



NEWSLETTER #129 July 2024 See [ABOUT](#) WIKISTIM

Using WIKISTIM to Support Meta-analysis Researchers, Peer Reviewers, Readers, and Policymakers

Meta-analyses (MAs) of clinical trials continue to proliferate in health care, sometimes with resulting controversy. This has been the case recently for spinal cord stimulation (SCS), and it continues: the lead author of a Cochrane review of SCS last year [Traeger-23], Adrian Traeger, published critical editorial comments last month [Traeger-24] on a new MA [Eldabe-24]. The new critique focused attention on two SCS trials, along with Traeger's MA, all of which raised concerns reported in our newsletters [[Nov-22](#), [Jan-23](#), [March-23](#), [May-23](#), [June-23](#)]. In brief, the new critique says that the conclusion of Eldabe and Duarte [Eldabe-24] "is entirely misleading" and "yet another attempt to control the narrative." This comes on the heels of a disappointing Traeger polemic published by JAMA Int Med [Traeger, Bero-24], which we discussed in our January newsletter [[Jan-24](#)].

"Peer reviewers and readers of research in this field" (Traeger's phrase), not to mention policy-makers, likely struggle to follow this controversy: not only is the field complex, with multiple reported outcomes and multiple important variables that can affect them, but also MAs are conducted and reported inconsistently, notwithstanding two decades of effort to develop methodologic and reporting quality standards and prospective registries. Using these standards [Shea-17], a critical SR published in March [Kleppel-24], concluded that of 25 MAs to date in the field of SCS only 3 have been of "high" quality, whereas the quality of 19 was deemed "critically low." An SR of MAs, so to speak, has shown the need for major improvements. Is the current controversy based on substance? Should clinical practice and policy be guided by this body of work?

WIKISTIM was designed explicitly to support SRs and MAs, and it has done so for the past 11 years by providing structured abstracts with comprehensive databases of the primary studies that constitute their raw material. To date, our databases have not included secondary sources, such as review articles and book chapters, as these contain no original data. We have, however, been considering for some time an exception for SRs and MAs, which (like primary sources) follow scientific methods and reporting formats (methods, results, discussion, etc.). Not only are there well developed

standards for their conduct, as for clinical trials, they also are amenable to structured abstracts comparable to those we already publish.

We propose to enhance WIKISTIM by adding:

- A new database of all published MAs of SCS (33 in number as of July 15, 2024). Entries will use a standard format analogous to our clinical database, with different fields as appropriate.
- Access to original data files, wherever possible, for each of these MAs, for use as templates and in quality control initiatives. Inquiries to authors about their willingness to participate in this effort have been encouraging.
- Adding fields in the existing SCS database as appropriate to support the most recent AMSTAR criteria (e.g., risk of bias) more explicitly.
- Novel presentations and comparisons of MAs.

We believe this initiative will facilitate the work of researchers and peer reviewers and enhance the understanding by our readers of this growing segment of evidence-based medicine.

References

- [Eldabe S, Nevitt S, Bentley A, Mekhail NA, Gilligan C, Billet B, Staats PS, Maden M, Soliday N, Leitner A, Duarte RV.](#) Network meta-analysis and economic evaluation of neurostimulation interventions for chronic non-surgical refractory back pain. Clin J Pain epub 2024
- [Kleppel DJ, Copeland R, Hussain N, Karri J, Wang E, D'Souza RS.](#) Methodological and statistical characteristics of meta-analyses on spinal cord stimulation for chronic pain: a systematic review. Reg Anesth Pain Med epub 1–9, 2024
- [Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, Henry DA.](#) AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ epub 2017
- [Traeger A.](#) Competing narratives: moving the field forward on spinal cord stimulation. Clin J Pain epub 2024
- [Traeger AC, Bero LA.](#) Corporate influences on science and health—the case of spinal cord stimulation. JAMA Intern Med 184(2):129-130, 2024
- [Traeger AC, Gilbert SE, Harris IA, Maher CG.](#) Spinal cord stimulation for low back pain. Cochrane Database Syst Rev 3(3):CD014789, 2023

Three People to Thank This Month and a Reminder That If You Are Reading This, We Need You to Join Them

This month, we are pleased to thank three people for their generous donations to WIKISTIM: Dr. David Cedeno and Dr. Pilar Mejia made a repeat donation and Dr. Sean Slee made his first. These donations were vital to the accomplishment of this month's

update and newsletter and were a cause for celebration. We don't have an endowment, and our operating budget includes, by necessity and indeed by definition, expenses that occur on a regular basis. You can easily be in very fine company by adding a donation to WIKISTIM to your own annual budget.

