*National Imaging Associates, Inc.	
Clinical guidelines EXPERIMENTAL, UNPROVEN, OR INVESTIGATIONAL SERVICES	Original Date: November 2015
Physical Medicine – Clinical Decision Making	Last Revised Date: December ~~August~~ 2023~~2~~
Guideline Number: NIA_CG_601	Implementation Date: July 2024~~3~~

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GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

~~Policy~~ Statement

This policy ~~will be used to~~ lists~~provides~~ ~~a listing of~~the procedures considered experimental, or investigational provided by any physical medicine practitioner‡.

NOTE: Services listed in the policy are not eligible for reimbursement.

Purpose

To provide a listing of procedures or services considered experimental, investigational, or unproven provided ~~services~~ by any physical medicine practitioner‡~~, including chiropractors, physical therapists, occupational therapists, and speech language pathologists~~.

Coverage

~~. To the extent there is any i~~If there is inconsistency between this medical policy and the terms of an enrollee's benefit plan, the terms of the enrollee's benefit plan ~~documents will always control~~supersede~~s~~ this policy. ~~Investigational services are not covered under enrollee's health plan.~~

NOTE: Coverage is subject to the terms of an enrollee's benefit plan

Services~~Definition~~

Defined

Experimental and investigational services (treatment, ~~include the use of a~~ service, procedure, ~~or~~ supply, device, or drug) ~~that is~~are not recognized as standard clinical care for the condition~~,~~ (disease, illness, or injury) ~~being treated~~when scientific evidence to support its use is insufficient.

A service, procedure, or supply includes ~~,~~ but is not limited to~~;~~

- Diagnostic service
- Treatment
- Facility

- Equipment~~,~~ or device

NOTE: ~~-~~This organization will determine whether a service, procedure, or supply is considered experimental and investigational~~,~~ ~~-~~ based upon reliable scientific methodology published in credible peer-reviewed journals or expert opinion from national and international professional medical organizations in the absence of definitive data.

Criteria

A service is considered experimental/investigation if **ANY** of the following criteria is met:

- A service~~s~~, treatment, procedure~~s~~, ~~or~~ supply, device, or drug~~ies~~ requiring appropriate ~~Federal or other g~~Government regulatory~~al~~ b~~b~~odies~~y~~ approval does **NOT** have final approval (e.g., the Food and Drug Administration)~~, such as drugs and devices,~~
  - ~~do not have unrestricted~~Restricted market approval ~~from the Food and Drug Administration (FDA) or final approval from any other governmental regulatory body~~ for use in the treatment of a specified condition (not substituted for final approval)
  - I~~. Any approval that is granted as an i~~nterim step in the regulatory process (not substituted for final approval) ~~is not a substitute for final or unrestricted market approval.~~

Insufficient or

- ~~There is i~~insufficient ~~or i~~nconclusive ~~medical and scientific evidence~~ evidence of the service, procedure, or supply~~;~~

~~•~~ To evaluate the therapeutic value~~to evaluate the therapeutic value of the service, procedure, or supply.~~
  -
  - ~~o~~ On the beneficial effect on health outcomes
    - ~~There is inconclusive medical and scientific evidence in peer-reviewed medical literature that the service, procedure, or supply has a beneficial effect on health outcomes.~~
  -

  Is not as beneficial as an established alternative
  -

  When used in a non-investigational setting ~~The service, procedure, or supply under consideration is not as beneficial as any established alternatives.~~

- ~~There is insufficient information or inconclusive scientific evidence that, when used in a non-investigational setting, t~~the service, procedure, or supply has a beneficial effect on health outcomes ~~or is as beneficial~~ as any established alternatives~~.~~

~~Experimental and investigational services include the use of a service, procedure, or supply that is not recognized as standard clinical care for the condition, disease, illness, or injury being treated. A service, procedure, or supply includes, but is not limited to the diagnostic service, treatment, facility, equipment, or device. This organization will determine whether a service, procedure, or supply is considered experimental and investigational.~~

Experimental and Investigational Services

~~The following is a partial listing of e~~Experimental and investigational services listing (**non-exclusive list**)~~:~~:

