(SD) IG3 end of study (days 43-49): 0.17(0.46) mean (SD) CG end of study (days 43-49): 1.63(2.65) mean(SD)	
Kortenink 2016	Treatment response was defined as a decrease of combined abdominal pain scores (Pain intensity score and pain frequency score) of 50%, during 1-year follow-up IG end n=7 IG 6 month n=10 IG 12 month n=19 CG end n=6 CG 6 month n=8 CG 12 month n=8	No	Pain frequency was scored as 0 : no daily pain, 1 : 0–20 minutes of daily pain, 2 : 20–40 minutes of daily pain, 3 : 40–90 minutes of daily pain, and 4 : >90 minutes of daily pain. The daily scores were added up, and mean week scores were used to obtain a pain intensity score and a pain frequency score. In case of missing values, data of the available weeks were used for the mean weekly pain scores. variance?? --> from figure	Pain intensity was scored using the validated 6-face Faces Pain ScaleRevised, ranging from 0 (no pain) to 5 (very much pain). variance?? Pain intensity at the study end for IG mean(SD) = 11.91(0.96) , for CG = 13.18(0.96) Pain intensity at 6months for IG mean(SD) = 10.42, for CG = 12.47 Pain intensity at 12months end for IG mean(SD) = 7.99, for CG = 12.14	NR

			Pain frequency at the study end for IG mean(SD) = 12.23(1.06), for CG = 13.83(1.1) Pain frequency at 6months for IG mean(SD) = 11.15, for CG = 13.15 Pain frequency at 12 months for IG mean(SD) = 8.06, for CG = 13.66		
Kovacic 2017	A post hoc definition was applied of 30% reduction in improvement of worst or unusual abdominal pain. IG n=29 met the criteria for worst pain reduction and n=28 for composite pain reduction at study end (week 3) CG n=10 met the criteria fpr worst pain reduction and n=13 for composite pain reduction at study end (week 3)	Pain frequency-severity-duration scale Figure 3	Participants were assessed by the Pain frequency-severity-duration scale modifed for weekly measurements/ Pain frequency scores are not reported seperately	*Worst pain intensity ratings* *IG median(IQR) at study end (week 3): 7.0(5.0-9.0)* *IG median(IQR) at follow-up: 6.0(5.0-8.0)* *CG median(IQR) at study end (week 3): 5.0(4.0-7.0)* *CG median(IQR) at follow-up: 7.0(5.0-8.0)*	IG = 2 (1 peptic ulcer; 1 eosinophilic oesophagitis) CG = 1 (eosinophilic oesophagitis)
Kuttner 2006	NR	No	NR	Given the difference at baseline, pain intensity was omitted as an outcome variable in the comparison of the two groups following the intervention"	0
Lalouni 2019	NR	No	Pain free days IG self-reported: 3.81(0.33) IG parent-reported:	FACES pain scale IG self-reported: 4.33(0.38) IG parent-reported:	IG: 0 CG: 1 (hyperthyroidism)

			3.73(0.34) CG self-reported: 3.00(0.34) CG parent-reported: 3.12(0.34)	5.26(0.36) CG self-reported: 5.57(0.38) CG parent-reported: 5.26(0.36)	
Levy 2010	NR	No	NR	In Levy 2010: This scale consists of four line drawings of faces showing gradual increases in pain expression In Levy 2013: The FPS-R consists of 6 hand-drawn faces showing gradual increases in pain expression from left to right. Children are asked to choose the face that best describes their current pain; parents independently make the same rating with respect to their child. Scores can range from 0-10 with higher values indicative of greater pain. Parent-reported raw mean(SE) changes from baseline are only shown in a figure and are reported in numbers as adjusted results of a mixed-model analysis and not raw. Child-reported data not shown. Faces Pain Scale-Revised	IG: 0 CG: 1 (1 child "too ill")

				- from graph but NR clearly IG Treatment End: 0.55 IG 3 months: 0.6 IG 6 months: 0.65 Faces Pain Scale-Revised - from graph but NR clearly CG Treatment End: 1 CG 3 months: 0.8 CG 6 months: 1 From Levy 2013, raw mean(SD) scores: Parent-reported pain at 6 months IG: 0.99(1.82) Parent-reported pain at 6 months CG: 1.35(2.45) Parent-reported pain at 12 months IG: 0.88(1.86) Parent-reported pain at 12 months CG: 0.94(1.78) Child-reported pain at 6 months IG: 0.97(1.40) Child-reported pain at 6 months CG: 0.74(1.41) Child-reported pain at 12 months IG: 0.93(1.42) Child-reported pain at 12 months CG: 0.70(1.53)	
Levy 2017	NR	*Changes in the parent reported API (mean, 95% CI)* *Only differences between groups, not from baseline*	API only	API only	0
Nieto 2019	NR	IG children end: 12.72(10.32)	Abdominal pain index 0-5, “not at all” (0) to	API only	NR

		CG children end: 11.55(8.84) IG parents end: 14(8.44) CG parents end: 11.67(8.93)	"every day" (5). IG: 1.08 (±1.32) CG: 1.11 (±1.24)		
Pas 2020	NR	No	NR	The Faces Pain Scale-Revised (FPS-R) was used to assess the child's average abdominal pain intensity from the previous week. This scale consists of six faces, presented horizontally, which relate to a numeric value from 0 ("no pain") to 10 ("the worst imaginable pain"). Main group, time, and interaction effect" for the outcomes is reported, however the mean(variance) per group is not reported	NR
Robins 2005	NR	API parent IG end: 14.9 CG end: 21.3 IG follow-up: 15.8 CG follow-up: 22.0 API child IG end: 15.5 CG end: 20.4 IG follow-up: 15.0 CG follow-up: 22.2	API only	API only	0
Rutten 2017	Treatment success was defined as at least 50%reduction in the PFS	No	Children completed a standardized diary to assess abdominal pain	Children completed a standardized diary to assess abdominal pain	0

	and PIS Whole cohort results: end of study IG: 46 end of study CG:62 6 months IG: 64 6 months CG: 81 12 months IG: 78 12 months CG: 88 <13 years old results: end of study IG: 23 end of study CG: 35 6 months IG: 32 6 months CG: 42 12 months IG: 38 12 months CG: 45 >=13 years old results: end of study IG: 24 end of study CG: 27 6 months IG: 33 6 months CG: 39 12 months IG: 39 12 months CG: 43 IBS results: end of study IG: 24 end of study CG: 33 6 months IG: 31 6 months CG: 41 12 months IG: 37 12 months CG: 43 FAP results: end of study IG: 22 end of study CG: 29 6 months IG: 33 6 months CG: 40		frequency and pain intensity during 7 consecutive days, which were computed into a pain frequency score (PFS) (scale of 0-21, with 0 indicating no pain and 21 indicating abdominal pain lasting more than 120 minutes on 7 consecutive days) and pain intensity score (PIS) (scale of 0-21, with 0 indicating no pain at all and 21 indicating the most severe pain [facial scale] on 7 consecutive days), repectively Data taken from figure: IG week 4: 11.5(0.6) ; CG: 9.6(0.7) IG week 8: 10.1(0.7) ; CG: 7.5(0.6) IG end: 9.0(0.7) ; CG: 6.6(0.6) IG 6months: 7.5(0.7) ; CG: 5.8(0.6) IG 12months: 6.1(0.7) ; CG: 4.6(0.5)	frequency and pain intensity during 7 consecutive days, which were computed into a pain frequency score (PFS) (scale of 0-21, with 0 indicating no pain and 21 indicating abdominal pain lasting more than 120 minutes on 7 consecutive days) and pain intensity score (PIS) (scale of 0-21, with 0 indicating no pain at all and 21 indicating the most severe pain [facial scale] on 7 consecutive days), repectively Data taken from figure: IG week 4: 11.4(0.6); CG: 9.8(0.6) IG week 8: 10.1(0.7); CG: 7.7(0.6) IG end: 9.1(0.8); CG: 6.5(0.6) IG 6months: 7.6(0.7); CG: 5.8(0.6) IG 12months: 6.1(0.7); CG: 4.6(0.4)	

	12 months IG: 40 12 months CG:45				
Sanders 1989	Number of pain-free chidren (All experienced pain at baseline) IG end: 6 IG 3 monts: 7 CG end: 2 CG 3 months: 3	No	Teacher reported. the number of days in which pain behavior was observed over a 2 week period Taken from graph. IG end: 1 CG end: 2.3 IG 3months: 0.7 CG 3months: 2.1	A child's pain intensity was obtained by summing the three daily recordings for each day of the week to obtain a total weekly pain intensity score. Because there were no missing data for any of the children, total pain intensity scores were used instead of daily averages. Taken from graph: Self-report IG phase 1: 22 CG phase 1: 24 IG phase 2: 2 CG phase 2: 30 IG end: 1 CG end: 10 IG 3 months: 3 CG 3 months: 13 Parent-report IG phase 1: 5.5 CG phase 1: 8 IG phase 2: 0 CG phase 2: 7.5 IG end: 0 CG end: 0.5 IG 3 months: 0.5 CG 3 months: 1	NR
Sanders 1994	Proportion of pain free children	No	Pain diary. Children monitored their pain on a daily basis for 14	Part of the pain diary, the intensity of pain was measured with a visual	NR