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Increase in the Number of Subscribers and Clicks

WIKISTIM now has 1853 subscribers. Thank you for spreading the word! As we reported last month, in April, 183 people clicked a link in our newsletter, and in May, this number jumped to 297. This trend continued in our June newsletter, with 316 people clicking links. Clicking a link, of course, indicates a deeper level of engagement than simply scanning the citation lists and requires that a citation be of particular interest to our readers. The performance of our newsletter far outstrips the statistics reported in our "sector" according to commonly accepted metrics.

Citations Added From Search on July 6, 2024

Whenever possible, we provide free full-text links. For journals where a full-text PDF downloads immediately when a page is opened or has a "watermark," we link to the link rather than to the PDF. (If necessary, please click "View Entire Message" to see all of the citation lists in this newsletter.)

We only list correction citations if the error was substantial. For small changes, such as a missing initial in an author's name, we simply update the WIKISTIM database.

Deep Brain Stimulation (now 8517 citations)

1. Al-Jaberi F, Moeskes M, Skalej M, Fachet M, Hoeschen C. **3D-visualization of segmented contacts of directional deep brain stimulation electrodes via registration and fusion of CT and FDCT.** EJNMMI Rep 2024 8(1):17 [PubMed Free Full Text](#)
2. Alanazi FI, Bravo CAR, Moreno JSS, Botero-Posada LF, Ladino LD, Rios ALL, Hutchison WD. **Modulation of neuronal activity in human centromedian nucleus during an auditory attention and working memory task.** Neuroimage 2024 296:120686 [PubMed Free Full Text](#)

3. Bergosh M, Medvidovic S, Zepeda N, Crown L, Ipe J, Debattista L, Romero L, Amjadi E, Lam T, Hakopian E, Choi W, Wu K, Lo JYT, Lee DJ. **Immediate and long-term electrophysiological biomarkers of antidepressant-like behavioral effects after subanesthetic ketamine and medial prefrontal cortex deep brain stimulation treatment.** Front Neurosci 2024 18:1389096 [PubMed](#) [Free Full Text](#)
4. Bocci T, Ferrara R, Albizzati T, Averna A, Guidetti M, Marceglia S, Priori A. **Asymmetries of the subthalamic activity in Parkinson's disease: phase-amplitude coupling among local field potentials.** Brain Commun 2024 6(3):fcae201 [PubMed](#) [Free Full Text](#)
5. Butenko K, Neudorfer C, Dembek TA, Hollunder B, Meyer GM, Li N, Oxenford S, Bahners BH, AlFatly B, Lofredi R, Gordon EM, Dosenbach NUF, Ganos C, Hallett M, Starr PA, Ostrem JL, Wu Y, Zhang C, Fox MD, Horn A. **Engaging dystonia networks with subthalamic stimulation.** medRxiv [preprint before peer review] 2024 epub [PubMed](#) [Free Full Text](#)
6. Canesi M, Lippi L, Rivaroli S, Vavassori D, Trenti M, Sartorio F, Meucci N, de Sire A, Siri C, Invernizzi M. **Long-term impact of deep brain stimulation in Parkinson's disease: does it affect rehabilitation outcomes?** Medicina (Kaunas) 2024 60(6):927 [PubMed](#) [Free Full Text](#)
7. Cernera S, Long S, Kelberman M, Hegland KW, Hicks J, Smith-Hublou M, Taylor B, Mou Y, de Hemptinne C, Johnson KA, Cagle JN, Moore K, Foote KD, Okun MS, Gunduz A. **Responsive versus continuous deep brain stimulation for speech in essential tremor: a pilot study.** Mov Disord 2024 epub [PubMed](#)
8. Charles KA, Molpeceres Sierra E, Bouali-Benazzouz R, Tibar H, Oudaha K, Naudet F, Duveau A, Fossat P, Benazzouz A. **Interplay between subthalamic nucleus and spinal cord controls parkinsonian nociceptive disorders.** Brain 2024 epub awae200 [PubMed](#)
9. Chen JA, Warren AEL, Rolston JD. **Robot-assisted deep brain stimulation of the centromedian nucleus of the thalamus for generalized epilepsy: targeting and operative video.** Neurosurg Focus Video 2024 11(1):V18 [PubMed](#) [Free Full Text](#)
10. D'Ascanio I, Giannini G, Baldelli L, Cani I, Giannoni A, Leogrande G, Lopane G, Calandra Buonaura G, Cortelli P, Chiari L, Palmerini L. **A method for the synchronization of inertial sensor signals and local field potentials from deep brain stimulation systems.** Biomed Phys Eng Express 2024 epub [PubMed](#) [Free Full Text](#)
11. D'Souza S, Seshadri V, Toms J, D'Haese P, Dawant BM, Li R, Shah HP, Koch P, Larson P, Holloway KL. **Precision targeting in the globus pallidus interna: insights from the multicenter, prospective, blinded VA/NINDS CSP 468 study.** J Neurosurg 2024 epub 1-11 [PubMed](#)
12. de Souza JCC, Falcone ACM, Barbosa RMG, Soares MC, Munhoz R, Farah M, Capato T, Casagrande SCB, Cordellini MF, de Castro Micheli G, Limongi JCP, Barbosa ER, Listik C, Cury RG. **Botulinum toxin and deep brain stimulation in dystonia.** Toxins (Basel) 2024 16(6):282 [PubMed](#) [Free Full Text](#)

