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# Comparative Effectiveness of Focused Ultrasound Therapy for Movement Disorders

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**VA**



**U.S. Department of Veterans Affairs**

Veterans Health Administration  
*Health Systems Research*

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# *Appendix*

# SEARCH STRATEGIES

## COCHRANE (INCEPTION TO 08/26/2024)

#	Search Statement	Results
1	((High-Intensity Focused Ultrasound Ablation OR focused ultrasound* OR HIFU* OR MRgFUS*)):ti,ab,kw (Word variations have been searched)	1755
2	(Guided) AND ("focused ultrasound")	199
3	Magnetic Resonance Imaging	36404
4	MRI	36806
5	#3 OR #4	50578
6	#2 AND #5	110
7	'high intensity' and focused and ultrasound and ablation	194
8	MR-guided focused ultrasound	63
9	insightec	19
10	#1 OR #6 OR #7 OR #8 OR #9	1794
11	((Essential Tremor OR Parkinson Disease OR essential tremor* OR familial tremor* OR parkinson*)):ti,ab,kw (Word variations have been searched)	14903
12	MeSH descriptor: [Parkinson Disease] explode all trees	6149
13	MeSH descriptor: [Essential Tremor] explode all trees	203
14	MeSH descriptor: [Chorea] explode all trees	376
15	MeSH descriptor: [Ataxia] explode all trees	398
16	MeSH descriptor: [Multiple Sclerosis] explode all trees	5246
17	MeSH descriptor: [Myoclonus] explode all trees	93
18	MeSH descriptor: [Tremor] explode all trees	708
19	MeSH descriptor: [Dystonia] explode all trees	382
20	MeSH descriptor: [Movement Disorders] explode all trees	8907
21	(Ataxia OR Chorea OR Dystonia OR Task specific OR tremor OR Fragile X Syndrome OR Hepatolenticular Degeneration OR Multiple Sclerosis OR Myoclonus OR Restless Legs Syndrome OR Supranuclear Palsy, Progressive OR Tardive Dyskinesia OR Tourette Syndrome OR atax* OR adiadochokines* OR cerebellar gait* OR cerebelloparenchymal disorder* OR coordination impairment* OR dyscoordination OR dysmetria* OR dyssynergia* OR hemitaxia* OR hypermetria* OR incoordination* OR rubral tremor* OR schut-haymaker OR SCA1* OR olivopontocerebellar OR spinocerebellar OR atroph* OR opca OR wadia-swami OR chorea* OR chorei* OR neuroacanthocytosis OR st* vitus* dance OR dystoni* OR fragile x OR marker x OR martin-bell OR fraxa OR fraxe OR hepatocerebral OR hepatolenticular OR neurohepatic OR progressive lenticular OR degeneration OR myoclon* OR polymyoclon* OR kinsbourne syndrome OR pseudosclerosis OR copper storage OR wilson OR westphal-strupell OR holmes tremor* OR huntington* OR sclerosis OR ms OR orofacial dyskinesia* OR tardive dyskinesia* OR restless leg* OR willis-ekbom OR wittmaack-ekbome OR progressive supranuclear OR ophthalmoplegia* or richardson* disease* OR richardson*syndrome*):ti,ab,kw (Word variations have been searched)	77556
22	#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21	89897
23	#10 AND #22	160
<b>Total</b>		<b>160</b>