- Advanced BioStructural Correction™ (ABC™)
- Alphabiotics
- Applied Kinesiology (including subfields~~or any of its derivations~~)[1]
- Applied Spinal Biomechanical Engineering
- Bio-Energetic Synchronization Technique (B.E.S.T)[2]
- Blood Flow Resistance Training[3-6]
- Chiropractic Biophysics (CBP,[7] Clinical Biomechanics of Posture, CBP Mirror Image Technique)[8])
- Chiropractic services directed at controlling progression and/or reducing scoliosis, including but not limited to the SpineCor brace[9] and CLEAR scoliosis treatment
- Coccygeal Meningeal Stress Fixation
- Cold Laser Therapy
- Computerized muscle testing or analysis
- Cupping[10-13]
- Craniosacral Therapy (CST,)[14], including the Upledger Technique)
- Directional Non-force Technique[15]
- Dry Needling[16]
- Hako-Med electrotherapy (horizontal electrotherapy)[17]
- High-density surface electromyography (HD-sEMG), surface scanning EMG, paraspinal surface EMG, or macro EMG Hippotherapy (e.g., evaluating low back pain, thoracolumbar segmental abnormalities, soft tissue injury, intervertebral disc disease, nerve root irritation, or scoliosis)[18-24]
- Impulse adjusting instrument
- Intersegmental traction and Autotraction[25,26]
- Kinesio taping[27-34] (Elastic Therapeutic Taping)
- Live Cell Analysis or hair analysis[35,36]
- Manipulation under Anesthesia (MUA)[37,38]
- Moire Contourographic Analysis[39]
- Nambudripad's Allergy Elimination Technique (NAET)/ other Allergy Testing[40]
- National Upper Cervical Chiropractic Association (NUCCA technique)[41]/Grostic technique

- Network Chiropractic, Neuro Emotional Technique (NET) [42,43]
- Neural Organizational Technique, Contact Reflex Analysis (CRA),[44] Whole System Scan
- Neurocalometer, Nervo-Sscope, Nerve Conduction Velocity, Surface EMG, [45]-Paraspinal Electromyography,[46] Spinoscopy or other nerve conduction testing for non-specific neck and back pain[47,48]
- Neurophysiologic Pain Profile (NPP), spine matrix scan (lumbar matrix scan)
- Nimmo Receptor-Tonus method[49]
- Pettibon, including, but not limited to wobble chair/board treatment and posture pump[50-55]
- Preventive Care, Corrective Care (chiropractic services)
- Pro-Adjuster
- Sacro Occipital Technique, Neurocranial Restructuring (NCR),[56] Cranial Manipulation
- Sound Assisted Soft Tissue mobilization[57]
- Spinal Diagnostic Ultrasound[58]
- Repeat imaging to determine the progress of conservative treatment
- Thermography[59]
- Treatment for brachioradial pruritis
- Vascular Studies, including, but not limited to, Doppler ultrasound analysis and plethysmography
- VAX-D,[60] Lordex, LTX3000, DRX-9000, DRS (Decompression Reduction Stabilization System), or other back traction devices charged at a higher rate than mechanical traction (97012)
- Whole Body Vibration (WBV),[61-63] Vibration Plate, Vibration Therapy
-
- Any lab work for which the office is not CLIA Certified or falls outside of the scope of practice, including, but not limited to:to drug testing, therapeutic drug assays, and organ or disease-oriented panels

Services Exceptions (possibly covered under another service)

Ultrasound may , however, be used as a guidance modality for certain spinal injections [1]."64

> **NOTE**: Professional societies have published position statements that diagnostic spinal ultrasound is investigational for non-operative spinal and paraspinal conditions in adults. The American Institute of Ultrasound in Medicine indicates: "There is insufficient evidence in the peer-reviewed medical literature establishing the value of non-operative spinal/paraspinal ultrasound in adults for diagnostic evaluations of conditions involving the intervertebral disks, facet joints and capsules, and central nerves… [A]t this time, the use of ultrasound in diagnostic evaluations, screening, or monitoring of therapy for these conditions has no proven clinical utility and should be considered investigational [1]."

- Whole body vibration as a treatment for low back pain (LBP) evidence remains equivocal ~~There is insufficient peer-reviewed published scientific evidence that computerized muscle testing leads to better patient outcomes. There is insufficient evidence to support any specific therapeutic effect of craniosacral therapy. While there is emerging evidence for the effectiveness of whole-body vibration in treating some medical conditions, the evidence for whole body vibration as a treatment for low back pain (LBP) remains equivocal.~~

- ~~A 2015 systematic review[65] found that that l~~Low level laser therapy ~~is an~~could be an effective method for relieving pain in non-specific chronic low back pain [2]~~ patients~~

  NOTE: ~~. However, n~~No significant treatment effect was identified for disability scores or spinal range of motion outcomes. ~~Guidelines from the North American Spine Society (2020)[66] report there is fair evidence to suggest that l~~Laser therapy combined with exercise provides better short-term relief of low back pain than either therapy alone [3]. ~~In addition, they report n~~No short-term benefit of laser therapy when compared with exercise alone [3]. ~~Current studies supported by larger sample sizes with longer follow-up was recommended. In a 2009 study, Yeldan and colleagues report no statistically significant differences between the placebo LLLT and LLLT groups on shoulder function in subacromial impingement syndrome.[67] Ay and colleagues found "no differences between laser and placebo laser treatments on pain severity and functional capacity in patients with acute and chronic low back pain caused by LDH [lumbar disc herniation]."[68] Furthermore, both a 2016 Cochrane review[69] and 2017 meta-analysis[70] report limited effectiveness of low level laser therapy in carpal tunnel syndrome management.in carpal tunnel syndrome management.in carpal tunnel syndrome management. A 2013 study examined the effectiveness of LLLT in reducing acute and chronic neck pain. The authors concluded, "This systematic review provided inconclusive evidence because of significant between-study heterogeneity and potential risk of bias. The benefit seen in the use of LLLT, although statistically significant, does not constitute the threshold of minimally important clinical difference."[71] The best available current evidence does not support the effectiveness of low level laser therapy as a therapy for patients with knee osteoarthritis.[65]~~

