Supplementary Table 1. Experimental contributions to each significant cluster in main effect of all studies inducing pain (n = 200)

Cluster	Experiments
Cluster 1: 14522 voxels (58, -24, 22)	
	Ando 2016
	Ariji 2018
	Asghar 2015
	Asghar 2016
	Atlas 2010
	Atlas 2014
	Baliki 2006
	Baliki 2009a
	Baliki 2010
	Bar 2007
	Becker 2017
	Benson 2012
	Bingel 2007a
	Bogdanov 2015
	Boland 2014
	Bouhassira 2013
	Boyle 2007
	Brinkmeyer 2010
	Brooks 2017
	Brugger 2011
	Brugger 2012
	Choi 2011
	Choi 2016
	Cleve 2017
	Coen 2008
	Coen 2009
	Coen 2011
	Cole 2006
	Cole 2010
	Corradi-Dell' Acqua 2011
	Davis 2016
	De la Fuente-Sandoval 2010
	De la Fuente-Sandoval 2012
	Dobek 2014
	Downar 2003
	Dube 2009

Dunckley 2005a
Eisenblatter 2017
Elsenbruch 2009
Esser 2017
Ettlin 2009
Farmer 2013
Farrell 2012
Farrell 2014
Fehse 2015
Forkmann 2013
Frankenstein 2001
Freund 2007
Freund 2009
Gard 2012
Geuze 2007
Godinho 2012
Gracely 2002
Grant 2011
Gu 2016
Guleria 2017
Gundel 2008
Habig 2017
Hahn 2013
Hansen 2015
Heckel_2011
Hu 2015
Iannilli 2008
Ibinson 2013
Jahn 2016
Jensen 2015
Kamping 2016
Kattoor 2013
Kim 2013b
Kobuch 2017
Kobuch 2018
Kong 2006
Kong 2010
Koyama 2005
Kross 2011
LaCesa 2014

Ladabaum 2007
Landgrebe 2008
Lee 2008
Lee 2015
Leung 2016a
Lindstedt 2011
Lloyd 2008
Loggia 2012
Loggia 2014
Loken 2017
Longo 2012
Lopez-Sola 2010a
Lopez-Sola 2010b
Lu 2004
Lui 2008
Lutz 2013
Lynn 2016
Maeda 2011
Maihofner 2004
Maihofner 2005
Maihofner 2006
Maihofner 2011
Mainero 2007
Markl 2013
Martin 2013
Mayhew 2013
Meier 2015
Misra 2015
Moana-Filho 2015
Mobascher 2009a
Mobascher 2009b
Mobascher 2010a
Mobascher 2010b
Mochizuki 2007
Mohr 2008
Moisset 2010
Morrison 2004
Moulton 2011
Moulton 2012
Naglatzki 2012

Nickel 2014
Niddam 2002
Obermann 2009
Ochsner 2006
Oertel 2008
Oertel 2012
Orenius 2017
Oshiro 2007
Oshiro 2009
Pazmany 2017
Peltz 2011
Perini 2013
Perlaki 2015
Perrotta 2017
Petschow 2016
Piche 2010
Pogatzki-Zahn 2010
Pujol 2017
Quiton 2014
Roberts 2008
Rodriguez-Raecke 2010
Rosenberger 2009
Rottmann 2010
Roy 2009
Rubio 2015
Russo 2012
Rutgen 2015
Salomons 2015
Scheef 2012
Schenk 2017
Schmahl 2006
Schoell 2010
Schulte 2016
Schulz-Stubner 2004
Seidel 2015
Seifert 2007
Seminowicz 2006
Seminowicz 2007
Sevel 2015
Shelton 2012

Shenoy 2011
Shinozaki 2016
Sinke 2016
Sinke 2017
Smith 2011
Song 2006
Sprenger 2015
Sprenger 2018
Stammler 2008
Stankewitz 2010
Starr 2009
Stoeckel 2016
Strigo 2013a
Strigo 2013b
Takahashi 2011
Talmi 2009
Tan 2015
Tedeschi 2015
Tessitore 2017
Theysohn 2014
Tseng 2010
Tseng 2013
Tseng 2015
Tseng 2017
Vachon-Presseau 2013
van den Bosch 2013
Vanhaudenhuyse 2009
von Leupoldt 2008
von Leupoldt 2009
Wagner 2009
Weiss 2008
Wiech 2005
Wiech 2006
Wiech 2009
Wiech 2010
Winston 2014
Woo 2015
Yang 2012
Yang 2018
Yoshino 2010

Youssef 2016
Zeidan 2015
Ziv 2010

Cluster 2: 3181 voxels (6, 12, 38)

Ando 2016
Asghar 2015
Asghar 2016
Atlas 2010
Atlas 2014
Baliki 2006
Baliki 2009a
Baliki 2010
Becker 2017
Benson 2012
Bogdanov 2015
Boland 2014
Brinkmeyer 2010
Brooks 2017
Brugger 2011
Choi 2011
Choi 2016
Coen 2008
Coen 2009
Coen 2011
Cole 2006
Cole 2010
Corradi-Dell' Acqua 2011
Davis 2016
De la Fuente-Sandoval 2010
De la Fuente-Sandoval 2012
Dobek 2014
Downar 2003
Dube 2009
Dunckley 2005a
Eisenblatter 2017
Esser 2017
Ettlin 2009
Farmer 2013
Farrell 2012
Farrell 2014