**PUBMED (INCEPTION TO 08/26/2024)**

#	Search Statement	Results
1	'high intensity focused ultrasound'	6,053
2	MR-guided focused ultrasound	630
3	('high intensity') AND (focused) AND (ultrasound) AND (ablation)	3,470
4	(((mrgfus*) OR (mrigfus*)) OR (MR-guided focused ultrasound)) OR (HIFU*) OR (insightec*) OR (focused ultrasound*)	22,093
5	(mr) OR (mri) OR ('nuclear magnetic resonance imaging') OR ('magnetic resonance imaging')	979,151
6	(guided) AND ('focused ultrasound')	5,554
7	(#5) AND (#6)	2,710
8	(((#1) OR (#2)) OR (#3)) OR (#4)) OR (#7)	22,823
9	Essential Tremor/ or Parkinson Disease/ or (essential tremor* or familial tremor* or parkinson*)	183,748
10	exp Ataxia/ or exp Chorea/ or Dystonia/ or tremor/ or tremor or Task specific/ or Fragile X Syndrome/ or Hepatolenticular Degeneration/ or exp Multiple Sclerosis/ or exp Myoclonus/ or Restless Legs Syndrome/ or Supranuclear Palsy, Progressive/ or Tardive Dyskinesia/ or Tourette Syndrome/ OR dystonic tremor OR MS associated tremor OR position specific tremor OR primary writing tremor OR focal dystonia OR writer* cramp OR neuroleptic induced parkinsonism OR medication induced parkinsonism OR cerebellar tremor OR rubral tremor OR (atax* or adiadochokines* or cerebellar gait* or coordination impairment* or dyscoordination or dysmetria* or dyssynergia* or hemitaxia* or hypermetria* or incoordination* or rubral tremor* or schut-haymaker or SCA1* or ((olivopontocerebellar or spinocerebellar) adj1 atroph*) or opca or wadia-swami or chorea* or chorei* or neuroacanthocytosis or st vitus* dance or dystoni* or ((fragile x or marker x or martin-bell or fraxa or fraxe or fra?x? or mar?x?) adj1 syndrome*) or ((hepatocerebral or hepatolenticular or neurohepatic or progressive lenticular) adj1 degeneration) or myoclon* or polymyoclon* or kinsbourne syndrome or pseudosclerosis or ((copper storage or wilson*) adj1 disease) or holmes tremor* or huntington* or ((disseminated or multiple) adj1 sclerosis) or ms or ((orofacial or tardive) adj1 dyskinesia*) or restless leg or willis-ekbom or (progressive supranuclear adj1 (ophthalmoplegia* or pals*)) or (richardson* adj3 (disease* or syndrome*)) or tic disorder or tourette)	894,166
11	(exp Movement disorder/) OR (movement disorder*)	137,983
12	((#9) OR (#10)) OR (#11)	1,116,015
13	(#8) AND (#12)	1,441
	<b>Total</b>	<b>1,441</b>

**EMBASE (INCEPTION TO 08/26/2024)**

#	Search Statement	Results
1	high intensity focused ultrasound'.mp. or high intensity focused ultrasound/ [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]	8512
2	('high intensity' and focused and ultrasound and ablation).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]	3830
3	high intensity focused ultrasound.mp. or exp high intensity focused ultrasound/	8512
4	MR-guided focused ultrasound.mp. or exp MR-guided focused ultrasound/	1759
5	mrgfus*.mp. or exp MR-guided focused ultrasound/	2013
6	exp MR-guided focused ultrasound/	1315
7	mrigfus*.mp.	57
8	(mr or mri or 'nuclear magnetic resonance imaging' or 'magnetic resonance imaging').mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]	1421378
9	(guided and 'focused ultrasound').mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word]	4457
10	8 and 9	3457
11	HIFU*.mp. or high intensity focused ultrasound/	8317
12	insightec*.mp.	533
13	focused ultrasound*.mp.	14788
14	1 or 2 or 3 or 4 or 5 or 6 or 7 or 10 or 11 or 12 or 13	15291
15	chorea.mp. or exp chorea/	56915
16	ataxia.mp. or exp ataxia/	106583
17	Multiple Sclerosis.mp. or exp Multiple Sclerosis/	183109
18	Myoclonus.mp. or exp Myoclonus/	30684
19	tremor.mp. or exp Tremor/	72975
20	Dystonia.mp. or exp Dystonia/	41208
21	movement disorder.mp. or motor dysfunction/	108367
22	(Task specific or Fragile X Syndrome or Hepatolenticular Degeneration or Restless Legs Syndrome or Supranuclear Palsy, Progressive or Tardive Dyskinesia or Tourette Syndrome or dystonic tremor or MS associated tremor or position specific tremor or primary writing tremor or focal dystonia or writer* cramp or neuroleptic induced parkinsonism or medication induced parkinsonism or cerebellar tremor or rubral tremor or atax* or adiadochokines* or cerebellar gait* or cerebelloparenchymal disorder* or coordination impairment* or dyscoordination or dysmetria* or dyssynergia* or hemitaxia* or hypermetria* or incoordination* or rubral tremor* or schut-haymaker or SCA1* or olivopontocerebellar or spinocerebellar or atroph* or opca or wadia-swami or chorea* or chorei* or neuroacanthocytosis or st* vitus* dance or dystoni* or fragile x or marker x or martin-bell or fraxa or fraxe or hepatocerebral or hepatolenticular or neurohepatic or progressive lenticular or degeneration or myoclon* or polymyoclon* or kinsbourne syndrome or pseudosclerosis or copper storage or wilson or westphal-strupell or holmes tremor* or huntington* or sclerosis or ms or orofacial dyskinesia* or tardive dyskinesia* or restless leg* or willis-ekbom or wittmaack-ekbome or progressive supranuclear or ophthalmoplegia* or richardson* disease* or richardson*syndrome*).mp.	1672366

