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Clinical Appropriateness Guidelines

Outpatient Rehabilitative and Habilitative Services

Appropriate Use Criteria: Physical Therapy, Occupational Therapy, and Speech Therapy

Proprietary

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Description and Application of the Guidelines

The Carelon Clinical Appropriateness Guidelines (hereinafter “the Carelon Clinical Appropriateness Guidelines” or the “Guidelines”) are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by Carelon, the Guidelines establish objective and evidence-based criteria for medical necessity determinations where possible. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary (i.e., in general, shown to be effective in improving health outcomes and considered the most appropriate level of service)
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of health care
- To promote the most efficient and cost-effective use of services

The Carelon guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up-to-date clinical principles and best practices. Relevant citations are included in the References section attached to each Guideline. Carelon reviews all of its Guidelines at least annually.

Carelon makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of the Carelon Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, Carelon considers the Guidelines to be important, proprietary information of Carelon, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of Carelon.

Carelon applies objective and evidence-based criteria, and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The Carelon Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient’s unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient’s condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient’s care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. Applicable federal and state coverage mandates take precedence over these clinical guidelines. If requested by a health plan, Carelon will review requests based on health plan medical policy/guidelines in lieu of the Carelon Guidelines. Pharmaceuticals, radiotracers, or medical devices used in any of the diagnostic or therapeutic interventions listed in the Guidelines must be FDA approved or conditionally approved for the intended use. However, use of an FDA approved or conditionally approved product does not constitute medical necessity or guarantee reimbursement by the respective health plan.

The Guidelines may also be used by the health plan or by Carelon for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

General Clinical Guideline

Clinical Appropriateness Framework

Critical to any finding of clinical appropriateness under the guidelines for a specific diagnostic or therapeutic intervention are the following elements:

- Prior to any intervention, it is essential that the clinician confirm the diagnosis or establish its pretest likelihood based on a complete evaluation of the patient. This includes a history and physical examination and, where applicable, a review of relevant laboratory studies, diagnostic testing, and response to prior therapeutic intervention.
- The anticipated benefit of the recommended intervention should outweigh any potential harms that may result (net benefit).
- Current literature and/or standards of medical practice should support that the recommended intervention offers the greatest net benefit among competing alternatives.
- Based on the clinical evaluation, current literature, and standards of medical practice, there exists a reasonable likelihood that the intervention will change management and/or lead to an improved outcome for the patient.

If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Simultaneous Ordering of Multiple Diagnostic or Therapeutic Interventions

Requests for multiple diagnostic or therapeutic interventions at the same time will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all interventions simultaneously. This is based on the fact that appropriateness of additional intervention is often dependent on the outcome of the initial intervention.

Additionally, either of the following may apply:

- Current literature and/or standards of medical practice support that one of the requested diagnostic or therapeutic interventions is more appropriate in the clinical situation presented; or
- One of the diagnostic or therapeutic interventions requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice.

Repeat Diagnostic Intervention

In general, repeated testing of the same anatomic location for the same indication should be limited to evaluation following an intervention, or when there is a change in clinical status such that additional testing is required to determine next steps in management. At times, it may be necessary to repeat a test using different techniques or protocols to clarify a finding or result of the original study.

Repeated testing for the same indication using the same or similar technology may be subject to additional review or require peer-to-peer conversation in the following scenarios:

- Repeated diagnostic testing at the same facility due to technical issues
- Repeated diagnostic testing requested at a different facility due to provider preference or quality concerns
- Repeated diagnostic testing of the same anatomic area based on persistent symptoms with no clinical change, treatment, or intervention since the previous study

- Repeated diagnostic testing of the same anatomic area by different providers for the same member over a short period of time

Repeat Therapeutic Intervention

In general, repeated therapeutic intervention in the same anatomic area is considered appropriate when the prior intervention proved effective or beneficial and the expected duration of relief has lapsed. A repeat intervention requested prior to the expected duration of relief is not appropriate unless it can be confirmed that the prior intervention was never administered.