	Percentages presented in table 3 but unable to calculate as numbers of participants per group are not given		consecutive days at each assessment period (pretreatment, posttreatment, and 6- and 12-month follow-up). Self-report Not presented for end of study IG 6 month: 2.6(6.6) IG 12 month: 0.4(1.0) CG 6 month: 7.6(11.1) CG 12 month: 5.5(9.3) Parent-report Not presented for end of study IG 6 month: 0.9(1.1) IG 12 month: 1.6(3.2) CG 6 month: 6.2(6.2) CG 12 month: 4.9(5.9)	analogue scale (VAS) was used. IG end: 3.27(8.33) IG 6month: 0.36(0.77) IG 12month: 0.64(1.38) CG end: 6.67(7.04) CG 6month: 3.97(5.08) CG 12month: 2.11(3.56)	
Schurman 2010	NR	No	NR	*Highest level of pain intensity (taken from Figure 2):* *IG post-treatment: 1.7 no variance reported* *CG post-treatment: 2.7 no variance reported*	NR
van der Veek 2013	Children were considered improved if they decreased >=9.90 points on the self-reported API (range 0–50); if in addition to this, their level of AP after treatment was closer to the mean of a	Child reported API IG end: 23.1 CG end: 26.51 IG 6 months: 18.67 CG 6 months: 24.66 IG 12 months: 19.03 CG 12 months: 17.72	NR	Pain diary IG end: 6.82 CG end: 8.8 IG 6months: 5.61 CG 6months: 7.45 IG 12months: 5.73 CG 12 months: 17.72	0

	healthy population than to the mean of the clinical population, they were considered recovered. If the AP increased >=9.90 points after treatment, children were considered deteriorated Recovered: IG end of treatment: 29.5% = 13/45 IG 6 months: 44.2% = 19/43 IG 12 months: 51.1% = 24/46 CG end of treatment: 25.5% = 12/47 CG 6 months: 36.6% = 16/44 CG 12 months: 53.8% = 23/42 Improved: IG end of treatment: 2.3% = 1/45 IG 6 months: 7.0% = 3/43 IG 12 months: 8.9% = 4/46 CG end of treatment: 4.3% = 2/47 CG 6 months: 4.9% = 2/44 CG 12 months: 2.6% = 1/42 Additionally, children were considered recovered if both their	Parent reported API IG end: 21.78 CG end: 24.03 IG 6 months: 18.68 CG 6 months: 2.82 ??? IG 12 months: 17.99 CG 12 months: 17.39			

	PIS and PDS decreased 80%; if both PIS and PDS decreased between 30% and 80%, children were considered improved, and if children's PIS or PDS decreased, 30%, they were considered not improved Recovered IG end of treatment: 41.0% = 18/45 IG 6 months: 42.5% = 18/43 IG 12 months: 58.5% = 27/46 CG end of treatment: 25.0% = 12/47 CG 6 months: 28.9% = /44 CG 12 months: 41.9% = 13/42 Improved: IG end of treatment: 25.6% = 12/45 IG 6 months: 22.5% = 10/43 IG 12 months: 7.3% = 3/46 CG end of treatment: 22.5% = 11/47 CG 6 months: 18.4% = 8/44 CG 12 months: 20.9% = 9/42				
van Tilburg 2009	Treatment response as 50% reduction in the	Abdominal pain score, not exactly API	AP score only	AP score only	NR

	abdominal pain score from before treatment to after treatment. IG end parent report: 12 CG end parent report: 4 IG end self report: 10 CG end self report: 5	Taken from figure, no SD IG end: 8.0 CG end: 15.0	Abdominal pain frequency and intensity were assessed with 2 questions derived from the Abdominal Pain Index, 12 as follows. (1) "In the last week, how often have you (your child) had abdominal pain (stomach aches)" (not at all, 1 or 2 days, 3 or 4 days, 5 or 6 days, or every day)? (2) "In the last week, when your (child's) stomach hurt, how much did it usually hurt" (10-point scale ranging from "no pain" to "the most pain possible")? Pain frequency and intensity were multiplied to yield 1 pain score, with a possible range of 0 to 40	Abdominal pain frequency and intensity were assessed with 2 questions derived from the Abdominal Pain Index, 12 as follows. (1) "In the last week, how often have you (your child) had abdominal pain (stomach aches)" (not at all, 1 or 2 days, 3 or 4 days, 5 or 6 days, or every day)? (2) "In the last week, when your (child's) stomach hurt, how much did it usually hurt" (10-point scale ranging from "no pain" to "the most pain possible")? Pain frequency and intensity were multiplied to yield 1 pain score, with a possible range of 0 to 40	
Vlieger 2007	Clinical remission was defined as a decrease of the PIS and PFS of 80%; significant improvement was defined as a decrease of PIS and PFS between 30% and 80% and treatment was considered unsuccessful if the scores	No	*"Pain frequency was daily scored as follows: 0 no pain, 1 1 to 30 minutes of pain, 2 31 to 120 minutes of pain, 3 more than 120 minutes of pain per day. Again, the data for 7 days were totaled giving a pain frequency*	*"Pain intensity was scored using an affective facial pain scale with faces showing no pain at all to faces showing severe pain. The data for 7 days were totaled, giving a maximum pain intensity score (PIS) of*	0

	improved 30% or got worse. Remission IG end of treatment: 16 CG end of treatment: 3 IG 6 months: 19 CG 6 months: 4 IG 12 months: 23 CG 12 months: 6 IG 5 years: 17 CG 5 years: 3 (discounting the patient who switch treatment groups) Improvement IG end of treatment: 7 CG end of treatment: 8 IG 6 months: 6 CG 6 months: 4 IG 12 months: 3 CG 12 months: 7 IG 5 years: 5 CG 5 years: 8		*score (PFS).* *Only mean changes between baseline and 1-year without variance are mentioned* *Taken from figure* *IG week 1: 10.0* *IG week 4: 7.6* *IG week 8: 3.9* *IG week 12: 2.4* *IG 6 months: 1.8* *IG 12months: 1.0* *CG week 1: 13.8* *CG week 4: 13.0* *CG week 8: 12.5* *CG week 12:12.0* *CG 6 months: 10.8* *CG 12months: 9.8* *IG 5 years follow up: 2.3(4.0) mean(SD)?* *CG 5 years follow up: 7.1(6.0) mean(SD)?*	*21."* *Only mean changes between baseline and 1-year without variance are mentioned* *Taken from figure* *IG week 1: 9.8* *IG week 4: 6.3* *IG week 8: 4.2* *IG week 12: 3.0* *IG 6 months: 2.4* *IG 12months: 1.8* *CG week 1: 12.2* *CG week 4: 12.0* *CG week 8: 10.0* *CG week 12: 9.9* *CG 6 months: 9.0* *CG 12months: 8.0* *IG 5 years follow up: 2.9(4.4) mean(SD)?* *CG 5 years follow up: 7.7(5.3) mean(SD)?*	
Walker 2021	NR	API self-report: IG mid: 1.70(0.77) CG mid: 1.90(0.99) IG end: 1.48(0.90) CG end: 1.55(1.02) IG 6months: 1.22(0.94) CG 6 months: 1.50(0.99) IG 12 months: 1.17(1.00) CG 12 months: 1.37(1.05)	API only	API only	0
Wallander 2011	NR	No	Abdominal Pain Frequency Rating	NR	0

			IG 3 months: 1.54 ±1.40 CG 3 months: 1.96±1.51 IG 6 months: 1.35 ±1.39 CG 6 months: 2.32 ±1.72		
Warschburger 2021	>=80% reduction of pain intensity compared with baseline IG: ; CG: Not given	No	NR	*Changes in logarithmised AUC for pain intensity (adjusted means, 95% CI)* *IG end: -0.69 (-1.05 to -0.32)* *IG 3 months: -0.74(-1.11 to -0.38)* *IG 6 months: -1.24(-1.61 to -0.88)* *CG end: -0.33(-0.70 to 0.05)* *CG 3 months: -0.38(-0.76 to -0.01)* *CG 6 months: -0.88(-1.26 to -0.51)*	0
Wassom 2013	NR	No	2 week pain diary Pain frequency at the study end for IG mean(SD) = 6.71(4.92) CG = 8.63(2.93)	Pain severity was rated using a horizontal pain thermometer scale that included 10 forced-choiceradio buttons Pain severity at the study end for IG mean(SD) = 4.31(1.02) CG = 5.01(0.36)	0
Weydert 2006	The percentage of children who had ≤ 4 days with pain and no missed activities during the previous month.	No	Number of days with pain per month Are these mean(range)? If yes, what is the variance?	FACES scale of 0–6 for any pain noted at 7 AM, 2 PM, and 6 PM each day. What is the variance?	0