13. Dong P, Bakhurin K, Li Y, Mikati MA, Cui J, Grill WM, Yin HH, Yang H. **Attenuating midline thalamus bursting to mitigate absence epilepsy.** Proc Natl Acad Sci USA 2024 121(28):e2403763121 [PubMed](#)
14. Fasano A, Mure H, Oyama G, Murase N, Witt T, Higuchi Y, Singer A, Sannelli C, Morelli N; DBS PSR Study Group. **Subthalamic nucleus local field potential stability in patients with Parkinson's disease.** Neurobiol Dis 2024 epub 106589 [PubMed](#) [Free Full Text](#)
15. Friedrich MU, Roenn AJ, Palmisano C, Alty J, Paschen S, Deuschl G, Ip CW, Volkmann J, Muthuraman M, Peach R, Reich MM. **Validation and application of computer vision algorithms for video-based tremor analysis.** NPJ Digit Med 2024 7(1):165 [PubMed](#) [Free Full Text](#)
16. Fujimoto SH, Fujimoto A, Elorette C, Seltzer A, Andraka E, Verma G, Janssen WG, Fleysher L, Folloni D, Choi KS, Russ BE, Mayberg HS, Rudebeck PH. **Deep brain stimulation induces white matter remodeling and functional changes to brain-wide networks.** bioRxiv [preprint before peer review] 2024 epub [PubMed](#) [Free Full Text](#)
17. Furrer RA, Merner AR, Stevens I, Zuk P, Williamson T, Shen FX, Lázaro-Muñoz G. **Public perceptions of neurotechnologies used to target mood, memory, and motor symptoms.** medRxiv [preprint before peer review] 2024 epub [PubMed](#) [Free Full Text](#)
18. Geng X, Quan Z, Zhang R, Zhu G, Nie Y, Wang S, Rolls E, Zhang J, Hu L. **Subthalamic and pallidal oscillations and their couplings reflect dystonia severity and improvements by deep brain stimulation.** Neurobiol Dis 2024 199:106581 [PubMed](#) [Free Full Text](#)
19. Gorecka-Mazur A, Krygowska-Wajs A, Furgala A, Li J, Misselwitz B, Pietraszko W, Kwinta B, Yilmaz B. **Associations between gut microbiota characteristics and non-motor symptoms following pharmacological and surgical treatments in Parkinson's disease patients.** Neurogastroenterol Motil 2024 e14846 [PubMed](#) [Free Full Text](#)
20. Hahn A, Lazar AA, Cernera S, Little S, Wang SS, Starr PA, Racine CA. **Neuropsychological and social predictors of participation in a deep brain stimulation study of Parkinson's disease and dystonia.** medRxiv [preprint before peer review] 2024 epub [PubMed](#) [Free Full Text](#)
21. Haliasos N, Giakoumantis D, Gnanaratnasingham P, Low HL, Misbahuddin A, Zikos P, Sakkalis V, Cleo S, Vakis A, Bisdas S. **Personalizing deep brain stimulation therapy for Parkinson's disease with whole-brain MRI radiomics and machine learning.** Cureus 2024 16(5):e59915 [PubMed](#) [Free Full Text](#)
22. Hines K, Sharan I, Schaefer J, Fayed I, Atik A, Matias CM, Wu C. **Microelectrode recording during deep brain stimulation does not consistently represent lead trajectory.** Oper Neurosurg (Hagerstown) 2024 epub [PubMed](#)
23. Holewijn RA, Wiggerts Y, Bot M, Verbaan D, de Bie RMA, Schuurman R, van den Munckhof P. **Surgical complications in subthalamic nucleus deep brain stimulation for Parkinson's disease: experience in 800 patients.** Stereotact Funct Neurosurg 2024 epub 1-9 [PubMed](#)