~~Similarly, there is insufficient evidence to support the clinical value of the Pettibon System. Posture Pump is deemed experimental and investigational because the effectiveness of this device has not been proven by adequate scientific studies, published in peer-reviewed scientific journals. There is insufficient evidence to support the clinical value of the Therapeutic (Wobble) Chair/Board.~~

~~The appropriateness and effectiveness of chiropractic manipulation as a preventive or maintenance therapy has not been established by clinical research and is not covered.~~

~~Thermography has not been shown to provide sufficient, reliable characterizing information about neurologic dysfunction or deficit to accept it as a proven evaluative procedure for the clinical diagnosis or characterization of: neck or back pain; musculoskeletal pain; entrapment neuropathy; headache; or transient cerebral ischemia and stroke.~~

~~High-density surface electromyography (HD-sEMG), surface scanning EMG, paraspinal surface EMG, or macro EMG are considered experimental and investigational as a diagnostic test for evaluating low back pain or other thoracolumbar segmental abnormalities, such as soft tissue injury, intervertebral disc disease, nerve root irritation and scoliosis, and for all other indications because the reliability and validity of these tests have not been established. Surface EMG devices are also experimental and investigational for diagnosis and/or monitoring of nocturnal bruxism and all other indications because the reliability and validity of these tests have not been demonstrated. The Neurophysiologic Pain Profile (NPP) and the spine matrix scan (lumbar matrix scan) are considered experimental and investigational because the reliability and validity of these tests has not been established.~~

- ~~There is insufficient evidence to conclude that nerve conduction studies are beneficial for health outcomes in patients with non-specific neck or back pain. Non-invasive automatic or portable nerve conduction monitoring systems that test only distal motor latencies and conduction velocities are unproven and not medically necessary for the purpose of electrodiagnostic testing.~~

- Plethysmography is the sole diagnostic modality for the listed conditions below or as an initial evaluation to determine the need for venography or arteriography
  - ~~is used to~~ D~~d~~iagnose deep vein thrombosis [4] [5]~~[72,73]~~
  - Diagnose a~~ and a~~rterial occlusive disease [6].~~[74]~~
  - ~~Plethysmography is used as the sole diagnostic modality for these conditions or as an initial evaluation to determine the need for venography or arteriography.~~ E~~Body Plethysmography e~~valuates total lung capacity and residual volume [7].~~[75]~~ (Body Plethysmography)

NOTE: Since treatment of cardiovascular and lung conditions falls outside of the scope of chiropractic, patients should be referred for testing if these conditions are suspected.

Election of Services by Member

~~**Procedure**~~

~~**Guidelines**~~

- If an experimental, unproven, or investigational~~such~~ service~~s~~ are to be provided, the practitioner will inform the member, in writing, that such services will be the member's responsibility
  - ~~.~~No~~ne of these~~ services are to be performed in lieu of an appropriate examination or without consideration of an appropriate referral.

- There is limited scientific evidence that the use of experimental, investigational, and unproven services provides ~~an improved or~~a more accurate diagnosis~~,~~ nor do they result in an improved clinical outcome~~.~~

~~- For member Scientific literature will continue to be reviewed and any significant changes in published literature will be taken into consideration for modification of this policy.~~

- e~~E~~xclusions or l~~/L~~imitations ~~(not limited to)~~
  - ~~R~~refer to the enrollee's Certificate of Coverage or Summary Plan Description~~.~~

Future Considerations

Removal of a service from the Experimental and Investigations Policy

- A review of the current literature will be evaluated annaully to determine if there is additional ~~research~~ evidence in support of any of the services listed under this policy (governmental regulatory bodies approval and scientific evidence)
- ~~.~~ Scientific ~~literature will continue to be reviewed and any significant changes in published literature will be taken into consideration for modification of this policy.~~evidence must demonstrate the final conclusions pertaining to a treatment are based upon sound scientific study methodology published in credible, peer reviewed journals following a hierarchy of reliable evidence is used;
  - Systematic reviews or Meta analyses of randomized controlled trials
  - Technology assessments
  - Randomized Controlled Trials
  - Cohort studies
  - Case-Control studies
  - National and International Professional Medical Societies consensus (in absence of definitive scientific data)

  NOTE: reliable evidence comes from well designed, high quality, double-blinded studies and not from personal professional opinions or personal choice for the standard of practice

~~This evaluation will include the following criteria:~~

- Services must be proven safe and effective;
  - Safety
    - Is the potential benefit superior to the potential harm
  - Health Outcomes
    - ~~Is there evidence the service will provide, at minimum, equal outcomes and at best, s~~Superior or comparable to the established alternatives ~~outcomes to currently available services?~~