	IG 1 month: 6 CG 1 month: 0 IG 2 months: 11 CG 2 months: 2		IG 1 month: 7.5 (2.9 - 12.2) IF IQR SD=10 CG 1 month: 11.3 (4.3 - 18.2) IF IQR SD=10.3 IG 2 months: 4.2 (0.9 - 7.5) IF IQR SD=4.9 CG 2 months: 7.9 (3.7-12.0) IF IQR SD=6.1	IG 1 month: 1.2 (0.9 - 1.5) IF IQR SD=0.44 CG 1 month: 1.6 (0.6-2.5) IF IQR SD=2.05 IG 2 months: ?? CG 2 months: ??	
Youssef 2009	NR	No	NR	From questionnaire IG baseline: 63.2 CGbaseline: 58.5 IG end: 14.8 CG end: 20.3 IG 3 months: 17.07 CG 3 months: 18.8 variance??	0

eTable 4. Secondary Outcomes

Study ID	QOL	Anxiety/depression	Defecation	adequate relief	school attendance/performance	SAEs
Afvlen 2007	NR	NR	NR	NR	NR	NR
Bonnert 2017	PedsQL IG self-report: 76.92(2.11)IG parent-report: 77.55(2.00) CG self-report: 74.89(1.99)CG parent-report: 78.15(1.85)	Anxiety Scale (SCAS-C/P) IG self-report: 25.23(2.38)IG parent-report: 13.75(1.33) CG self-report: 22.62(2.22)CG parent-report: 12.27(1.24)	NR	NR	Hours away from class in last month (due to abdominal pain/discomfort) IG self-report 1.04 (0.16) IG parent-report 1.22 (0.16) CG self-report 1.31 (0.15) CG parent-report 1.45 (0.15)	NR
Cunningham 2020	NR	Anxiety: 50% reduction in SCARED scores at post-treatment was an indicator of improvement/remission. IG SCARED: 13 children with at least 50% reduction CG SCARED: 6 children with at least 50% reduction	NR	NR	NR	0
DRKS00015706	NR	NR	NR	NR	NR	NR
Duarte 2006	NR	NR	NR	NR	NR	NR
Evans 2014	Measured on the SF-36 Estimated marginal means, change scores (95% CI) IG: 74.69, Change 6.67 (2.87 - 10.47) CG: 67.35 (Change 0.00 (-4.47 - 4.47)).	NR	NR	NR	NR	IG 1 hitting knee; CG 0

Gross 2013	All items of the PedsQL separately reported in the paper	NR	NR	NR	NR	0
Gullewitsch 2013	Measured at baseline, no end of study results reported	NR	NR	NR	rare and could not be calculated	0
Gullewitsch 2017	KINDL-Kiddy (age 4–7 years) and the KINDL-Kid (8–12 years) IG: 71.27 (9.24) CG: 70.63 (13.70)	NR	NR	NR	The pain diary also assessed whether the child missed school because of AP. IG: 0.50 (0.65) CG: 0.65 (1.37)	0
Hicks 2006	PedsQL IG self-report: 76.3(15.3) IG parent-report: 77.9(13.2) CG self-report: 77.7(14.0)CG parent-report: 80.2(9.8)	NR	NR	NR	NR	NR
Humprheys 2000	NR	NR	NR	NR	Measured by the RSA-F1, RSA-F2 IG1 end of study: 0.1(0.25) mean(SD) IG2 end of study: 0.0(0.0) mean(SD) IG3 end of study: 0.1(0.25) mean (SD) CG end of study: 0.8(1.26) mean(SD)	NR
Kortenink 2016	All items of the KIDSCREEN-27 reported in the paper	NR	NR	NR	Percentage of kids with school absence at least once a month IG: 12.5%(n=4) CG: 36% (n=12)	NR

Kovacic 2017	NR	Only measured at follow-up, not study end	NR	NR	NR	0
Kuttner 2006	NR	Children's Depression Inventory: IG: 2.64 ± 1.95 CG: 4.27 ±5.0 Revised Manifest Anxiety Scale: IG: 10.64±5.20 CG: 14.75±6.42	NR	NR	NR	NR
Lalouni 2019	PedsQoL IG self-reported: 86.39(1.96) IG parent-reported: 84.48(2.05) CG self-reported: 77.04(1.96) CG parent-reported: 74.60(2.08) Kidscreen-10 IG self-reported: 3.67(0.16) CG self-reported: 3.49(0.16)	CDI (Depression) IG self-reported: 1.99(0.43) CG self-reported: 2.89(0.43) SCAS-S (Anxiety) IG self-reported: 8.59(1.15)IG parent-reported: 7.66(1.08) CG self-reported: 15.31(1.15) CG parent-reported: 13.32(1.10)	NR	NR	School absence parent-reported IG: 0.21(0.14) School absence parent-reported CG: 0.41(0.14)	IG: 1 gastroenteritis CG: 1 hyperthyroidism
Levy 2010	NR	Data not shown for anxiety. Depression: IG change at end: −1.76 (0.38) IG change at 3 months: −2.68 (0.53) IG change at 6 months: −2.65 (0.54) CG change at end: −0.36 (0.40)	NR	NR	NR	IG: 0 CG: 1 child too ill

		CG change at 3 months: −1.68 (0.57) CG change at 6 months: −1.32 (0.57)				
Levy 2017	Only changes between groups reported	NR	NR	NR	Only changes between groups reported	0
Nieto 2019	PedsQL (0-100) IG: 81.92 (13.28) CG: 77.95 (14.91)	Children Depression inventory (CDI) IG: 7.52 (5.21) CG: 8.75 (7.13)	NR	NR	NR	NR
Pas 2020	NR	NR	NR	NR	NR	NR
Robins 2005	NR	NR	NR	NR	IG mean missed days = 9.0 CG mean missed days = 14.5	NR
Rutten 2017	NR	NR	NR	NR	NR	NR
Sanders 1989	NR	NR	NR	NR	NR	NR
Sanders 1994	NR	NR	NR	NR	NR	NR
Schurman 2010	All PedsQL items reported in the paper	The Behavior Assessment System for Children (BASC) IG depression end: 46.00 (7.21) CG depression end: 52.67 (13.76) IG depression 6-months: 42.33 (1.00) CG depression 6-months: 47.50 (10.64) IG anxiety end: 47.22 (8.33) CG anxiety end: 49.22 (14.76) IG anxiety 6-months: 39.44 (5.15)	NR	NR	PedsQL School functioning IG end: 70.56 (11.84) CG post: 73.33 (16.96)	NR

		CG anxiety 6-months: 48.33 (14.62)				
van der Veek 2013	Items for PedsQL reported in the paper	Anxiety at end: IG: 6.83 CG: 7.76 Anxiety 6 months: IG: 5.38 CG: 7.72 Anxiety 12 months: IG: 5.47 CG: 5.82 Depression at end: IG: 2.17 CG: 2.33 Depression 6 months: IG: 1.88 CG: 3.06 Depression 12 months: IG: 1.85 CG: 1.79	NR	NR	NR	0
van Tilburg 2009	PedsQL IG: 28.2 CG: 9.3	NR	NR	NR	Parents were asked about numbers of school absences in the past 2months IG: 1.7 (no variance) CG: 0.7 (no variance)	NR
Vlieger 2007	NR	NR	NR	NR	NR	NR
Walker 2021	NR	NR	NR	NR	NR	0
Wallander 2011	PedsQL physical and psychosocial IG 3 months physical: 23.96±4.38 CG 3 months physical: 23.75±5.83 IG 6 months	NR	NR	NR	NR	0

	physical: 26.32±4.69 CG 6 months physical: 23.81±6.11 IG 3 months psychosocial: 36.12±10.69 CG 3 months psychosocial: 40.39±8.59 IG 6 months psychosocial: 43.29±9.20 CG 6 months psychosocial: 41.38±8.87					
Warschburger 2021	All items reported in the paper	NR	NR	NR	Measured only at 12 months follow-up	0
Wassom 2013	PedsSQL IG = 73.44(13.02) CG = 65.62(7.16)	NR	NR	NR	NR	NR
Weydert 2006	NR	NR	NR	NR	Missed school days due to abdominal pain IG 1 month: 0.6 (0- 1.3) CG 1 month: 1.1 (0.2-2.1) IG 2 month: 0.2 (0-0.5) CG 2 month: 0.3 (0 -0.7)	0
Youssef 2009	NR	NR	NR	NR	Missed school days in the past 3 months IG:0 children CG: 2 children	0