24. Jeno M, Zimmerman MB, Shandley S, Wong-Kisiel L, Singh RK, McNamara N, Fedak Romanowski E, Grinspan ZM, Eschbach K, Alexander A, McGoldrick P, Wolf S, Nangia S, Bolton J, Olaya J, Shrey DW, Karia S, Karakas C, Tatachar P, Ostendorf AP, Gedela S, Javarayee P, Reddy S, Manuel CM, Gonzalez-Giraldo E, Sullivan J, Coryell J, Depositario-Cabacar DFT, Hauptman JS, Samanta D, Armstrong D, Perry MS, Marashly A, Ciliberto M. **Pediatric palliative epilepsy surgery: a report from the Pediatric Epilepsy Research Consortium (PERC) surgery database.** Pediatr Neurol 2024 157:70-78 [PubMed](#)[Free Full Text](#)
25. Jerczynski S, Quémener M, Noël VP, Rousseau A, Parham E, Bédard A, Masoumi S, Charland T, Drouin A, Roussel J, Dionne V, Shooner T, Parrot A, Takech MA, Philippe É, DePaoli D, Cantin L, Parent M, Côté DC. **Human brain tissue identification using coherent anti-Stokes Raman scattering spectroscopy and diffuse reflectance spectroscopy for deep brain stimulation surgery.** Neurophotonics 2024 11(2):025006 [PubMed](#)[Free Full Text](#)
26. Jia F, Shukla AW, Hu W, Ma Y, Zhang J, Almeida L, Kao C, Guo Y, Zhang S, Tao Y, Ling Z, Xu X, Yang Z, Meng FG, Wan X, Liu H, Konard PE, Li L. **Variable frequency deep brain stimulation of subthalamic nucleus to improve freezing of gait in Parkinson's disease.** Natl Sci Rev 2024 11(6):nwae187 [PubMed](#)[Free Full Text](#)
27. Kabotyanski KE, Najera RA, Banks GP, Sharma H, Provenza NR, Hayden BY, Mathew SJ, Sheth SA. **Cost-effectiveness and threshold analysis of deep brain stimulation vs. treatment-as-usual for treatment-resistant depression.** Transl Psychiatry 2024 14(1):243 [PubMed](#)[Free Full Text](#)
28. Kähkölä J, Puhto T, Katisko J, Lahtinen M. **Recommendations for the prevention and management of deep brain stimulation infections based on 26-year single-center experience.** Stereotact Funct Neurosurg 2024 epub 1-8 [PubMed](#)
29. Karazapryanov PA, Gabrovski KR, Milenova Y, Pavlov VK, Karameshev A, Damianova M, Sirakov S, Minkin K. **Mapping of capsular side effects by using intraoperative motor-evoked potentials during asleep deep brain stimulation surgery of the subthalamic nucleus for Parkinson's disease.** Stereotact Funct Neurosurg 2024 epub 1-9 [PubMed](#)
30. Karl JA, Joyce JM, Ouyang B, Gill CE, Verhagen Metman L. **Directional deep brain stimulation programming: is the segment clearly identifiable and stable over time?** Mov Disord Clin Pract 2024 epub [PubMed](#)[Free Full Text](#)
31. Kashyap V, Ashby M, Stanslaski S, Nguyen K, Hageman K, Chang YC, Khalessi AA. **Feasibility of endovascular deep brain stimulation of anterior nucleus of the thalamus for refractory epilepsy.** Oper Neurosurg (Hagerstown) 2024 epub [PubMed](#)[Free Full Text](#)
32. Köhler RM, Binns TS, Merk T, Zhu G, Yin Z, Zhao B, Chikermane M, Vanhoecke J, Busch JL, Habets JGV, Faust K, Schneider GH, Cavallo A, Haufe S, Zhang J, Kühn AA, Haynes JD, Neumann WJ. **Dopamine and deep brain stimulation accelerate the neural dynamics of volitional action in Parkinson's disease.** Brain 2024 epub awae219 [PubMed](#)[Free Full Text](#)