- Patient Management
  - Does the service improve clinical decision making
- Clinical Performance
  - Is the reliability and predictive value of the service equal or superior to the current ~~"~~gold standard~~"~~ for the service
- Cost-effectiveness
  - Is the service equal to or lower cost than ~~currently utilized services for similar diagnosis and treatment?~~established treatments that produce similar outcomes

~~**All criteria will be based on peer-reviewed scientific literature and internationally and nationally accepted and published guidelines. Peer-reviewed scientific studies must be published in or accepted for publication by medical journals meeting national requirements for scientific publication (http://www.icmje.org/). The medical literature must meet the National Institutes of Health Library of Medicine standards for indexing (https://www.nlm.nih.gov/). Medical journals that publish most of their scientific manuscripts by the editorial staff of a journal will not be considered for review. If the majority of funding for research is published by the device manufacturer or organization sponsoring a technique, the results will not be considered for review.**~~

NOTE: If the service appears to be safe and cost-effective, this organization will present these results to our health plan partners for consideration of coverage and/or payment. Final authority for such coverage determinations rests with the health plan.

BACKGROUND

Health Care Providers

‡A qualified licensed health care providers (chiropractors, physical therapists, occupational therapists, speech language pathologist, physician assistants, speech language pathologist assistants, ~~therapists,~~ physical therapist assistants, and occupational therapy assistants) by education, training, and licensure/regulation performs a professional service within his/her scope of practice and reports to health professional boards.

POLICY HISTORY

Date	Summary
December 2023	• Removed; Services Exceptions – Ultrasound: as ultrasound is not applicable to therapy services • Editorial changes-sections adjusted/moved for better reading flow • Updated References
August 2022	• Removed "Maintenance Care" from the list of E & I services • References updated
December 2021	• Added "General Information" statement • Reordered (in alphabetical order) the list of experimental and investigational services • Added Blood Flow Resistance Training to list of E&I services

References

[1] American Institute of Ultrasound in Medicine, "AIUM," 2 November 2019. [Online]. Available: https://www.aium.org/resources/official-statements/view/nonoperative-spinal-paraspinal-ultrasound-in-adults. [Accessed 23 August 2023].

[2] Z. Huagn, J. Ma, J. Chen, B. Shen, F. Pei and V. Byers Kraus, "The effectiveness of low-level laser therapy for nonspecific chronic low back pain: a systematic review and meta-analysis," *Arthritis Res Ther,* vol. 17, no. 360, 15 December 2015.

[3] North American Spine Society (NASS), "Evidence-Based Clinical Guidelines for Multidisciplinary Spine Care: Diagnosis & Treatment of Low Back Pain," 2020. [Online]. Available: https://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf. [Accessed 23 August 2023].

[4] W. S. Jones, S. Vemulapalli, K. S. Parikh, R. R. Coeytaux, M. J. Crowley, G. Raitz, A. L. Johnston, V. Hasselblad, A. J. McBroom, K. R. Lallinger and G. D. Sanders-Schmidler, Treatment Strategies for Patients with Lower Extremity Chronic Venous Disease (LECVD). Agency for Healthcare Research and Quality (US); 2017, Rockville, MD: Agency for Healthcare Reserach and Quality (US), 2017.

[5] N. R. A. Dezotti, M. B. Dalio, M. S. Ribeiro, C. E. Piccinato and E. E. Joviliano, "The clinical importance of air plethysmography in the assessment of chronic venous disease," *J Vasc Bras,* vol. 15, no. 4, pp. 287-292, 2016.

[6] N. Nirala, R. Periyasamy and A. Kumar, "Noninvasive Diagnostic Methods for Better Screening of Peripheral Arterial Disease," *Ann Vasc Surg,* vol. 52, pp. 263-272, 2018.

[7] B. J. Delgado and T. Bajaj, Physiology, Lung Capacity, Treasure Island, FL: StatPearls Publishing, 2023.

~~**REFERENCES**~~

~~1. Kelso JM. Unproven Diagnostic Tests for Adverse Reactions to Foods. *J Allergy Clin Immunol Pract*. Mar-Apr 2018;6(2):362-365. doi:10.1016/j.jaip.2017.08.021~~

~~2. Hawk C, Rupert RL, Colonvega M, Boyd J, Hall S. Comparison of bioenergetic synchronization technique and customary chiropractic care for older adults with chronic musculoskeletal pain. *J Manipulative Physiol Ther*. Sep 2006;29(7):540-9. doi:10.1016/j.jmpt.2006.06.026~~

~~3. Centner C, Wiegel P, Gollhofer A, König D. Effects of Blood Flow Restriction Training on Muscular Strength and Hypertrophy in Older Individuals: A Systematic Review and Meta-Analysis. *Sports Med*. Jan 2019;49(1):95-108. doi:10.1007/s40279-018-0994-1~~