eTable 5. Definitions of Treatment Success in the Included Studies

CBT vs no intervention	CBT vs educational support	Yoga vs no intervention	Hypnotherapy vs no intervention	Gut-directed hypnotherapy vs hypnotherapy	Guided imagery vs relaxation	Other
Cunningham 2020: Average pain over the past two weeks was assessed via a Visual Analog Scale (VAS) anchored with the words, “no pain,” and “worst pain,”. A ≥ 3/10 is clinically significant	Warschburger 2021: >=80% reduction of pain intensity compared with baseline	Evans 2014: A reduction of at least 1 point on the Numeric Rating Scale for abdominal pain (Minimal Clinically Statistical Differences)	Gulewitch 2013: Participating children with >80 % improvement of the index were considered as responders with a clinical remission.An improvement between 30–80 % was defined as “significant improvement.”	Gulewitch 2017: Participating children with >80 % improvement of the index were considered as responders with a clinical remission. An improvement between 30–80 % was defined as “significant improvement.”	Weydert 2006: The percentage of children who had ≤ 4 days with pain and no missed activities during the previous month.	Humprheys 2000: Elimination of pain
Gross 2013: Not meeting rome III criteria for chronic abdomina pain at study end		Kortenink 2016: Treatment response was defined as a decrease of combined abdominal pain scores (Pain intensity score and pain frequency score) of 50%, during 1-year follow-up	Vlieger 2007: Clinical remission was defined as a decrease of the PIS and PFS of 80%; significant improvement was defined as a decrease of PIS and PFS between 30% and 80% and treatment was considered unsuccessful if the scores improved 30% or got worse			Kovacic 2017: A post hoc definition was applied of 30% reduction in improvement of worst or unusual abdominal pain.
Hicks 2006: A reduction in the sum of pain intensity of at least 50% from baseline to over the						Rutten 2017: Treatment success was defined as at least 50%reduction in the PFS and PIS

two week period measured at 1 and 3 month follow up.						
Sanders 1989: Number of pain-free chidren						van Tilburg 2009: Treatment response as 50% reduction in the abdominal pain score from before treatment to after treatment.
Sanders 1994: Proportion of pain free children						
van der Veek 2013: Children were considered improved if they decreased >=9.90 points on the self-reported API (range 0–50); if in addition to this, their level of AP after treatment was closer to the mean of a healthy population than to the mean of the clinical population, they were considered recovered. If the AP increased >=9.90 points after treatment, children were considered deteriorated						

eTable 6. Excluded Studies

#	**Excluded study ID**	**Reason for exclusion**
1	Berrill 2014	Wrong patient population
2	Cassettari 2018	Wrong patient population
3	Evans 2011	Duplicate
4	Fisher 2019	Wrong study design
5	IRCT20190906044710N1	Wrong study design
6	Lalouni 2017	Not an RCT
7	Lalouni 2017	Duplicate
8	NCT02566876	Wrong intervention
9	NCT03518216	Wrong intervention
10	Nimrouzi 2015	Wrong intervention
11	Reme 2011	Wrong patient population
12	Rutten 2014	Not an RCT
13	Sanctuary 2019	Wrong intervention
14	Sanctuary 2019	Duplicate
15	Scharff 1995	Wrong study design
16	Stepurina 2018	Wrong patient population
17	Tabbers 2010	Wrong patient population
18	Vlieger 2010	Wrong outcomes
19	Zucker 2017	Wrong study design
20	Anonymous 2008	Duplicate
21	NCT00010933	Completed status on the trial registration website - No response after contact for data
22	NCT00060619	Unknown status - Undelivered emails - we could not contact them
23	NCT00852878	Withdrawn
24	NCT01966341	Withdrawn
25	NCT02613078	Authors are in the process of preparing a manuscript for publication
26	NTR5814 - Browne 2019	Authors are in the process of preparing a manuscript for publication
27	NCT02920268	Ongoing trial
28	NCT03100487	Ongoing trial
29	NCT03823742	Ongoing trial

eTable 7. Risk of Bias Details

Afvlen 2007 (14)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Clinic Group A and B was eliminated by randomisation. No further details given.
Allocation concealment (selection bias)	Unclear risk	No details given.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study.
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Unclear risk	Attrition not reported.
Selective reporting (reporting bias)	Low risk	Outcomes reported as expected.
Other bias	Low risk	No concerns.

Bonnert 2017 (15)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	The randomization was conducted by an independent researcher, who received lists with anonymous study ID numbers and used a random number service (www.random.org) to allocate participants, thus ensuring concealment of allocation
Allocation concealment (selection bias)	Low risk	The randomization was conducted by an independent researcher, who received lists with anonymous study id-numbers and used a random number service (www.random.org) to allocate participants, thus ensuring concealment of allocation
Blinding of participants and personnel (performance bias)	High risk	Unblinded study.
Blinding of outcome assessment (detection bias)	Low risk	Author response: "The study should be regarded as blinded to assessors since all assessments were answered online, without any influence from study staff"
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups
Selective reporting (reporting bias)	Low risk	Results appropriately reported, except for the 6 month results for the control group
Other bias	Low risk	No concerns

Cunningham 2020 (16)		
Bias	**Authors' judgement**	**Support for judgement**

Random sequence generation (selection bias)	Low risk	Computer generated list
Allocation concealment (selection bias)	Low risk	Author response: "Yes we did conceal the allocation of treatment. In our study, the study statistician would send the research assistant the group assignment for each participant and then that was put in a sealed envelope for the baseline assessor to open and assign the participant after the baseline assessment was completed"
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Author response: "Every effort was made to blind the assessors and this occurred in the majority of cases. For example, all baseline assessors were not aware of randomization until after their assessment was completed. All efforts were made to keep outcome assessors blind to the treatment allocation of the participants as well. There were some instances, however, where the blind of the outcome assessors was not always maintained due to staffing issues"
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups
Selective reporting (reporting bias)	Low risk	Results reported as per trial registration
Other bias	Low risk	No concerns

DRKS00015706 (40)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer generated list
Allocation concealment (selection bias)	Low risk	A distribution plan was applied by the secretary. The secretary assigned the child and then informed the osteopath in which group the child is assigned.
Blinding of participants and personnel (performance bias)	High risk	Blinding of participants: placebo group received "normal" osteopathic treatment. Due to the nature of treatment blinding of personnel not possible.
Blinding of outcome assessment (detection bias)	High risk	Outcome assessors were aware of the treatments
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups
Selective reporting (reporting bias)	Low risk	All reported but in the trial registration (registered after the beginning of the study),

		the primary outcome was stated as "Self-reported pain before the first treatment, after the last treatment and two weeks after the last treatment, measured by the faces pain scale (FPS)"
Other bias	Low risk	No concerns

Duarte 2006 (26)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	All completed the intervention
Selective reporting (reporting bias)	Low risk	All data stated in the methods section was collected and reported.
Other bias	Low risk	No concerns

Evans 2014 (31)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation to one of the 2 groups was perfomed in a 1:1 ratio, according to a random number table stratified by person not involved in research.
Allocation concealment (selection bias)	Low risk	A research staff member who was not otherwise involved in the study used the research randomizer program as a means to generate random numbers for patient assignment to the intervention or waitlist group. Principal investigators were blinded to participant randomization during the study process
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Author response: The assessors were not blinded
Incomplete outcome data (attrition bias)	Unclear risk	Higher attrition rates in the CG before the beginning of the intervention and higher in the IG after the intervention.
Selective reporting (reporting bias)	Low risk	The outcomes are presented but not always clearly as in the case of treatment success for the CG adolescent group. Trial registration

		and protocol published after beginning of recruitment.
Other bias	Unclear risk	More adolescents in the IG than CG.

Gross 2013 (17)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer aided randomisation by a non-involved person.
Allocation concealment (selection bias)	Low risk	Author response: This was done by a person uninvolved in the study.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Author response: not blinded for assessors
Incomplete outcome data (attrition bias)	Low risk	Low and balanced attrition
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Low risk	No concerns

Gulewitsch 2013 (34)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Simple randomization procedures (computerized random number generator)
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	All completed the intervention
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Low risk	No concerns

Gulewitsch 2017 (36)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Simple randomization procedures (computerized random number generator)
Allocation concealment (selection bias)	Unclear risk	No details

Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	High attrition but balanced between groups
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Low risk	No concerns

Hicks 2006 (18)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Author's response: Using a random number table, 20 blocks were randomized with 10 blocks to the treatment condition and 10 blocks to the control condition. The master randomization list was held by a graduate-level research assistant, so that the researchers were blind to the ordering of blocks and therefore the potential assignment to conditions.
Allocation concealment (selection bias)	Low risk	Author's response: The master randomization list was held by a graduate-level research assistant, so that the researchers were blind to the ordering of blocks and therefore the potential assignment to conditions. The research assistant would not provide information about assignment to condition until a block of 4 participants was full. The research assistant kept the allocation list and did not allow the researchers to break the order of the list.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Author's response: Independent assessors were not used. It was unblinded for the assessors.
Incomplete outcome data (attrition bias)	Low risk	Balanced attrition between groups
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Low risk	No concerns

Humphreys 2000 (41)		
Bias	**Authors' judgement**	**Support for judgement**

Random sequence generation (selection bias)	Low risk	Computer-generated random numbers table
Allocation concealment (selection bias)	High risk	Researchers informed participants "of their random assignments to treatment conditions", which implies there was no allocation concealment
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	Low and balanced attrition between groups
Selective reporting (reporting bias)	Unclear risk	The study outcomes are not clearly presented in the methods section and there is no trial registration or a protocol.
Other bias	Low risk	The authors report that there were no baseline imbalances even though the baseline characteristics are not clearly presented per group. One group (IG3) seems to have lower pain intensity at baseline (1.5 point mean lower on a 7 point scale)

Kortenink 2016 (32)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-aided randomization was performed by a person who was not involved in the study. Random numbers were generated by a computer program with an allocation ratio of 1:1and well-balanced blocks
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Unclear risk	The attrition in the control group is considerable and quite higher
Selective reporting (reporting bias)	Unclear risk	Outcomes reported as in the methods section but not entirely as in the trial registration (the primary outcome is defined differently). Variances not reported.
Other bias	Low risk	No concerns

Kovacic 2017 (42)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-aided randomization was performed by a person who was not involved in the study.