33. Krugliakova E, Karpovich A, Stieglitz L, Huwiler S, Lustenberger C, Imbach L, Bujan B, Jedrysiak P, Jacomet M, Baumann CR, Fattinger S. **Exploring the local field potential signal from the subthalamic nucleus for phase-targeted auditory stimulation in Parkinson's disease.** Brain Stimul 2024; 17(4):769-779 [PubMed](#) [Free Full Text](#)
34. Lasá-Aranzasti A, Larasati YA, da Silva Cardoso J, Solis GP, Koval A, Cazurro-Gutiérrez A, Ortigoza-Escobar JD, Miranda MC, De la Casa-Fages B, Moreno-Galdó A, Tizzano EF, Gómez-Andrés D, Verdura E, Katanaev VL, Pérez-Dueñas B; Study Group of GNAO1 patients from Spain. **Clinical and molecular profiling in GNAO1 permits phenotype-genotype correlation.** Mov Disord 2024 epub [PubMed](#) [Free Full Text](#)
35. Li W, Li N, Wang X, Chen L, Su M, Zheng Z, Li J, Wang X, Jing D, Wang X, Ge S. **Microelectrode recording characterization of the nucleus accumbens and the anterior limb of internal capsule in patients with addiction.** Neurosci Lett 2024; 836:137884 [PubMed](#)
36. Liu X, Guang J, Glowinsky S, Abadi H, Arkadir D, Linetsky E, Abu Snineh M, León JF, Israel Z, Wang W, Bergman H. **Subthalamic nucleus input-output dynamics are correlated with Parkinson's burden and treatment efficacy.** NPJ Parkinsons Dis 2024; 10(1):117 [PubMed](#) [Free Full Text](#)
37. Lopez Ramos CG, Rockhill AP, Shahin MN, Gragg A, Tan H, Yamamoto EA, Fecker AL, Ismail M, Cleary DR, Raslan AM. **Beta oscillations in the sensory thalamus during severe facial neuropathic pain using novel sensing deep brain stimulation.** Neuromodulation 2024 epub [PubMed](#)
38. Luo B, Chang L, Qiu C, Dong W, Zhao L, Lu Y, Sun J, Yan J, Wei X, Yan J, Zhang W. **Reorganization of motor network in patients with Parkinson's disease after deep brain stimulation.** CNS Neurosci Ther 2024; 30(6):e14792 [PubMed](#) [Free Full Text](#)
39. Mankame S, Worobey SJ, Sacko TJ, Pierce RC, Swinford-Jackson SE. **Differential effects of deep brain stimulation on reinstatement of cocaine seeking in male and female rats.** Neurosci Lett 2024 epub; 137888 [PubMed](#) [Free Full Text](#)
40. Martin T, Jannin P, Baxter JSH. **Generalisation capabilities of machine-learning algorithms for the detection of the subthalamic nucleus in micro-electrode recordings.** Int J Comput Assist Radiol Surg 2024 epub [PubMed](#)
41. Morishita T, Sakai Y, Iida H, Tanaka H, Permana GI, Kobayashi H, Tanaka SC, Abe H. **Surgical concepts and long-term outcomes of thalamic deep brain stimulation in patients with severe Tourette syndrome: a single-center experience.** Neurol Med Chir (Tokyo) 2024 epub [PubMed](#) [Free Full Text](#)
42. Mylène M, Elisabeth S, Sophie CC, Isabelle B, Dominique G, Elodie H, Anne-Sophie R, Christophe CJ, Hervé D, Raymund S, David D; PREDISTIM study group. **Development and validation of the DBS-PS (Deep Brain Stimulation-Perception Scale): assessing parkinsonian patients' expectations to prevent post-operative disappointment?** J Neurol Sci 2024; 462:123093 [PubMed](#)

43. Nair SS, Chakravarthy S. **A computational model of deep brain stimulation for Parkinson's disease tremor and bradykinesia.** Brain Sci 2024 14(6):620 [PubMed](#) [Free Full Text](#)
44. O'Sullivan KP, Orazem ME, Otto KJ, Butson CR, Baker JL. **Electrical rejuvenation of chronically implanted macroelectrodes in nonhuman primates.** J Neural Eng 2024 21(3) [PubMed](#)
45. Oner O, Jafarova S, Ozden H, Seker A, Ince Gunal D. **The impact of deep brain stimulation on apathy in Parkinson's disease patients.** Turk Neurosurg 2023 epub [PubMed](#) [Free Full Text](#)
46. Ortigoza-Escobar JD, Zamani M, Dorison N, Sadeghian S, Azizimalamiri R, Alvi JR, Sultan T, Galehdari H, Shariati G, Saberi A, Leeuwen L, Zifarelli G, Bauer P, d'Hardemare V, Douummar D, Roze E, Travaglini L, Nicita F, Ojea Ponce N, Zahraei SM, Alabdi L, Tamim A, Hashem MO, Ababneh F, Morrow MM, Curry C, Tam A, Ruedy J, Bhambhani V, Veith R, Strømme P, Efthymiou S, Alkuraya FS, Moreno-De-Luca A, Burglen L, Houlden H, Maroofian R. **Biallelic ZBTB11 variants: a neurodevelopmental condition with progressive complex movement disorders.** Mov Disord 2024 epub [PubMed](#) [Free Full Text](#)
47. Pavlovsky P, Sayfulina K, Gamaleya A, Tomskiy A, Belova E, Sedov A. **Clinical asymmetry in Parkinson's disease is characterized by prevalence of subthalamic pause-burst neurons and alpha-beta oscillations.** Clin Neurophysiol 2024 165:36-43 [PubMed](#)
48. Rohr-Fukuma M, Stieglitz LH, Bujan B, Jedrysiak P, Oertel MF, Salzmann L, Baumann CR, Imbach LL, Gassert R, Büchsel O. **Neurofeedback-enabled beta power control with a fully implanted DBS system in patients with Parkinson's disease.** Clin Neurophysiol 2024 165:1-15 [PubMed](#) [Free Full Text](#)
49. Sajonz BEA, Brugger TS, Reisert M, Büchsel M, Schröter N, Rau A, Egger K, Reinacher PC, Urbach H, Coenen VA, Kaller CP. **Cerebral intraparenchymal hemorrhage due to implantation of electrodes for deep brain stimulation: insights from a large single-center retrospective cross-sectional analysis.** Brain Sci 2024 14(6):612 [PubMed](#) [Free Full Text](#)
50. Sauerbier A, Herberg J, Stopic V, Loehrer PA, Ashkan K, Rizos A, Jost ST, Petry-Schmelzer JN, Gronostay A, Schneider C, Visser-Vandewalle V, Evans J, Nimsky C, Fink GR, Antonini A, Martinez-Martin P, Silverdale M, Weintraub D, Schrag A, Ray Chaudhuri K, Timmermann L, Dafsari HS; EUROPAR, the German Parkinson Society Non-motor Symptoms Study Group, and the International Parkinson and Movement Disorders Society Non-Motor Parkinson's Disease Study Group. **Predictors of short-term anxiety outcome in subthalamic stimulation for Parkinson's disease.** NPJ Parkinsons Dis 2024 10(1):114 [PubMed](#) [Free Full Text](#)
51. Schönthaler EMD, Holl AK, Tmava-Berisha A, Schwingenschuh P, Kögl M, Katschnig P, Reininghaus EZ, Holl EM. **Psychological symptoms after awake deep brain stimulation surgery in Parkinson's disease, essential tremor, and dystonia.** Eur Neuropsychopharmacol 2024 86:13 [PubMed](#)