Rehabilitation and Habilitative Therapies

Codes

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

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0552T	Low-level laser therapy, dynamic photonic and dynamic thermokinetic energies, provided by a physician or other qualified health care professional
20560	Needle insertion(s) without injection(s), 1 or 2 muscle(s)
20561	Needle insertion(s) without injection(s), 3 or more muscle(s)
90901	Biofeedback training by any modality (when done for medically necessary indications)
90912	Biofeedback training for bowel or bladder control, initial 15 minutes
90913	Biofeedback training for bowel or bladder control, additional 15 minutes
94667	Demonstration and/or evaluation of manual maneuvers to chest wall to assist movement of lung secretions
94668	Manual maneuvers to chest wall to assist movement of lung secretions
96001	Three-dimensional, video-taped, computer-based gait analysis during walking
97010	Application of hot or cold packs to 1 or more areas
97012	Application of mechanical traction to 1 or more areas
97014	Application of electrical stimulation to 1 or more areas, unattended by therapist
97016	Application of blood vessel compression or decompression device to 1 or more areas
97018	Application of hot wax bath to 1 or more areas
97022	Application of whirlpool therapy to 1 or more areas
97024	Application of heat wave therapy to 1 or more areas
97026	Application of low energy heat (infrared) to 1 or more areas
97028	Application of ultraviolet light to 1 or more areas
97032	Application of electrical stimulation to 1 or more areas
97033	Application of medication through skin using electrical current, each 15 minutes
97034	Therapeutic hot and cold baths to 1 or more areas, each 15 minutes
97035	Application of ultrasound to 1 or more areas, each 15 minutes
97036	Physical therapy treatment to 1 or more areas, Hubbard tank, each 15 minutes
97039	Unlisted modality (specify type and time if constant attendance)
97110	Therapeutic exercise to develop strength, endurance, range of motion, and flexibility, each 15 minutes
97112	Therapeutic procedure to re-educate brain-to-nerve-to-muscle function, each 15 minutes
97113	Water pool therapy with therapeutic exercises to 1 or more areas, each 15 minutes
97116	Walking training to 1 or more areas, each 15 minutes
97124	Therapeutic massage to 1 or more areas, each 15 minutes
97139	Unlisted therapeutic procedure (specify)
97140	Manual (physical) therapy techniques to 1 or more regions, each 15 minutes
97150	Therapeutic procedures in a group setting
97161	Evaluation of physical therapy, typically 20 minutes

97162	Evaluation of physical therapy, typically 30 minutes
97163	Evaluation of physical therapy, typically 45 minutes
97164	Re-evaluation of physical therapy, typically 20 minutes
97530	Therapeutic activities to improve function, with one-on-one contact between patient and provider, each 15 minutes
97533	Sensory technique to enhance processing and adaptation to environmental demands, each 15 minutes
97535	Self-care or home management training, each 15 minutes
97537	Community or work reintegration training, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work hardening or conditioning, first 2 hours
97546	Work hardening or conditioning
97750	Physical performance test or measurement with report, each 15 minutes
97755	Assistive technology assessment to enhance functional performance, each 15 minutes
97760	Training in use of orthotics (supports, braces, or splints) for arms, legs and/or trunk, per 15 minutes
97761	Training in use of prosthesis for arms and/or legs, per 15 minutes
97763	Management and/or training in use of orthotics (supports, braces, or splints) for arms, legs, and/or trunk, per 15 minutes
G0281	Electrical stimulation, for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers, and venous stasis ulcers
G0282	Electrical stimulation, to one or more areas, for wound care
G0283	Electrical Stimulation, to one or more areas, for other than wound care
G0295	Electromagnetic therapy, one or more areas, for wound care
G0329	Electromagnetic therapy, to one or more areas for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers and venous stasis ulcers
S8940	Therapeutic horseback riding, per session
S8948	Treatment with low level laser (phototherapy) each 15 minutes
S8950	Complex lymphedema therapy, each 15 minutes
S8990	Physical or manipulative therapy for maintenance
S9090	Vertebral axial decompression (lumbar traction), per session