Allocation concealment (selection bias)	Low risk	Only lead author knew of allocation and they had no patient contact. All researchers with patient contact did not know allocation. Patient randomly assigned using a code generator. Allocation was concealed. Physicians, statisticians, nurses, participants, caregivers and reserch coordinators were unaware of device codes.
Blinding of participants and personnel (performance bias)	Low risk	Sham controlled study
Blinding of outcome assessment (detection bias)	Low risk	Sham Controlled. Physicians, statisticians, nurses, participants, caregivers and reserch coordinators were unaware of device codes.
Incomplete outcome data (attrition bias)	Unclear risk	Higher attrition in the control group.
Selective reporting (reporting bias)	Low risk	Outomes reported as per the methods and trial registration, however, the definition of success was only done post-hoc
Other bias	Low risk	No concerns

Kuttner 2006 (33)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Adolescents were randomly assigned to either the yoga intervention or wait list control group using a sequence of randomly determined numbers.
Allocation concealment (selection bias)	Low risk	Author response: allocation was concealed, we used codes
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Author response: The assessor of our results was at another university on the east coast of Canada and had not been involved with the procedure of the study
Incomplete outcome data (attrition bias)	Low risk	Attrition only in the control group but it was small
Selective reporting (reporting bias)	Low risk	All expected outcomes reported except for pain intensity which the authors decided to not report due to high baseline imabalances
Other bias	High risk	High pain scores baseline differences between the groups which prevented the authors from reporting it as an outcome.

Lalouni 2019 (19)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomization was conducted on prespecified datesin 7 blocks shortly after the baseline assessment wascomplete (block sizes, 5–19 children). Group sizes were balanced within each block.
Allocation concealment (selection bias)	Low risk	To prevent potential selection bias, a researcher not otherwise involved in the study conducted the randomization procedure. Anony-mous study identification numbers and a list randomizer(available at www.random.org) were used to ensure allocation concealment.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Author response: "We used computerized internet-based assessments, i.e., questionnaires were assessed by the participating children and parents in their own homes, without the influence of study personnel in our study. We consider this procedure equivalent to blinded assessors, as no influence from an assessor is present. Do not hesitate to ask more questions if they arise"
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported clearly and as per trial registration
Other bias	Low risk	No concerns

Levy 2010 (28)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated stratifying by age (8–11 and 12–17 years)
Allocation concealment (selection bias)	Unclear risk	No clear explanation
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Blinded for outcomes assessors
Incomplete outcome data (attrition bias)	Low risk	Relatively low attrition and balanced between groups
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Unclear risk	"Baseline characteristics generally did not differ as a function of treatment group with the exception of two outcome measures: parent-reported child current pain (FACES) and child-reported pain minimization (PRI).

		Parents ultimately randomized to the SLCBT condition reported greater baseline levels of child pain as compared with those randomized to the ES condition; and children ultimately randomized to the ES condition reported greater pain minimization coping skill as compared with those randomized to the SLCBT condition."

Levy 2017 (27)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomization (1:1:1) using a computer-generated randomization sequence occurred following baseline assessments, stratified by child gender and baseline parent-reported child pain severity scores on the API (scores at or above 1.75 (the median value from our prior study) versus below). IG2 had fewer randomised patients than the other two groups, perhaps due to the stratification.
Allocation concealment (selection bias)	Unclear risk	"Recruiters and physicians were blind to treatment assignment. After enrollment and completion of baseline assessments, the study coordinator queried the randomization database for treatment assignment and then scheduled sessions with the participant. Participants were informed of mode of delivery (in person or phone) when scheduling the first session"
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	High risk	More pronounced attrition in IG2
Selective reporting (reporting bias)	Low risk	Outcomes reported. Authors mention "Refer to Web version on PubMed Central for supplementary material" but we could not access that
Other bias	Low risk	No concerns

Nieto 2019 (20)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation to one of the 2 groups was perfomed within each block, simple randomisation was performed using a random sequence generated by computer and

		performed in a way that was hidden to the researcher
Allocation concealment (selection bias)	High risk	Author response: The research personnel knew in which group each family was allocated
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Unblinded study for assessors too according to author
Incomplete outcome data (attrition bias)	High risk	High attrition and higher in the control group. However, the study flow is well described for all patients with reasons given after start interventions.
Selective reporting (reporting bias)	Low risk	Primary and secondary outcomes are reported. Protocol available on clinicaltrials.gov and published online prospectively. However, not all outcome timepoints have been presented as in the trial registration.Authors mention "Refer to Web version on PubMed Central for supplementary material" but we could not access that
Other bias	Low risk	No concerns

Pas 2020 (37)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computerized random number generator for concealment. Both assessors (A.F. and S.V.O) were blind after the assignment.
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Both assessors (A.F. and S.V.O) were blind after the assignment.
Incomplete outcome data (attrition bias)	Low risk	Low and balanced attrition
Selective reporting (reporting bias)	Unclear risk	Analysis "Main group, time, and interaction effect" for the outcomes is reported, however the mean(variance) per group is not reported. Manuscript deviated from registered protocol, deviations were reported in the spirit of transparency.
Other bias	Low risk	No concerns

Robins 2005 (21)		
Bias	**Authors' judgement**	**Support for judgement**

Random sequence generation (selection bias)	Low risk	Coin flip method
Allocation concealment (selection bias)	High risk	The coin flip method suggests allocation was not concealed
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	High risk	High attrition more pronounced in the CG.Some refused to take part once assigned to the standard medical treatment condition
Selective reporting (reporting bias)	Low risk	Outcomes reported
Other bias	Unclear risk	Parents in the experimental group were educated to a higher level, on average, compared to the control group. No other baseline imbalances.

Rutten 2017 (43)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	A central computerized random-number generator for concealment was used, performing randomization (1:1 ratio) with random permuted blocks of varying sizes of 2, 4, and 6. Randomization was stratified by hospital and school level (primary or secondary school).
Allocation concealment (selection bias)	Low risk	The authors confirmed that allocation was concealed
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Unblinded study for assessors too as confirmed by the authors
Incomplete outcome data (attrition bias)	Low risk	Low attrition and no big differences between groups.
Selective reporting (reporting bias)	Low risk	Outcomes reported
Other bias	Low risk	"With the exception of the percentage of children with school absenteeism, no differences in baseline characteristics were observed between the groups"

Sanders 1989 (22)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details

Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	Some assessors were blind but most assessments were not
Incomplete outcome data (attrition bias)	Low risk	No attrition
Selective reporting (reporting bias)	Unclear risk	A lot of data was collected and these data were not fully reported.
Other bias	High risk	Pain differences at pain baseline

Sanders 1994 (23)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Unclear risk	No details
Selective reporting (reporting bias)	Low risk	Outcomes reported
Other bias	High risk	Pain was higher at baseline for the IG. No other baseline imbalances.

Schurman 2010 (13)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated random number sequence to one of two treatment groups (10 participants per group)
Allocation concealment (selection bias)	Low risk	The allocation sequence was concealed in a series of numbered envelopes by the PI prior to study recruitment and opened by other research personnel at the time of randomization in order to limit possible subversion of allocation.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	The physician completing the global score assessment was blinded but otherwise blinding was not possible

Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups
Selective reporting (reporting bias)	Unclear risk	The outcomes are reported but the outcomes for pain are not clearly presented and no variance is provided.
Other bias	Unclear risk	Unclear if there were baseline imbalances as the data is not presented per group

van der Veek 2013 (24)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"The first author randomized the children using a computerized randomization program, stratifying by age (2 age groups: 8–12 and 13-17 years) and gender. Children and parents were notified immediately of the results of the randomization."
Allocation concealment (selection bias)	Low risk	The authors responded that allocation was concealed
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Authors response: it was unblinded for the assessors as well
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups
Selective reporting (reporting bias)	Low risk	Outcomes are reported, however, the authors were not able to provide the variance data for our meta-analysis
Other bias	Low risk	"At baseline, no significant differences were found in any of the demographic and clinical characteristics between the 2 groups, except for the presence of comorbid anxiety disorders, which were more prevalent in the IMC group"

van Tilburg 2009 (44)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Low risk	Children picked a closed envelope that determined what intervention they would receive
Blinding of participants and personnel (performance bias)	High risk	Unblinded study

Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	Balanced attrition between groups
Selective reporting (reporting bias)	Low risk	Outcomes are reported
Other bias	Low risk	No concers

Vlieger 2007 (35)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Patients were randomly allocated using a computerized random-number generator for concealment to either HT or standard medical care.
Allocation concealment (selection bias)	Low risk	The author confirmed that allocation was concealed
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	"Pain diaries were analyzed by S. W. (medical student), who was blinded to the treatment arm."
Incomplete outcome data (attrition bias)	Low risk	Low and balanced attrition
Selective reporting (reporting bias)	Unclear risk	Limited results presented for pain intensity and frequency. The authors were not able to provide the data.
Other bias	Low risk	"There were no differences between the 2 treatment groups with respect to demographic characteristics, clinical features, and baseline measures of pain intensity, pain frequency, and associated symptoms that could explain treatment effects"

Walker 2021 (29)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	The randomization assignment was generated four at a time using an online, free research randomizer (available at www.randomizer.org) and blacked out until a participant was ready to be randomized. Randomization was stratified by patient subgroup (i.e., High Pain Dysfunctional, High Pain Adaptive, and Low Pain Adaptive). Patient subgroups were generated by computer from baseline measures and were unknown by patients. A separate randomization table was created for each patient subgroup.
Allocation concealment (selection bias)	Low risk	The randomization schedule, including patient subgroups, was stored in a password-protected document accessible only to study staff

		responsible for randomization. Staff implementing the study at Vanderbilt Children's Hospital did not have knowledge of patient treatment allocation. Standard care by each patient's physician was not altered and physicians were not aware of patient treatment allocation or subtype.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Study assessors were blinded.
Incomplete outcome data (attrition bias)	Low risk	Low attrition and no major differences between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported as in methods and trial registration
Other bias	Low risk	No baseline imabalances between treatment groups according to authors

Wallander 2011 (45)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation to one of the 2 groups was perfomed in a 1:1 ratio, computer generated randomisation list. However, the randomised number per group are not 1:1
Allocation concealment (selection bias)	Low risk	Author response: "Did not conceal allocation strictly speaking, but PI and Co-PI did not access the allocation of individual participants until all data had been entered into the analysis database"
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	Author response: "All but one variable was assessed via self- or parent-report, so those are unblinded to condition but blinded to the hypotheses. RAs who completed the medical record assessment were blinded."
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Low risk	Author response: "We tested for any differences at baseline and none were detected"

Warschburger 2021 (30)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation, 1:1

Allocation concealment (selection bias)	Low risk	Randomisation sequence was established in the study center by a person not involved in the intervention process and analysis. The person allocating the participants in this predefined order was blinded with respect to group assignment and thus unaware of the assignment of individual patients. The results of the randomisation were only provided directly to the trainers, who were the only persons unblinded informed about the allocation. Study participants received no information on their treatment allocation at any point.
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Low risk	The assessors were blinded.
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported per trial registration
Other bias	Low risk	No concerns

Wassom 2013 (25)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Uniform random-numbers table
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	Unclear risk	No details
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported
Other bias	Unclear risk	There were differences between the control and the internvention group at baseline. The intervention group had higher pain scores and lower QoL compared to controls. Randomisation was done after baseline measures were taken and some baseline data is not provided per group.

Weydert 2006 (38)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random assignment was made in groups of four by drawing tokens out of a hat by the biostatistics core group assisting with this study. Two randomized tables were used depending on the source of the referral–pediatric gastroenterologist or general pediatrician–and further stratified by age, grouped age 5 < 12 and =12 to 18
Allocation concealment (selection bias)	Low risk	The randomization list was given only to the therapists teaching the breathing techniques and guided imagery and was concealed until the intervention was assigned. No other member of the research team was aware of the group assignments.
Blinding of participants and personnel (performance bias)	High risk	Blinding not possible but some degree of masking of subjects not previously aware of these therapies.
Blinding of outcome assessment (detection bias)	Low risk	All treatments, regardless of the group, were referred to as "relaxation techniques", which allowed blinding of the research associate collecting outcomes
Incomplete outcome data (attrition bias)	Low risk	Low attrition and balanced between groups.
Selective reporting (reporting bias)	Low risk	All outcomes reported but some variances are unclear
Other bias	Unclear risk	Authors report the imbalances at baseline between groups in terms of pain are not statistically significant, however, there are differences and in combination with the differences of the numbers randomised per group make this risk of bias unclear. Also, baseline characteristics are not for all randomised, only for those who received treatment.

Youssef 2009 (39)		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	Unblinded study
Blinding of outcome assessment (detection bias)	High risk	Unblinded study
Incomplete outcome data (attrition bias)	Unclear risk	No attrition details

Selective reporting (reporting bias)	Unclear risk	Not all outcomes are presented in this abstract
Other bias	Unclear risk	Not enough information to judge

eTable 8. Summary of Findings

CBT compared to no intervention for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: CBT

Comparison: No intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no intervention	Risk with CBT				
Treatment success	154 per 1,000	**365 per 1,000** (200 to 668)	**RR 2.37** (1.30 to 4.34)	324 (6 studies)	⨁⨁⨁⨀ moderate [a]	-
Pain frequency	-	SMD **0.36 lower** (0.63 lower to 0.09 lower)	-	446 (7 studies)	⨁⨁⨁⨀ moderate [a]	-
Pain intensity	-	SMD **0.58 lower** (0.83 lower to 0.32 lower)	-	332 (6 studies)	⨁⨁⨁⨀ moderate [a]	-
Composite pain scores	-	MD **1.17 higher** (2.36 lower to 4.7 higher)	-	114 (1 study)	⨁⨀⨀⨀ very low [b, c]	-
Withdrawals due to adverse events	4 per 1,000	**1 per 1,000** (1 to 172)	**RR 0.33** (0.01 to 31)	466 (7 studies)	⨁⨁⨀⨀ low [d]	-

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **SMD:** Standardised mean difference; **MD:** Mean difference; **OR:** Odds ratio

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.
[b] Downgraded by one level due to imprecision from sparse data

[c] Downgraded by two levels due to high risk of bias.

[d] Downgraded by two levels due to high imprecision from very sparse data

CBT compared to Educational Support for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: CBT

Comparison: Educational Support

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with Ecucational Support	**Risk with CBT**				
Treatment success	-	-	-	(0 studies)	-	
Pain frequency	-	-	-	(0 studies)	-	
Pain intensity	-	MD **0.36 lower** (0.87 lower to 0.15 higher)	-	127 (1 study)	⨁⨁⨀⨀ low [a, b]	
Composite pain scores	-	MD **0.07 lower** (0.29 lower to 0.15 higher)	-	300 (1 study)	⨁⨁⨀⨀ low [a, b]	
Withdrawals due to adverse events	2 per 1,000	**8 per 1,000** (1 to 16)	**RR 0.33** (0.01 to 8.09)	943 (4 studies)	⨁⨁⨀⨀ low [c]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.
[b] Downgraded by one level due to imprecision from sparse data

[c] Downgraded by two levels due to high imprecision from very sparse data

Yoga compared to no intervention for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: Yoga

Comparison: No intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no intervention	Risk with Yoga				
Treatment success	239 per 1,000	**260 per 1,000** (139 to 497)	**RR 1.09** (0.58 to 2.08)	99 (2 studies)	⨁⨁⨀⨀ low [a, b]	
Pain frequency	-	MD **1.6 lower** (2.11 lower to 1.09 lower)	-	69 (1 study)	⨁⨀⨀⨀ very low [a, c]	
Pain intensity	-	MD **1.27 lower** (1.72 lower to 0.82 lower)	-	69 (1 study)	⨁⨀⨀⨀ very low [a, c]	
Pain intensity change	-	MD **0.47 lower** (1.45 lower to 0.51 higher)	-	30 (1 study)	⨁⨀⨀⨀ very low [a, c]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.

[b] Downgraded by one level due to imprecision from sparse data

[c] Downgraded by two levels due to high imprecision from very sparse data

Hypnotherapy compared to no intervention for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: Hypnotherapy

Comparison: No intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no intervention	Risk with Hypnotherapy				
Treatment success	186 per 1,000	**532 per 1,000** (221 to 1,000)	**RR 2.86** (1.19 to 6.83)	91 (2 studies)	⨁⊖⊖⊖ very low [a, b]	
Pain frequency	-	MD **4.37 lower** (6.84 lower to 1.9 lower)	-	38 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Pain intensity	-	MD **2.86 lower** (4.38 lower to 1.34 lower)	-	38 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Composite pain score change	-	MD **4.54 lower** (7.17 lower to 1.91 lower)	-	38 (1 study)	⨁⊖⊖⊖ very low [a, b]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.