52. Sermon JJ, Wiest C, Tan H, Denison T, Duchet B. **Evoked resonant neural activity long-term dynamics can be reproduced by a computational model with vesicle depletion.** Neurobiol Dis 2024 199:106565 [PubMed](#) [Free Full Text](#)
53. Sneyers V, Valgaeren B, Van Berkel B. **Twiddler's syndrome.** J Belg Soc Radiol 2024 108(1):60 [PubMed](#) [Free Full Text](#)
54. Suresh S, Chaitanya G, Kachhvah AD, Vashin V, Saranathan M, Pati S. **Nocturnal low-frequency stimulation of the centromedian thalamic nucleus improves sleep quality and seizure control.** Front Hum Neurosci 2024 18:1392100 [PubMed](#) [Free Full Text](#)
55. Swinnen BEKS, Hoy CW, Pegolo E, Matzilevich EU, Sun J, Ishihara B, Morgante F, Pereira E, Baig F, Hart M, Tan H, Sawacha Z, Beudel M, Wang S, Starr P, Little S, Ricciardi L. **Basal ganglia theta power indexes trait anxiety in people with Parkinson's disease.** medRxiv [preprint before peer review] 2024 epub [PubMed](#) [Free Full Text](#)
56. Tanaka T, Nhi HNY, Pyae Kyaw M, Otoki Y, Takase Y, Uwatoko K, Minagawa H, Yukitake M, Agari T, Suehiro E, Abe T, Matsuno A. **Successful management of acute subdural hematoma in deep brain stimulation patient: a case report and literature review.** Cureus 2024 16(5):e61469 [PubMed](#) [Free Full Text](#)
57. Thum JA, Malekmohammadi M, Toker D, Sparks H, Alijanpourtaghsara A, Choi JW, Hudson AE, Monti MM, Pouratian N. **Globus pallidus externus drives increase in network-wide alpha power with propofol-induced loss-of-consciousness in humans.** Cereb Cortex 2024 34(6):bhae243 [PubMed](#)
58. Tian X, Ding C, Liu M, Dai L, Xie Z, Fang T. **Bilateral globus pallidus internus-deep brain stimulation in a 5-year-old boy with SGCE-related myoclonus dystonia syndrome.** Pediatr Investig 2024 8(2):154-156 [PubMed](#) [Free Full Text](#)
59. Uchida M, Horisawa S, Azuma K, Akagawa H, Tokushige S, Kawamata T, Taira T. **Thalamic deep brain stimulation for SPG-56 related focal hand dystonia.** J Mov Disord 2024 epub [PubMed](#) [Free Full Text](#)
60. Voegtle A, Terzic L, Farahat A, Hartong N, Galazky I, Hinrichs H, Nasuto SJ, de Oliveira Andrade A, Knight RT, Ivry RB, Voges J, Deliano M, Buentjen L, Sweeney-Reed CM. **Ventrointermediate thalamic stimulation improves motor learning in humans.** Commun Biol 2024 7(1):798 [PubMed](#) [Free Full Text](#)
61. Wan X, Duan C, Lin Z, Zeng Z, Zhang C, Li D. **Motor improvement of remote programming in patients with Parkinson's disease after deep brain stimulation: a 1-year follow-up.** Front Neurol 2024 15:1398929 [PubMed](#)
62. Wang F, Dai L, Wang T, Zhang Y, Wang Y, Zhao Y, Pan Y, Bian L, Li D, Zhan S, Lai Y, Voon V, Sun B. **Presurgical structural imaging and clinical outcome in combined bed nucleus of the stria terminalis-nucleus accumbens deep brain stimulation for treatment-resistant depression.** Gen Psychiatr 2024 37(3):e101210 [PubMed](#) [Free Full Text](#)
63. Wang F, Huang P, Lin S, Dai L, Lin Z, Pan Y, Zhang C, Sun B, Wu Y, Li D. **Anterior capsulotomy combined with subthalamic nucleus deep brain**