~~4. Cuyul-Vásquez I, Leiva-Sepúlveda A, Catalán-Medalla O, Araya-Quintanilla F, Gutiérrez-Espinoza H. The addition of blood flow restriction to resistance exercise in individuals with knee~~

pain: a systematic review and meta-analysis. *Braz J Phys Ther*. Nov-Dec 2020;24(6):465-478. doi:10.1016/j.bjpt.2020.03.001
5. Grantham B, Korakakis V, O'Sullivan K. Does blood flow restriction training enhance clinical outcomes in knee osteoarthritis: A systematic review and meta-analysis. *Phys Ther Sport*. May 2021;49:37-49. doi:10.1016/j.ptsp.2021.01.014
6. Wortman RJ, Brown SM, Savage-Elliott I, Finley ZJ, Mulcahey MK. Blood Flow Restriction Training for Athletes: A Systematic Review. *Am J Sports Med*. Jun 2021;49(7):1938-1944. doi:10.1177/0363546520964454
7. Oakley PA, Harrison DD, Harrison DE, Haas JW. Evidence-based protocol for structural rehabilitation of the spine and posture: review of clinical biomechanics of posture (CBP) publications. *J Can Chiropr Assoc*. 2005;49(4):270-296.
8. Harrison DE, Cailliet R, Betz JW, et al. A non-randomized clinical control trial of Harrison mirror image methods for correcting trunk list (lateral translations of the thoracic cage) in patients with chronic low back pain. *Eur Spine J*. 2005;14(2):155-162. doi:10.1007/s00586-004-0796-z
9. Rożek K, Potaczek T, Zarzycka M, Lipik E, Jasiewicz B. Effectiveness of Treatment of Idiopathic Scoliosis by SpineCor Dynamic Bracing with Special Physiotherapy Programme in SpineCor System. *Ortop Traumatol Rehabil*. Oct 28 2016;18(5):425-434. doi:10.5604/15093492.1224616
10. Niu JF, Zhao XF, Hu HT, Wang JJ, Liu YL, Lu DH. Should acupuncture, biofeedback, massage, Qi gong, relaxation therapy, device-guided breathing, yoga and tai chi be used to reduce blood pressure?: Recommendations based on high-quality systematic reviews. *Complement Ther Med*. Feb 2019;42:322-331. doi:10.1016/j.ctim.2018.10.017
11. Almeida Silva HJ, Barbosa GM, Scattone Silva R, et al. Dry cupping therapy is not superior to sham cupping to improve clinical outcomes in people with non-specific chronic low back pain: a randomised trial. *J Physiother*. Apr 2021;67(2):132-139. doi:10.1016/j.jphys.2021.02.013
12. Seo J, Chu H, Kim CH, Sung KK, Lee S. Cupping Therapy for Migraine: A PRISMA-Compliant Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Evid Based Complement Alternat Med*. 2021;2021:7582581. doi:10.1155/2021/7582581
13. Kim S, Lee SH, Kim MR, et al. Is cupping therapy effective in patients with neck pain? A systematic review and meta-analysis. *BMJ Open*. Nov 5 2018;8(11):e021070. doi:10.1136/bmjopen-2017-021070
14. Brough N, Lindenmeyer A, Thistlethwaite J, Lewith G, Stewart-Brown S. Perspectives on the effects and mechanisms of craniosacral therapy: A qualitative study of users' views. *European Journal of Integrative Medicine*. 2015;7(2):172-183.
15. Khauv KB, John C. Health-related quality of life improvements in adult patients with chronic low back pain under low-force chiropractic care: A practice-based study. *Chiropractic Journal of Australia*. 2011;41(4):118-122.
16. Liu L, Huang QM, Liu QG, et al. Evidence for Dry Needling in the Management of Myofascial Trigger Points Associated With Low Back Pain: A Systematic Review and Meta-Analysis. *Arch Phys Med Rehabil*. Jan 2018;99(1):144-152.e2. doi:10.1016/j.apmr.2017.06.008