[b] Downgraded by two levels due to high imprecision from very sparse data

Gut-directed hypnotherapy compared to hypnotherapy for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: Gut-directed hypnotherapy

Comparison: Hypnotherapy

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with hypnotherapy	Risk with Gut-directed hypnotherapy				
Treatment success	375 per 1,000	**94 per 1,000** (23 to 394)	**RR 0.25** (0.06 to 1.05)	45 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Pain frequency	-	MD **1.27 higher** (0.62 lower to 3.16 higher)	-	45 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Pain intensity	-	MD **0.69 higher** (0.08 higher to 1.3 higher)	-	45 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Composite pain scores	-	MD **0.54 higher** (0.06 higher to 1.02 higher)	-	45 (1 study)	⨁⊖⊖⊖ very low [a, b]	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.

[b] Downgraded by two levels due to high imprecision from very sparse data

Guided imagery compared to Relaxation for the treatment of Functional Abdominal Pain Disorders in children

Patient or population: Children with FAPDs

Intervention: Guided imagery

Comparison: Relaxation

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with Relaxation	**Risk with Guided imagery**				
Treatment success	1 per 1,000	**9 per 1,000** (1 to 1000)	**RR 9.18** (0.57 to 147.90)	27 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Pain frequency	-	MD **3.8 lower** (11.61 lower to 4.01 higher)	-	27 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Pain intensity	-	MD **0.4 lower** (1.63 lower to 0.83 higher)	-	27 (1 study)	⨁⊖⊖⊖ very low [a, b]	
Composite pain scores	-	-	-	(0 studies)	-	
Withdrawals due to adverse events	-	-	-	(0 studies)	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference; **OR:** Odds ratio

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

[a] Downgraded by one level due to risk of bias.

[b] Downgraded by two levels due to high imprecision from very sparse data

eAppendix 1. ROME IV Criteria for Pediatric FAPDs

FD[a]
Must include 1 or more of the following bothersome symptoms at least 4 days per month: 1. Postprandial fullness 2. Early satiation 3. Epigastric pain or burning not associated with defecation 4. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition. [a]*Criteria fulfilled for at least 2 months before diagnosis.* Within FD, the following subtypes are now adopted: 1. Postprandial distress syndrome includes bother- some postprandial fullness or early satiation that prevents finishing a regular meal. Supportive features include upper abdominal bloating, post- prandial nausea, or excessive belching **2.** Epigastric pain syndrome, which includes all of the following: bothersome (severe enough to interfere with normal activities) pain or burning localized to the epigastrium. The pain is not generalized or localized to other abdominal or chest regions and is not relieved by defecation or passage of flatus. Supportive criteria can include (a) burning quality of the pain but without a retrosternal component and (b) the pain commonly induced or relieved by ingestion of a meal but may occur while fasting.
IBS[b]
Must include all of the following: 1. Abdominal pain at least 4 days per month associated with one or more of the following: a. Related to defecation b. A change in frequency of stool c. A change in form (appearance) of stool 2. In children with constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not irritable bowel syndrome) 3. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition [b]*Criteria fulfilled for at least 2 months before diagnosis*
AM[c]
Must include all of the following occurring at least twice: 1. Paroxysmal episodes of intense, acute periumbilical, midline or diffuse abdominal pain lasting 1 hour or more (should be the most severe and distressing symptom) 2. Episodes are separated by weeks to months. 3. The pain is incapacitating and interferes with normal activities 4. Stereotypical pattern and symptoms in the individual patient 5. The pain is associated with 2 or more of the following: a. Anorexia b. Nausea c. Vomiting d. Headache e. Photophobia f. Pallor 6. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition. [c]*Criteria fulfilled for at least 6 months before diagnosis.*
FAP-NOS[d]

Must be fulfilled at least 4 times per month and include all of the following: 1. Episodic or continuous abdominal pain that does not occur solely during physiologic events (e.g. eating, menses) 2. Insufficient criteria for irritable bowel syndrome, functional dyspepsia, or abdominal migraine 3. After appropriate evaluation, the abdominal pain cannot be fully explained by another medical condition [d]*Criteria fulfilled for at least 2 months before diagnosis*
FAPDs = functional abdominal pain disorders; FD = functional dyspepsia; IBS = irritable bowel syndrome; AM = abdominal migraine; FAP-NOS = functional abdominal pain – not otherwise specified.

eAppendix 2. Search Strategies

1 Cochrane CENTRAL search strategy (ovid)

(functional gastrointestinal disorder* or functional GI disorder* or FGIDs).tw,kw.exp Irritable Bowel Syndrome/(irritable bowel or irritable colon* or IBS).tw,kw.exp Dyspepsia/(dyspepsia or dyspeptic or indigestive or indigestion).tw,kw.((abdominal or abdomen or bowel or stomach or epigastric) adj3 (pain* or migraine* or colic* or discomfort* or ache* or aching or sorrow or sore* or distress* or cramp*)).tw,kw.(functional abdominal or FAP or FAPs or FAPD or FAPDs or CFAP or CFAPs).tw,kw.exp Abdominal Pain/(NUD or FD).tw,kw.or/1-9(psychosocial* or psychotherap*).tw,kw.exp Exercise/ or exp Exercise Therapy/(exercise* or behavior* or Behaviour* or kinesiotherap*).tw,kw.exp Physical Therapy Modalities/ or exp Physical Fitness/exp psychotherapy/exp complementary therapies/(hypnosis or hypnotherap* or guided imagery).tw,kw.(Acupuncture or Auriculotherap* or Reflexotherap*).tw,kw.((alternative or complementary or mind-body or body-oriented or fitness) adj5 (therap* or intervention* or treat*)).tw,kw.((physical or psycho*) adj5 (therap* or intervention* or treat*)).tw,kw.(homeopath* or homoeopath* or Osteopath* or chiropractic or yoga).tw,kw.((cognitive adj5 (therap* or intervention* or treat*)) or CBT or mindfulness).tw,kw.(written self-disclosure* or (lifestyle adj2 change*)).tw,kw.paradoxical intention.tw,kw.(Acceptance adj5 Commitment adj5 (therap* or intervention* or treat*)).tw,kw.(phytotherap* or Aromatherap* or historical eclecticism).tw,kw.((plant* or herb*) adj5 (therap* or intervention* or treat*)).tw,kw.(relax* thearp* or relaxation or reflexotherap*).tw,kw.or/11-2810 and 29exp Adolescent/exp Child/exp Minors/exp Pediatrics/exp Puberty/exp Schools/(child or children or pediatric* or paediatric* or peadiatric* or kid or kids or adolescen* or preschool or pre-school).tw,kw.(boy* or girl* or teen* or minors or prepubescen* or postpubescen* or prepuberty* or pubescen* or puber*).tw,kw.(elementary school* or high school* or highschool* or kinder* or Jugend* or nursery school* or primary school* or secondary school*).tw,kw.(youth* or young or student* or juvenil* or pupil* or school age* or underage* or schoolchild* or (under* adj age*) or under 16 or under 18).tw,kw.or/31-4030 and 41

2 MEDLINE search strategy (ovid)

(functional gastrointestinal disorder* or functional GI disorder* or FGIDs).tw,kw.exp Irritable Bowel Syndrome/(irritable bowel or irritable colon* or IBS).tw,kw.exp Dyspepsia/(dyspepsia or dyspeptic or indigestive or indigestion).tw,kw.((abdominal or abdomen or bowel or stomach or epigastric) adj3 (pain* or migraine* or colic* or discomfort* or ache* or aching or sorrow or sore* or distress* or cramp*)).tw,kw.(functional abdominal or FAP or FAPs or FAPD or FAPDs or CFAP or CFAPs).tw,kw.exp Abdominal Pain/(NUD or FD).tw,kw.or/1-9(psychosocial* or psychotherap*).tw,kw.exp Exercise/ or exp Exercise Therapy/(exercise* or behavior* or Behaviour* or kinesiotherap*).tw,kw.exp Physical Therapy Modalities/ or exp Physical Fitness/exp psychotherapy/exp complementary therapies/(hypnosis or hypnotherap* or guided imagery).tw,kw.(Acupuncture or Auriculotherap* or Reflexotherap*).tw,kw.((alternative or complementary or mind-body or body-oriented or fitness) adj5 (therap* or intervention* or treat*)).tw,kw.((physical or psycho*) adj5 (therap* or intervention* or treat*)).tw,kw.(homeopath* or homoeopath* or Osteopath* or chiropractic or yoga).tw,kw.((cognitive adj5 (therap* or intervention* or treat*)) or CBT or mindfulness).tw,kw.(written self-disclosure* or (lifestyle adj2 change*)).tw,kw.paradoxical intention.tw,kw.(Acceptance adj5 Commitment adj5 (therap* or intervention* or treat*)).tw,kw.(phytotherap* or Aromatherap* or historical eclecticism).tw,kw.((plant* or herb*) adj5 (therap* or intervention* or treat*)).tw,kw.(relax* thearp* or relaxation or reflexotherap*).tw,kw.or/11-2810 and 29exp Adolescent/exp Child/exp Minors/exp Pediatrics/exp Puberty/exp Schools/(child or children or pediatric* or paediatric* or peadiatric* or kid or kids or adolescen* or preschool or pre-school).tw,kw.(boy* or girl* or teen* or minors or prepubescen* or postpubescen* or prepuberty* or pubescen* or

puber*).tw,kw.(elementary school* or high school* or highschool* or kinder* or Jugend* or nursery school* or primary school* or secondary school*).tw,kw.(youth* or young or student* or juvenil* or pupil* or school age* or underage* or schoolchild* or (under* adj age*) or under 16 or under 18).tw,kw.or/31-4030 and 41randomized controlled trial.pt.controlled clinical trial.pt.random*.ab.placebo.ab.drug therapy.fs.trial.ab.groups.ab.or/43-49exp animals/ not humans.sh.50 not 5142 and 52
Note: Lines 43-52. RCT filter: "Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity-maximizing version (2008 revision); Ovid format". We made the following minor revision: used "random*" instead of "randomized.ab" or "randomly.ab." to capture word variations such as "randomised, randomization, random.