Modifiers

96	Habilitative Services
97	Needle insertion(s) without injection(s), 1 or 2 muscle(s)

ICD-10 Diagnosis

Refer to the ICD-10 CM Manual

Physical Therapy

General Information

Abbreviations

- Ankle foot orthosis (AFO)
- Congestive heart failure (CHF)
- Heart rate (HR)
- Long-term goals (LTG)

- Lower Extremity Functional Scale (LEFS)
- Range of motion (ROM)

Background

Physical therapy, also known as physiotherapy, is a skilled, nonsurgical treatment involving education, active exercise as well as passive measures in order to maximize physical mobility and function, and quality of life. Physical therapy is a goal-directed and collaborative approach, most commonly employed when abilities have been impaired due to a medical condition, disease, or injury.

Details and Scope

The purpose of this guideline is to establish conceptual principles and documentation requirements for the appropriate initial and subsequent use of outpatient physical therapy services for habilitation and rehabilitation, and maintenance programs. This guideline does not provide specific clinical requirements or direction for a given episode of physical therapy. Specific types of physical therapy interventions, for instance hippotherapy or wobble board, may be subject to additional guidelines (please refer to the Adjunctive and Alternative Treatments section of this document). Requirements defined by benefit design (maximum number of physical therapy visits), state and federal regulations supersede this guideline.

For requests that meet the specific criteria set forth in the clinical guidelines, determination of the appropriate number of visits will depend on some or all of the following case details as applicable to the individual clinical circumstances:

- Functional outcome tool and/or severity of impairment
- History of pertinent surgery
- Comorbidities expected to impact treatment
- Progress toward functional goals (or mitigating factors if lack of progress)
- Existence of additional, achievable, functional goals
- Potential for progress
- Revisions to the plan of care

Requesting providers will need to provide information on such factors in order to support their request for more than an evaluation visit. A peer-to-peer conversation may be required to determine appropriateness in certain cases.

Unless specifically stated in the document, these guidelines do not express any opinion about the appropriate scope of practice for the practitioners who deliver these services and should not be put forth as having such an opinion.

Definitions

- **Acceptable mitigating factors** refers to issues which could realistically contribute to or fully account for the lack of progress/improvement that would otherwise be expected during a course of treatment. These include but are not limited to an intervening fall, injury, illness, surgery, or hospitalization, transportation difficulties, or poor response to the initial treatment plan.
- **Caregiver** refers to someone who regularly looks after or helps with the care of the child or adult (patient) with the disability.
- **Duplicative therapy** refers to treatments by more than one provider (same or different discipline) which are 1) rendered during an overlapping time period, 2) intended to treat the same or similar body parts (e.g., arm and shoulder), conditions or diagnoses, and 3) have substantively similar goals (e.g., improved functional shoulder range of motion).
- **Functional progress** refers to progress that directly reflects improvement in specific functional tasks such as mobility and self-care activities.

- **Habilitation** refers to services performed to help patients develop skills and functions for daily living that have not yet been acquired at an age appropriate level ^{1,2} or keep those skills and functions which are at risk of being permanently lost (not merely fluctuating) due to illness or disease without the habilitative service.
- **Maintenance program** is defined as a program provided to the patient expressly to maintain the patient's current condition or to prevent or slow further deterioration due to a disease or illness. The creation, design and instruction of the program must require the skilled knowledge or judgement of a qualified therapist. A prescribed maintenance program can generally be performed by the patient individually or with the assistance of a caregiver. The provision of such a program would be considered a skilled intervention.
- **Qualified physical therapy provider** refers to a physical therapist or physical therapy assistant or other provider type who is duly licensed or certified, respectively, by his/her state to deliver physical therapy services and who provides such services in accordance with his/her state's PT practice act. State regulations regarding appropriate providers may supersede this guideline.
- **Rehabilitation** focuses on the maximal restoration of physical and psychological function in persons with injuries, pain syndromes, and/or other physical or cognitive impairments.³
- **Self-limited** refers to impairments caused by a disease process or surgical intervention that are expected to resolve in the near term solely with resumption of normal activity and/or a nonsupervised home exercise program.
- **Skilled services are those services which require a qualified provider to administer the treatment plan.** A service is not considered skilled simply because a qualified provider is performing it.