17. Di Sante L, Paoloni M, Dimaggio M, et al. Ultrasound-guided aspiration and corticosteroid injection compared to horizontal therapy for treatment of knee osteoarthritis complicated with Baker's cyst: a randomized, controlled trial. *Eur J Phys Rehabil Med*. Dec 2012;48(4):561-7.
18. Hilgers M, Nielsen H. The Efficacy of Hippotherapy for Physical Rehabilitation: A Systematic Review. *Occupational Therapy Capstones*. 2018;387
19. Santos-de-Assis G, Schlichting T, Rodrigues-Mateus B, Gomes-Lemos A, Dos Santos AN. Physical therapy with hippotherapy compared to physical therapy alone in children with cerebral palsy: systematic review and meta-analysis. *Dev Med Child Neurol*. Aug 28 2021;doi:10.1111/dmcn.15042
20. Lightsey P, Lee Y, Krenek N, Hur P. Physical therapy treatments incorporating equine movement: a pilot study exploring interactions between children with cerebral palsy and the horse. *J Neuroeng Rehabil*. 2021;18(1):132-132. doi:10.1186/s12984-021-00929-w
21. Peters BC, Wood W, Hepburn S, Moody EJ. Preliminary Efficacy of Occupational Therapy in an Equine Environment for Youth with Autism Spectrum Disorder. *J Autism Dev Disord*. Sep 23 2021;doi:10.1007/s10803-021-05278-0
22. Prieto AV, Ayupe KMA, Abreu ACA, Filho P. Development and Validation of an Instrument to Assess Horseback Mobility in Hippotherapy. *Percept Mot Skills*. Oct 2021;128(5):2117-2131. doi:10.1177/00315125211036578
23. Suárez-Iglesias D, Bidaurrazaga-Letona I, Sanchez-Lastra MA, Gil SM, Ayán C. Effectiveness of equine-assisted therapies for improving health outcomes in people with multiple sclerosis: A systematic review and meta-analysis. *Mult Scler Relat Disord*. Jul 23 2021;55:103161. doi:10.1016/j.msard.2021.103161
24. Menor-Rodríguez MJ, Sevilla Martín M, Sánchez-García JC, Montiel-Troya M, Cortés-Martín J, Rodríguez-Blanque R. Role and Effects of Hippotherapy in the Treatment of Children with Cerebral Palsy: A Systematic Review of the Literature. *Journal of clinical medicine*. 2021;10(12):2589. doi:10.3390/jcm10122589
25. Tesio L, Franchignoni FP. Autotraction treatment for low-back pain syndromes. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 1995;7(1):1-9.
26. Tesio L, Merlo A. Autotraction versus passive traction: an open controlled study in lumbar disc herniation. *Arch Phys Med Rehabil*. Aug 1993;74(8):871-6. doi:10.1016/0003-9993(93)90015-3
27. Mao H-Y, Hu M-T, Yen Y-Y, Lan S-J, Lee S-D. Kinesio Taping Relieves Pain and Improves Isokinetic Not Isometric Muscle Strength in Patients with Knee Osteoarthritis—A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health*. 2021;18(19):10440. doi:10.3390/ijerph181910440
28. Topdemir E, Birinci T, Taşkıran H, Mutlu EK. The effectiveness of Kinesio taping on playing-related pain, function and muscle strength in violin players: A randomized controlled clinical trial. *Phys Ther Sport*. Aug 29 2021;52:121-131. doi:10.1016/j.ptsp.2021.08.010
29. Jung K-S, Jung J-H, In T-S, Cho H-Y. Influences of Kinesio Taping with Therapeutic Exercise in Patients with Low Back Pain. *Healthcare (Basel, Switzerland)*. 2021;9(8):927. doi:10.3390/healthcare9080927

30. Yam ML, Yang Z, Zee BC, Chong KC. Effects of Kinesio tape on lower limb muscle strength, hop test, and vertical jump performances: a meta-analysis. *BMC Musculoskelet Disord*. May 14 2019;20(1):212. doi:10.1186/s12891-019-2564-6
31. Tsikopoulos K, Sidiropoulos K, Kitridis D, Cain Atc SM, Metaxiotis D, Ali A. Do External Supports Improve Dynamic Balance in Patients with Chronic Ankle Instability? A Network Meta-analysis. *Clin Orthop Relat Res*. Feb 2020;478(2):359-377. doi:10.1097/corr.0000000000000946
32. de Oliveira FCL, Pairot de Fontenay B, Bouyer LJ, Desmeules F, Roy JS. Kinesiotaping for the Rehabilitation of Rotator Cuff-Related Shoulder Pain: A Randomized Clinical Trial. *Sports Health*. Mar 2021;13(2):161-172. doi:10.1177/1941738120944254
33. Gianola S, Iannicelli V, Fascio E, et al. Kinesio taping for rotator cuff disease. *Cochrane Database Syst Rev*. Aug 8 2021;8(8):Cd012720. doi:10.1002/14651858.CD012720.pub2
34. Nunes GS, Feldkircher JM, Tessarin BM, Bender PU, da Luz CM, de Noronha M. Kinesio taping does not improve ankle functional or performance in people with or without ankle injuries: Systematic review and meta-analysis. *Clin Rehabil*. Feb 2021;35(2):182-199. doi:10.1177/0269215520963846
35. Kintz P, Russell E, Baber M, Pichini S. Clinical applications of hair analysis. *Hair Analysis in Clinical and Forensic Toxicology*. Elsevier; 2015:141-159.
36. Nketia TA, Sailem H, Rohde G, Machiraju R, Rittscher J. Analysis of live cell images: Methods, tools and opportunities. *Methods*. Feb 15 2017;115:65-79. doi:10.1016/j.ymeth.2017.02.007
37. DiGiorgi D, Cerf JL, Bowerman DS. Outcomes indicators and a risk classification system for spinal manipulation under anesthesia: a narrative review and proposal. *Chiropr Man Therap*. 2018;26:9-9. doi:10.1186/s12998-018-0177-z
38. Kraal T, The B, Boer R, et al. Manipulation under anesthesia versus physiotherapy treatment in stage two of a frozen shoulder: a study protocol for a randomized controlled trial. *BMC musculoskeletal disorders*. 2017;18(1):412-412. doi:10.1186/s12891-017-1763-2
39. Labecka MK, Plandowska M. Moiré topography as a screening and diagnostic tool-A systematic review. *PLoS One*. 2021;16(12):e0260858. doi:10.1371/journal.pone.0260858
40. Nambudripad DS. *Say Good-Bye to Illness*. 3rd ed. Delta Publishing Co.; 2002.
41. Woodfield HC, 3rd, York C, Rochester RP, et al. Craniocervical chiropractic procedures - a précis of upper cervical chiropractic. *J Can Chiropr Assoc*. 2015;59(2):173-192.
42. Peterson CD, Haas M, Gregory WT. A pilot randomized controlled trial comparing the efficacy of exercise, spinal manipulation, and neuro emotional technique for the treatment of pregnancy related low back pain. *Chiropr Man Therap*. 2012;20(1):18-18. doi:10.1186/2045-709X-20-18
43. Bablis P, Pollard H, Rosner AL. Stress reduction via neuro-emotional technique to achieve the simultaneous resolution of chronic low back pain with multiple inflammatory and biobehavioural indicators: A randomized, double-blinded, placebo-controlled trial. *J Integr Med*. Mar 2022;20(2):135-144. doi:10.1016/j.joim.2021.12.001
44. Jensen AM. Estimating the prevalence of use of kinesiology-style manual muscle testing: A survey of educators. *Advances in Integrative Medicine*. 2015;2(2):96-102.