3 Embase search strategy (ovid)
(functional gastrointestinal disorder* or functional GI disorder* or FGIDs).tw,kw.exp irritable colon/(irritable bowel or irritable colon* or IBS).tw,kw.exp dyspepsia/(dyspepsia or dyspeptic or indigestive or indigestion).tw,kw.((abdominal or abdomen or bowel or stomach or epigastric) adj3 (pain* or migraine* or colic* or discomfort* or ache* or aching or sorrow or sore* or distress* or cramp*)).tw,kw.(functional abdominal or FAP or FAPs or FAPD or FAPDs or CFAP or CFAPs).tw,kw.exp abdominal pain/(NUD or FD).tw,kw.or/1-9(psychosocial* or psychotherap*).tw,kw.exp exercise/ or exp kinesiotherapy/(exercise* or behavior* or Behaviour* or kinesiotherap*).tw,kw.exp physiotherapy/ or exp fitness/exp psychotherapy/exp alternative medicine/(hypnosis or hypnotherap* or guided imagery).tw,kw.(Acupuncture or Auriculotherap* or Reflexotherap*).tw,kw.((alternative or complementary or mind-body or body-oriented or fitness) adj5 (therap* or intervention* or treat*)).tw,kw.((physical or psycho*) adj5 (therap* or intervention* or treat*)).tw,kw.(homeopath* or homoeopath* or Osteopath* or chiropractic or yoga).tw,kw.((cognitive adj5 (therap* or intervention* or treat*)) or CBT or mindfulness).tw,kw.(written self-disclosure* or (lifestyle adj2 change*)).tw,kw.paradoxical intention.tw,kw.(Acceptance adj5 Commitment adj5 (therap* or intervention* or treat*)).tw,kw.(phytotherap* or Aromatherap* or historical eclecticism).tw,kw.((plant* or herb*) adj5 (therap* or intervention* or treat*)).tw,kw.(relax* thearp* or relaxation or Reflexotherap*).tw,kw.or/11-2810 and 29exp adolescence/ or exp adolescent/exp child/exp newborn/exp kindergarten/exp pediatrics/exp puberty/(child or children or pediatric* or paediatric* or peadiatric* or kid or kids or adolescen* or preschool or pre-school).kw,kw.(boy* or girl* or teen* or minors or prepubescen* or postpubescen* or prepubert* or pubescen* or puber*).kw,kw.(elementary school* or high school* or highschool* or kinder* or Jugend* or nursery school* or primary school* or secondary school*).kw,kw.(youth* or young or student* or juvenil* or pupil* or school age* or underage* or schoolchild* or (under* adj age*) or under 16 or under 18).kw,kw.or/31-4030 and 41random:.tw.placebo:.mp.double-blind:.tw.or/43-45exp animal/ not human.sh.46 not 4742 and 48
Note: Lines 43-46. RCT filter. Combined one term high sensitivity and two or more terms high sensitivity and high specificity version: https://hiru.mcmaster.ca/hiru/hedges/All-EMBASE.htm

4 APA PsycInfo (ovid)
(functional gastrointestinal disorder* or functional GI disorder* or FGIDs).tw.exp Irritable Bowel Syndrome/(irritable bowel or irritable colon* or IBS).tw.exp Dyspepsia/(dyspepsia or dyspeptic or indigestive or indigestion).tw.((abdominal or abdomen or bowel or stomach or epigastric) adj3 (pain* or migraine* or colic* or discomfort* or ache* or aching or sorrow or sore* or distress* or cramp*)).tw.(functional abdominal or FAP or FAPs or FAPD or FAPDs or CFAP or CFAPs).tw.(NUD or FD).tw.or/1-8(psychosocial* or psychotherap*).tw.exp Exercise/(exercise* or behavior* or Behaviour* or kinesiotherap*).tw.exp Physical Fitness/exp psychotherapy/(hypnosis or hypnotherap* or guided imagery).tw.(Acupuncture or Auriculotherap* or Reflexotherap*).tw.((alternative or complementary or mind-body or body-oriented or fitness) adj5

(therap* or intervention* or treat*)).tw.((physical or psycho*) adj5 (therap* or intervention* or treat*)).tw.(homeopath* or homoeopath* or Osteopath* or chiropractic or yoga).tw.((cognitive adj5 (therap* or intervention* or treat*)) or CBT or mindfulness).tw.(written self-disclosure* or (lifestyle adj2 change*)).tw.paradoxical intention.tw.(Acceptance adj5 Commitment adj5 (therap* or intervention* or treat*)).tw.(phytotherap* or Aromatherap* or historical eclecticism).tw.((plant* or herb*) adj5 (therap* or intervention* or treat*)).tw.(relax* thearp* or relaxation or Reflexotherap*).tw.or/10-269 and 27exp Pediatrics/exp Puberty/exp Schools/(child or children or pediatric* or paediatric* or peadiatric* or kid or kids or adolescen* or preschool or preschool). tw.(boy* or girl* or teen* or minors or prepubescen* or postpubescen* or prepubert* or pubescen* or puber*).tw.(elementary school* or high school* or highschool* or kinder* or Jugend* or nursery school* or primary school* or secondary school*).tw.(youth* or young or student* or juvenil* or pupil* or school age* or underage* or schoolchild* or (under* adj age*) or under 16 or under 18).tw.or/29-3528 and 36random:.tw.37 and 38
Note: Line 38. RCT filter: Eady AM,et al. PsycINFO search strategies identified methodologically sound therapy studies and review articles for use by clinicians and researchers. J Clin Epidemiol. 2008;61(1):34-40. [Ovid]- Single term Best sensitivity & Best specificity.

5 AMED search strategy (ovid)
(functional gastrointestinal disorder* or functional GI disorder* or FGIDs).tw.exp Irritable Bowel Syndrome/(irritable bowel or irritable colon* or IBS).tw.exp Dyspepsia/(dyspepsia or dyspeptic or indigestive or indigestion).tw.((abdominal or abdomen or bowel or stomach or epigastric) adj3 (pain* or migraine* or colic* or discomfort* or ache* or aching or sorrow or sore* or distress* or cramp*)).tw.(functional abdominal or FAP or FAPs or FAPD or FAPDs or CFAP or CFAPs).tw.exp Abdominal Pain/(NUD or FD).tw.or/1-9(psychosocial* or psychotherap*).tw.exp Exercise/ or exp Exercise Therapy/(exercise* or behavior* or Behaviour* or kinesiotherap*).tw.exp Physical Therapy Modalities/ or exp Physical Fitness/exp psychotherapy/exp complementary therapies/(hypnosis or hypnotherap* or guided imagery).tw.(Acupuncture or Auriculotherap* or Reflexotherap*).tw.((alternative or complementary or mind-body or body-oriented or fitness) adj5 (therap* or intervention* or treat*)).tw.((physical or psycho*) adj5 (therap* or intervention* or treat*)).tw.(homeopath* or homoeopath* or Osteopath* or chiropractic or yoga).tw.((cognitive adj5 (therap* or intervention* or treat*)) or CBT or mindfulness).tw.(written self-disclosure* or (lifestyle adj2 change*)).tw.paradoxical intention.tw.(Acceptance adj5 Commitment adj5 (therap* or intervention* or treat*)).tw.(phytotherap* or Aromatherap* or historical eclecticism).tw.((plant* or herb*) adj5 (therap* or intervention* or treat*)).tw.(relax* thearp* or relaxation or reflexotherap*).tw.or/11-2810 and 29exp Adolescent/exp Child/exp Pediatrics/exp Puberty/exp Schools/(child or children or pediatric* or paediatric* or peadiatric* or kid or kids or adolescen* or preschool or pre-school).tw.(boy* or girl* or teen* or minors or prepubescen* or postpubescen* or prepubert* or pubescen* or puber*).tw.(elementary school* or high school* or highschool* or kinder* or Jugend* or nursery school* or primary school* or secondary school*).tw.(youth* or young or student* or juvenil* or pupil* or school age* or underage* or schoolchild* or (under* adj age*) or under 16 or under 18).tw.or/31-3930 and 40