- stimulation for tardive dystonia.** J Psychiatr Res 2024 176:148-154 [PubMed Free Full Text](#)
64. Wang X, Fu S, Yoo K, Wang X, Gan L, Zou T, Gao Q, Han H, Yang Z, Hu X, Chen H, Liu D, Li R. **Individualized structural perturbations on normative brain connectome restrict deep brain stimulation outcomes in Parkinson's disease.** Mov Disord 2024 epub [PubMed Free Full Text](#)
 65. Yilmaz A, Eray HA, Cakir M, Ceylan M, Blomstedt P. **Deep brain stimulation with double targeting of the VIM and PSA for the treatment of rare tremor syndromes.** Stereotact Funct Neurosurg 2024 epub 1-16 [PubMed](#)
 66. Zhang Z, Huang Y, Chen X, Li J, Yang Y, Lv L, Wang J, Wang M, Wang Y, Wang Z. **State-specific regulation of electrical stimulation in the intralaminar thalamus of macaque monkeys: network and transcriptional insights into arousal.** Adv Sci (Weinh) 2024 e2402718 [PubMed](#)

Dorsal Root Ganglion Stimulation (now 278 citations)

1. Yang A, Yousef TA, Aggarwal N, Chapman KB. **Dorsal root ganglion stimulation for the management of inflammatory bowel disease: a case report.** A A Pract 2024 18(6):e01804 [PubMed Free Full Text](#)

Gastric Electrical Stimulation (still 528 citations)

Peripheral Nerve Stimulation (now 804 citations)

1. Chen W, Wang S, Bao J, Yu C, Jiang Q, Song J, Zheng Y, Hao Y, Xu K. **Restoration of coherent reach-grasp-pull movement via sequential intraneuronal peripheral nerve stimulation in rats.** J Neural Eng 2024 21(4) [PubMed](#)
2. Kapural L, Melton J, Kim B, Mehta P, Sigdel A, Bautista A, Petersen EA, Slavin KV, Eidt J, Wu J, Elshihabi S, Schwalb JM, Garrett HE Jr, Veizi E, Barolat G, Rajani RR, Rhee PC, Guirguis M, Mekhail N. **Primary 3-month outcomes of a double-blind randomized prospective study (the QUEST study) assessing effectiveness and safety of novel high-frequency electric nerve block system for treatment of post-amputation pain.** J Pain Res 2024 17:2001-2014 [PubMed Free Full Text](#)
3. Lambrecht JM, Cady SR, Peterson EJ, Dunning JL, Dinsmoor DA, Pape F, Graczyk EL, Tyler DJ. **A distributed, high-channel-count, implanted bidirectional system for restoration of somatosensation and myoelectric control.** J Neural Eng 2024 21(3) [PubMed Free Full Text](#)
4. Pierson CJ, Javed N, Jain NB, Konda C. **Peripheral nerve stimulation of the axillary nerve improves chronic shoulder pain and dysfunction following reverse total shoulder arthroplasty: a case report.** Am J Phys Med Rehabil 2024 epub [PubMed](#)
5. Tebcherani TM, Loparo KA, Kaffashi F, Tyler DJ, Graczyk EL. **Interleaved multi-contact peripheral nerve stimulation to enhance reproduction of**

tactile sensation: a computational modeling study. IEEE Trans Neural Syst Rehabil Eng 2024 32:2302-2313 [PubMed](#) [Free Full Text](#)

6. Xi P, Yao Q, Liu Y, He J, Tang R, Lang Y. **Biomimetic peripheral nerve stimulation promotes the rat hindlimb motion modulation in stepping: an experimental analysis.** Cyborg Bionic Syst 2024 5:0131 [PubMed](#) [Free Full Text](#)

Sacral Nerve Stimulation (now 1234 citations)

1. Bakula M, Hauptman D, Hudolin T, Škegrov SN, Tudor KI, Bakula B, Kaštelan Ž. **Sacral neuromodulation in treating overactive bladder patients - first-time application in Croatia.** Acta Clin Croat 2023 62(Suppl2):143-147 [PubMed](#) [Free Full Text](#)
2. de Miguel Valencia MJ, Marin G, Acevedo A, Hernando A, Alvarez A, Oteiza F, de Miguel Velasco MJ. **Long-term outcomes of sacral neuromodulation for low anterior resection syndrome after rectal cancer surgery.** Ann Coloproctol 2024 40(3):234-244 [PubMed](#) [Free Full Text](#)
3. Martin S, O'Connor AD, Selvakumar D, Baraza W, Faulkner G, Mullins D, Kiff ES, Telford K, Sharma A. **Patient satisfaction with long-term sacral neuromodulation for fecal incontinence: experience from a single tertiary center.** Dis Colon Rectum 2024 epub [PubMed](#)
4. Tabakin AL, Sawhney R, Daily AM, Winkler HA, Shalom DF, Tam J, Lee W. **Case log trends of urogynecology and reconstructive pelvic surgery fellows: a comparison of urology- and gynecology-based fellowship programs.** Neurourol Urodyn 2024 epub [PubMed](#)