45. Audag N, Goubau C, Toussaint M, Reychler G. Screening and evaluation tools of dysphagia in children with neuromuscular diseases: a systematic review. *Dev Med Child Neurol*. Jun 2017;59(6):591-596. doi:10.1111/dmcn.13354
46. Meyer JJ. The validity of thoracolumbar paraspinal scanning EMG as a diagnostic test: an examination of the current literature. *J Manipulative Physiol Ther*. Oct 1994;17(8):539-51.
47. Albeck MJ, Taher G, Lauritzen M, Trojaborg W. Diagnostic value of electrophysiological tests in patients with sciatica. *Acta Neurol Scand*. Apr 2000;101(4):249-54. doi:10.1034/j.1600-0404.2000.101004249.x
48. Levinson DR. Questionable billing for Medicare electrodiagnostic tests. Department of Health and Human Services. Updated April 2014. Accessed September 8, 2022. https://oig.hhs.gov/oei/reports/oei-04-12-00420.pdf
49. Koo TK, Cohen JH, Zheng Y. Immediate effect of nimmo receptor tonus technique on muscle elasticity, pain perception, and disability in subjects with chronic low back pain. *J Manipulative Physiol Ther*. Jan 2012;35(1):45-53. doi:10.1016/j.jmpt.2011.09.013
50. Morningstar M. Integrative treatment using chiropractic and conventional techniques for adolescent idiopathic scoliosis: outcomes in four patients. *J Vert Sublux Rep*. 2007;9:1-7.
51. Morningstar M. Cervical curve restoration and forward head posture reduction for the treatment of mechanical thoracic pain using the pettibon corrective and rehabilitative procedures. *J Chiropr Med*. Summer 2002;1(3):113-115. doi:10.1016/S0899-3467(07)60013-5
52. Morningstar MW. Improvement of lower extremity electrodiagnostic findings following a trial of spinal manipulation and motion-based therapy. *Chiropr Osteopat*. 2006;14:20-20. doi:10.1186/1746-1340-14-20
53. Morningstar MW, Joy T. Scoliosis treatment using spinal manipulation and the Pettibon Weighting System: a summary of 3 atypical presentations. *Chiropr Osteopat*. 2006;14:1-1. doi:10.1186/1746-1340-14-1
54. Morningstar MW, Strauchman MN. Adolescent idiopathic scoliosis treatment using the Pettibon corrective procedures: a case report. *J Chiropr Med*. 2007;6(2):83-84. doi:10.1016/j.jcme.2007.04.006
55. Morningstar MW, Strauchman MN, Gilmour G. Adolescent idiopathic scoliosis treatment using pettibon corrective procedures: a case report. *J Chiropr Med*. Summer 2004;3(3):96-103. doi:10.1016/S0899-3467(07)60093-7
56. Davis GE, Murphy MP, Yueh B, Weymuller EA, Jr. A complication from neurocranial restructuring: nasal septum fracture. *Arch Otolaryngol Head Neck Surg*. Apr 2003;129(4):472-4. doi:10.1001/archotol.129.4.472
57. Nazari G, Bobos P, MacDermid JC, Birmingham T. The Effectiveness of Instrument-Assisted Soft Tissue Mobilization in Athletes, Participants Without Extremity or Spinal Conditions, and Individuals with Upper Extremity, Lower Extremity, and Spinal Conditions: A Systematic Review. *Arch Phys Med Rehabil*. Sep 2019;100(9):1726-1751. doi:10.1016/j.apmr.2019.01.017
58. Heidari P, Farahbakhsh F, Rostami M, Noormohammadpour P, Kordi R. The role of ultrasound in diagnosis of the causes of low back pain: a review of the literature. *Asian J Sports Med*. 2015;6(1):e23803-e23803. doi:10.5812/asjsm.23803