Note: Illness includes a wide range of conditions. For purposes of clarity, illness includes, but is not limited to, autism spectrum disorder and developmental delay.

Clinical Indications

Initiation of physical therapy for rehabilitative or habilitative services is considered medically necessary when criteria for both A and B are met:

A. Initial Physical Therapy Evaluation

Initial physical therapy evaluation is performed by a qualified physical therapy provider documenting **ALL** of the following:

- The reason for referral, specifically a condition that causes or contributes to one or more impairments in physical function that is not self-limited
- A need for physical therapy to:
 - restore function (rehabilitation), or
 - keep, learn, or improve function that has not yet been acquired at any age appropriate level, or if clinically indicated, prevent loss of function that is at risk of being lost (habilitation)
- A relevant case history including comorbidities expected to impact treatment, a relevant physical examination, and a review of supporting, available documentation
- Functional impairment on at least 1 relevant, validated, therapist-rated and/or patient-reported outcome measure
- Potential for clinically meaningful progress, the assessment of which must be supported by clinical details documented within the evaluation

Note: Potential for clinically meaningful progress *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function that is at risk of being lost (habilitation).*

B. Individualized Physical Therapy Plan of Care

Individualized physical therapy plan requires the skill and training of a qualified physical therapy provider employing interventions and delivery methods that adhere to the Clinical Appropriateness Framework (outlined in the General Clinical Guideline above). There must be a reasonable expectation that the condition being treated is amenable to such intervention and that clinically meaningful, sustained improvement will be achieved.

Note: The expectation of clinically meaningful, sustained improvement *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function that is at risk of being lost (habilitation).*

This plan must include **ALL** of the following components:

- One or more goals which are:
 - Specific
 - Measurable
 - Likely to be attained in a reasonable amount of time
 - Based on clinically significant improvement in the functional impairment(s) identified on initial evaluation
 - Formulated in collaboration with the patient and/or primary caregiver

Note: There may be additional goals which do not meet the above criteria, but at least one goal must meet these criteria in order for medical necessity to be met.

Examples of appropriate goals:

- Increase knee ROM to 100 degs to allow safe, independent toilet transfers (to be achieved in 4 weeks)
- Patient to do 8 steps with minimum assist and one handrail (8 weeks)
- Patient will ambulate on level surface without AFO for 50 ft without loss of balance (estimated time 12 weeks)
- Patient will be able to lift 20# with neutral C-spine and 0/10 pain to improve ability to lift feed bags at her ranch (LTG 6 weeks)

Examples of inappropriate goals:

- Increase knee ROM to 100 degrees (acceptable as an additional goal but not as the required functional, time-limited goal)
- Patient to go up/down stairs (to be achieved in 8 weeks)
- Normalize gait
- Patient to lift heavy load without discomfort
- LEFS score of 60
- Recommended frequency and estimated duration of treatment needed to achieve documented goals
- Patient and/or caregiver education particularly related to the patient's individual goals
- A recommendation for evaluation/examination by a physician or otherwise appropriate provider if there is reasonable suspicion that an undiagnosed condition outside therapist's scope of practice is present or limiting current progression towards goals

Proceeding with physical therapy services is considered medically necessary when ALL of the following criteria (A-F) are met:

A. Require the skills and training of a qualified physical therapy provider:

- The skilled intervention(s) must be clearly denoted in the documentation

Examples of skilled intervention documentation:

- Skilled passive ROM to shoulder needed to maintain post-op restrictions and due to high risk of dislocation
- Advancing strengthening exercises, requires skilled monitoring of patient's HR response and activity tolerance due to CHF risk

B. ANY of the following:

- Therapy has produced clinically meaningful improvement on reassessment of one or more of the therapist-rated or patient centered outcome measures documented on initial evaluation

Example of clinically meaningful improvement on outcome measure:

- Statistically significant improvement in outcome tool score with improvement in at least one of the functional parameters of the outcome measure (e.g., walking parameter in the Oswestry Disability Index)

Examples of non-clinically meaningful improvement on outcome measure:

- Improvements only in non-specific, non-functional parameters of the functional tool (e.g., pain parameter in the Oswestry Disability Index)
- Statistically insignificant improvement in outcome tool score
- There is attainment of functional goals established on initial evaluation or otherwise qualitative and sustained functional progress

Examples of functional progress:

- Patient able to do three 4-inch steps with step-up pattern and no assistance before fatiguing
- Patient able to get off toilet with minimal assistance using only one-hand push-off
- Patient knee flexion ROM now 60 degrees (*when documented as progress towards specific functional goal such as "Increase knee ROM to 100 degrees for safe toilet transfer." Such progress might then also reasonably be documented as "ROM 60% met" if applied to this same functional goal*)

Examples of non-functional progress:

- Stairs ongoing
- Toilet transfers partially met
- Goal 60% met (without clear indication of what parameter 60% reflects and what functional goal it applies to)
- Strength improved to 3/5
- Shoulder ROM increased 20 degrees
- There is little to no demonstrable progress; however, there are acceptable mitigating factors and a treatment plan has been revised accordingly
- There is confirmation of functional status being maintained *in cases in which the appropriate purpose of therapy is to prevent loss of function that is at risk of being lost* (habilitation)

- C. There is ongoing patient and/or caregiver education and/or training
- D. There is at least one unmet functional or caregiver training goal
- E. There is an expectation that the remaining goal(s) will be met within a reasonable and defined period of time
- F. Progress is commensurate with the duration of treatment rendered

A recommendation for evaluation/examination by a physician or otherwise appropriate provider must be made if there is poor progression toward goals due to new or persistent symptoms

Institution of a physical therapy maintenance program may be considered medically necessary in specific circumstances (refer to Definitions section)

Exclusions

The following are considered **not medically necessary**:

- Maintenance therapies extending beyond the creation, design, and instruction of a therapy program
- Therapies for which the primary purpose is anything other than rehabilitation or habilitation of a functional impairment due to medical illness, disease, condition, or injury. This includes therapies to improve recreational sports performance or general fitness, provide massage, or athletic taping.

Examples of rehabilitation purpose:

- Treatment rendered in order to restore ability to do pain-free push off for jumping
- Treatment rendered in order to restore ability to do running gait

Examples of recreational/sports purpose:

- Treatment rendered in order to improve endurance to allow for running a longer distance
- Treatment rendered in order to improve muscle endurance to allow playing full 60 minutes of basketball without muscle fatigue or pain
- Treatment rendered to achieve (or restore) ability to jump high enough to dunk a basketball
- Progress is not commensurate with the duration of treatment provided (e.g. range of motion improved but only a small amount relative to the length of time patient has been in treatment, and without any reasonable mitigating factor(s) accounting for it.)
- Therapies deemed to be duplicative (see definition above)
- Any and all non-skilled services

References

1. American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons appropriate use criteria for management of osteochondritis dissecans of the femoral condyle. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2015. p. 79.
2. American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons clinical practice guideline on management of hip fractures in the elderly. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2014. p. 521.
3. American Academy of Orthopaedic Surgeons. American Academy of Orthopaedic Surgeons clinical practice guideline on management of anterior cruciate ligament injuries. Rosemont (IL): American Academy of Orthopaedic Surgeons,; 2014. p. 619.