#	Search Statement	Results
23	Parkinson Disease.mp. or exp Parkinson disease/	209822
24	exp essential tremor/ or essential tremor*.mp.	9717
25	familial tremor*.mp.	65
26	parkinson*.mp.	273044
27	15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26	1950628
28	14 and 27	2004
<b>Total</b>		2004

**CLINICALTRIALS.GOV (INCEPTION TO 08/26/2024)**

#	Search Statement	Results
1	Condition/disease: tremor; Other terms:(Movement Disorders) OR (Parkinson's); Intervention/Treatment:Ultrasound	35
2	Intervention/Treatment:Magnetic Resonance Guided Functional Ultrasound	13
3	Condition/disease: tremor; ; Intervention/Treatment:high-intensity Ultrasound	2
4	Condition/disease: movement; Intervention/Treatment:high-intensity Ultrasound	6
5	Condition/disease: Multiple Sclerosis; Intervention/Treatment:Ultrasound	11
6	Condition/disease: Dystonia ; Intervention/Treatment:Ultrasound	17
7	Condition/disease: tremor ; Other terms:(Movement Disorders) OR (Parkinson's) OR (dystonia) OR (multiple sclerosis); Intervention/Treatment: (Ultrasound) OR (focused ultrasound) OR (HIFU) OR (MRgFUS)	43
8	Condition/disease: tremor; Other terms:(Movement Disorders) OR (Parkinson's) OR (dystonia) OR (multiple sclerosis) OR (Ataxia) OR (Chorea) OR (Dystonia) OR (Fragile X Syndrome) OR (Hepatolenticular Degeneration) OR (Myoclonus) OR (Restless Legs Syndrome) OR (Palsy) OR (Tardive Dyskinesia) OR (Tourette Syndrome)OR (tic disorder); Intervention/Treatment: (Ultrasound) OR (focused ultrasound) OR (HIFU) OR (MRgFUS)	43
9	Condition/disease: (Movement Disorders) OR (Parkinson's) OR (dystonia) OR (multiple sclerosis) OR (Ataxia) OR (Chorea) OR (Dystonia) OR (Fragile X Syndrome) OR (Hepatolenticular Degeneration) OR (Myoclonus) OR (Restless Legs Syndrome) OR (Palsy) OR (Tardive Dyskinesia) OR (Tourette Syndrome)OR (tic disorder); Intervention/Treatment: (Ultrasound) OR (focused ultrasound) OR (HIFU) OR (MRgFUS)	241
<b>Total after deduplication</b>		251