Spinal Cord Stimulation (now 3324 citations)

1. Elmati PR, Raghove V, Kogilathota Jagirdhar GS, Bautista A. **External oblique intercostal plane block: a case report and review of literature.** Cureus 2024 16(6):e61617 [PubMed](#) [Free Full Text](#)
2. Fabregat-Cid G, Cedeno DL, De Andrés J, Harutyunyan A, Monsalve-Dolz V, Minguez-Martí A, Escrivá-Matoses N, Asensio-Samper JM, Carnaval T, Villoria J, Rodríguez-López R, Vallejo R. **Insights into the pathophysiology and response of persistent spinal pain syndrome type 2 to spinal cord stimulation: a human genome-wide association study.** Reg Anesth Pain Med 2024 epub rapm-2024-105517 [PubMed](#)
3. Golembiewski EH, Leon-Garcia M, Gravholt DL, Brito JP, Spatz ES, Bendel MA, Montori VM, Maraboto AP, Hartasanchez SA, Hargraves IG. **Comparing methods for identifying post-market patient preferences at the point of decision-making: insights from patients with chronic pain considering a spinal cord stimulator device.** Patient Prefer Adherence 2024 18:1325-1344 [PubMed](#) [Free Full Text](#)
4. Gunduz ME, Matis GK, Ozdurhan E, Hancı V. **Evaluating the readability, quality and reliability of online patient education materials on spinal cord stimulation.** Turk Neurosurg 2023 epub [PubMed](#) [Free Full Text](#)

5. Hines K, Tran C, Koka A, Mouchtouris N, Hafazalla K, Hattar E, Wu C, Sharan A. **Thoracic canal morphology on preoperative magnetic resonance imaging in spinal cord stimulation patients.** Pain Pract 2024 epub [PubMed Free Full Text](#)
6. Kallewaard JW, Billet B, Van Paesschen R, Smet I, Mendiola A, Peña I, López P, Carceller J, Tornero C, Zuidema X, Vesper J, Lehmberg J, Laloo W, Cedeño DL, Vallejo R. **European randomized controlled trial evaluating differential target multiplexed spinal cord stimulation and conventional medical management in subjects with persistent back pain ineligible for spine surgery: 24-month results.** Eur J Pain 2024 epub [PubMed Free Full Text](#)
7. Mahrous AA, Chardon M, Johnson M, Miller J, Heckman CJ. **A new postural motor response to spinal cord stimulation: post-stimulation rebound extension.** bioRxiv [preprint before peer review] 2024 epub [PubMed Free Full Text](#)
8. Miao XZ, Gao DZ, Yang SM, Guo XL, Wen YF, Shi L, Chu L. **Biportal endoscopic spinal cord stimulation paddle lead implantation: technical note and preliminary clinical results.** Neuromodulation 2024 epub [PubMed](#)
9. Nijhuis H, Kallewaard JW, van de Minkelis J, Hofsté WJ, Elzinga L, Armstrong P, Gültuna I, Almac E, Baranidharan G, Nikolic S, Gulve A, Vesper J, Dietz BE, Mugan D, Huygen FJPM. **Durability of evoked compound action potential (ECAP)-controlled, closed-loop spinal cord stimulation (SCS) in a real-world European chronic pain population.** Pain Ther 2024 epub [PubMed Free Full Text](#)
10. Okazaki Y, Sasaki T, Hosomoto K, Tanimoto S, Kawai K, Nagase T, Sugahara C, Yabuno S, Kin K, Sasada S, Yasuhara T, Tanaka S, Date I. **Cervical spinal cord stimulation exerts anti-epileptic effects in a rat model of epileptic seizure through the suppression of CCL2-mediated cascades.** Sci Rep 2024 14(1):14543 [PubMed Free Full Text](#)
11. Sokal P, Palus D, Jabłońska M, Puk O, Kieronska-Siwak S. **Spinal cord stimulation for central neuropathic pain after spinal cord injury: a single-center case series.** J Pain Res 2024 17:2029-2035 [PubMed Free Full Text](#)
12. Wang D, Lee KY, Kagan ZB, Bradley K, Lee D. **Frequency-dependent neural modulation of dorsal horn neurons by kilohertz spinal cord stimulation in rats.** Biomedicines 2024 12(6):1346 [PubMed Free Full Text](#)

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