Fehse 2015
Ferris 2016
Forkmann 2013
Frankenstein 2001
Freund 2009
Gard 2012
Geuze 2007
Godinho 2012
Gracely 2002
Grant 2011
Guleria 2017
Gundel 2008
Habig 2017
Hansen 2015
Hu 2015
Iannilli 2008
Ibinson 2013
Jahn 2016
Jensen 2015
Kamping 2016
Kobuch 2017
Kobuch 2018
Kong 2006
Kong 2010
Koyama 2005
Kross 2011
Ladabaum 2007
Landgrebe 2008
Lee 2008
Loggia 2012
Longo 2012
Lopez-Sola 2010a
Lopez-Sola 2010b
Lu 2004
Lui 2008
Lutz 2013
Lynn 2016
Maeda 2011
Maihofner 2006
Maihofner 2011

Mainero 2007
Markl 2013
Martin 2013
Mayhew 2013
Misra 2015
Mobascher 2009a
Mobascher 2009b
Mobascher 2010a
Mobascher 2010b
Mochizuki 2007
Mohr 2008
Morrison 2004
Moulton 2011
Moulton 2012
Naglatzki 2012
Nickel 2014
Niddam 2002
Obermann 2009
Ochsner 2006
Oertel 2008
Oertel 2012
Oshiro 2007
Oshiro 2009
Peltz 2011
Perlaki 2015
Perrotta 2017
Petschow 2016
Piche 2010
Pujol 2017
Quiton 2014
Roberts 2008
Rodriguez-Raecke 2010
Rottmann 2010
Roy 2009
Russo 2012
Rutgen 2015
Salomons 2015
Scheef 2012
Schenk 2017
Schmahl 2006

Schulz-Stubner 2004
Seminowicz 2006
Seminowicz 2007
Sevel 2015
Shelton 2012
Shenoy 2011
Shinozaki 2016
Sinke 2016
Sinke 2017
Song 2006
Sprenger 2015
Sprenger 2018
Stankewitz 2010
Starr 2009
Stoeckel 2016
Strigo 2013b
Takahashi 2011
Talmi 2009
Tan 2015
Tedeschi 2015
Tessitore 2017
Theysohn 2014
Tseng 2013
Tseng 2015
Tseng 2017
Vachon-Presseau 2013
Vanhaudenhuyse 2009
von Leupoldt 2008
von Leupoldt 2009
Wagner 2009
Weiss 2008
Wiech 2005
Wiech 2010
Winston 2014
Woo 2015
Yang 2012
Yang 2018
Yoshino 2010
Youssef 2016
Zeidan 2015

Ziv 2010

Cluster 3: 325 voxels (-32, -56, -34)

Ariji 2018
Asghar 2015
Bar 2007
Benson 2012
Bogdanov 2015
Boland 2014
Boyle 2007
Brooks 2017
Corradi-Dell' Acqua 2011
Dobek 2014
Dube 2009
Farrell 2012
Farrell 2014
Gracely 2002
Hahn 2013
Hansen 2015
Jahn 2016
Kamping 2016
Kim 2013b
Kong 2010
Kross 2011
Lee 2008
Loggia 2014
Lopez-Sola 2010a
Lu 2004
Mobascher 2009a
Mobascher 2010a
Mobascher 2010b
Mohr 2008
Nickel 2014
Oshiro 2009
Roy 2009
Rutgen 2015
Scheef 2012
Shelton 2012
Shenoy 2011
Shinozaki 2016
Song 2006

Sprenger 2015
Sprenger 2018
Starr 2009
Stoeckel 2016
Strigo 2013b
Takahashi 2011
Tedeschi 2015
Weiss 2008
Winston 2014
Woo 2015
Youssef 2016

Cluster 4: 238 voxels (48, 4, 42)

Boyle 2007
Brooks 2017
Choi 2011
Coen 2011
Cole 2006
Cole 2010
Dube 2009
Farmer 2013
Farrell 2012
Farrell 2014
Freund 2007
Gard 2012
Geuze 2007
Iannilli 2008
Kong 2010
Kross 2011
Ladabaum 2007
Landgrebe 2008
Loggia 2012
Longo 2012
Lopez-Sola 2010a
Maihofner 2005
Maihofner 2006
Maihofner 2011
Mayhew 2013
Misra 2015
Moisset 2010
Moulton 2011

	Ochsner 2006
	Oshiro 2009
	Peltz 2011
	Piche 2010
	Quiton 2014
	Russo 2012
	Salomons 2015
	Scheef 2012
	Schmahl 2006
	Shinozaki 2016
	Stoeckel 2016
	Takahashi 2011
	Tseng 2010
	Tseng 2015
	von Leupoldt 2009
	Wagner 2009
	Winston 2014
	Ziv 2010

Note: Cluster identification on the first column indicates cluster number, number of voxels in cluster, and peak coordinate of cluster.

Supplementary Table 2. PICOS table for search and eligibility criteria.

Concept	Keyword/Synonyms
P – Population	Healthy participants over the age of 18
I - Intervention, Prognostic Factor, or Exposure	Confirmed physical pain induction ("pain" or "noxious" or "nociception")
C - Comparison or Intervention	*Not applicable*
O - Outcome	Reported MNI or Talairach coordinate results from BOLD response to pain measured by task-induced fMRI ("MRI" or "magnetic resonance imaging" or "fMRI" or "BOLD" or "brain mapping")
S - Study	1. Includes at least 10 participants 2. Conducts a whole brain search 3. Meets statistical threshold of voxel height of $p < 0.001$ uncorrected or cluster-corrected height of $p < 0.05$ for cluster identification

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	supplementary
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5-6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	8
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	8-9
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	supplementary
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	NA
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	10
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	10

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	13
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	12-13
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	13-14
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	supplementary
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	NA
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	supplementary
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	14
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	14
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	15-20
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	21
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	26-27
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	27
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	28

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Supplementary Figure 1. PRISMA checklist for reporting of meta-analyses.