59. Neves EB, Vilaça-Alves J, Rosa C, Reis VM. Thermography in Neurologic Practice. *Open Neurol J*. 2015;9:24-27. doi:10.2174/1874205X01509010024
60. Oh H J, Jeon C B, Jeong M G, Choi S J. The effects of spinal decompression therapy on pain and disability in patients with chronic low back pain. *J Kor Phys Ther*. 2017;29(6):299-302.
61. Watanabe H, Takahara M, Katakami N, Kanamoto T, Nakata K, Shimomura I. Acute effects of whole-body vibration exercise on post-load glucose metabolism in healthy men: a pilot randomized crossover trial. *Endocrine*. 2021:1-8. doi:10.1007/s12020-021-02893-w
62. Domagalska-Szopa M, Szopa A, Siwiec A, Kwiecień-Czerwieniec I, Schreiber L, Dąbek J. Effects of Whole-Body Vibration Training on Lower Limb Blood Flow in Children with Myelomeningocele-A Randomized Trial. *Journal of clinical medicine*. 2021;10(18):4273. doi:10.3390/jcm10184273
63. Min S-K, Lee K, Lim S-T. The effect of whole body vibration on the sprint ability of Korean national bobsled and skeleton athletes. *PloS one*. 2021;16(10):e0258353-e0258353. doi:10.1371/journal.pone.0258353
64. American Institute of Ultrasound in Medicine. Nonoperative Spinal/Paraspinal Ultrasound in Adults. American Institute of Ultrasound in Medicine (AIUM). Updated November 2, 2019. Accessed September 8, 2022. https://www.aium.org/officialStatements/18
65. Huang Z, Ma J, Chen J, Shen B, Pei F, Kraus VB. The effectiveness of low-level laser therapy for nonspecific chronic low back pain: a systematic review and meta-analysis. *Arthritis Res Ther*. 2015;17:360-360. doi:10.1186/s13075-015-0882-0
66. North American Spine Society (NASS). Evidence-Based Clinical Guidelines for Multidisciplinary Spine Care: Diagnosis and Treatment of Low Back Pain. North American Spine Society. Updated 2020. Accessed November 4, 2022. https://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/LowBackPain.pdf
67. Yeldan I, Cetin E, Ozdincler AR. The effectiveness of low-level laser therapy on shoulder function in subacromial impingement syndrome. *Disabil Rehabil*. 2009;31(11):935-40. doi:10.1080/09638280802377985
68. Ay S, Doğan SK, Evcik D. Is low-level laser therapy effective in acute or chronic low back pain? *Clin Rheumatol*. Aug 2010;29(8):905-10. doi:10.1007/s10067-010-1460-0
69. Peters S, Page MJ, Coppieters MW, Ross M, Johnston V. Rehabilitation following carpal tunnel release. *Cochrane Database Syst Rev*. Feb 17 2016;2:Cd004158. doi:10.1002/14651858.CD004158.pub3
70. Bekhet AH, Ragab B, Abushouk AI, Elgebaly A, Ali OI. Efficacy of low-level laser therapy in carpal tunnel syndrome management: a systematic review and meta-analysis. *Lasers Med Sci*. Aug 2017;32(6):1439-1448. doi:10.1007/s10103-017-2234-6
71. Kadhim-Saleh A, Maganti H, Ghert M, Singh S, Farrokhyar F. Is low-level laser therapy in relieving neck pain effective? Systematic review and meta-analysis. *Rheumatol Int*. Oct 2013;33(10):2493-501. doi:10.1007/s00296-013-2742-z
72. Jones WS, Vemulapalli S, Parikh KS, et al. AHRQ Technology Assessments. *Treatment Strategies for Patients with Lower Extremity Chronic Venous Disease (LECVD)*. Agency for Healthcare Research and Quality (US); 2017.

73. Dezotti NRA, Dalio MB, Ribeiro MS, Piccinato CE, Joviliano EE. The clinical importance of air plethysmography in the assessment of chronic venous disease. *J Vasc Bras*. Oct-Dec 2016;15(4):287-292. doi:10.1590/1677-5449.002116
74. Nirala N, Periyasamy R, Kumar A. Noninvasive Diagnostic Methods for Better Screening of Peripheral Arterial Disease. *Ann Vasc Surg*. Oct 2018;52:263-272. doi:10.1016/j.avsg.2018.03.018
75. Delgado BJ, Bajaj T. Physiology, Lung Capacity. *StatPearls*. StatPearls Publishing Copyright © 2021, StatPearls Publishing LLC.; 2021.

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