4. American Academy of Orthopaedic Surgeons. Management of osteoarthritis of the hip: Evidence-based clinical practice guideline. Rosemont, Illinois: American Academy of Orthopaedic Surgeons; 2017. p. 853.
5. Bannuru RR, Osani MC, Vaysbrot EE, et al. OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. *Osteoarthritis and cartilage*. 2019;27(11):1578-89. Epub 2019/07/07.
6. Bier JD, Scholten-Peeters WGM, Staal JB, et al. Clinical Practice Guideline for Physical Therapy Assessment and Treatment in Patients With Nonspecific Neck Pain. *Physical therapy*. 2018;98(3):162-71.
7. Blanpied PR, Gross AR, Elliott JM, et al. Neck Pain: Revision 2017. *The Journal of orthopaedic and sports physical therapy*. 2017;47(7):A1-a83.
8. Carcia CR, Martin RL, Houck J, et al. Achilles pain, stiffness, and muscle power deficits: achilles tendinitis. *The Journal of orthopaedic and sports physical therapy*. 2010;40(9):A1-26.
9. Cibulka MT, Bloom NJ, Enseki KR, et al. Hip Pain and Mobility Deficits-Hip Osteoarthritis: Revision 2017. *The Journal of orthopaedic and sports physical therapy*. 2017;47(6):A1-a37.
10. Cincinnati Children's Hospital Medical Center. Evidence-based care guideline for conservative management of lateral patellar dislocations and instability in children and young adults aged 8-25 years. . Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2014. p. 30.
11. Cincinnati Children's Hospital Medical Center. Evidence-based care guideline for post-operative management of Legg-Calve-Perthes disease in children aged 3 to 12 years. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2013. p. 18.
12. Colorado Division of Workers' Compensation. Chronic pain disorder medical treatment guideline. Denver (CO): Colorado Division of Workers' Compensation; 2017. p. 178.
13. Colorado Division of Workers' Compensation. Lower extremity injury medical treatment guidelines. Denver (CO): Colorado Division of Workers' Compensation; 2016. p. 211.
14. Coroneos CJ, Voineskos SH, Christakis MK, et al. Obstetrical brachial plexus injury (OBPI): Canada's national clinical practice guideline. *BMJ open*. 2017;7(1):e014141.
15. de Almeida JR, Guyatt GH, Sud S, et al. Management of Bell palsy: clinical practice guideline. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*. 2014;186(12):917-22.
16. Delitto A, George SZ, Van Dillen LR, et al. Low back pain. *The Journal of orthopaedic and sports physical therapy*. 2012;42(4):A1-57.
17. Enseki K, Harris-Hayes M, White DM, et al. Nonarthritic hip joint pain. *The Journal of orthopaedic and sports physical therapy*. 2014;44(6):A1-32.
18. Flannery AM, Tamber MS, Mazzola C, et al. Congress of Neurological Surgeons Systematic Review and Evidence-Based Guidelines for the Management of Patients with Positional Plagiocephaly Executive Summary. *Neurosurgery*. 2016;79(5):623-4.
19. Hall CD, Herdman SJ, Whitney SL, et al. Vestibular Rehabilitation for Peripheral Vestibular Hypofunction: An Evidence-Based Clinical Practice Guideline: FROM THE AMERICAN PHYSICAL THERAPY ASSOCIATION NEUROLOGY SECTION. *Journal of neurologic physical therapy : JNPT*. 2016;40(2):124-55.
20. Hanno PM, Burks DA, Clemens JQ, et al. Diagnosis and treatment of interstitial cystitis/bladder pain syndrome. Linthicum (MD): American Urological Association Education and Research, Inc.; 2014. p. 45.
21. Kaplan SL, Coulter C, Sargent B. Physical Therapy Management of Congenital Muscular Torticollis: A 2018 Evidence-Based Clinical Practice Guideline From the APTA Academy of Pediatric Physical Therapy. *Pediatric physical therapy : the official publication of the Section on Pediatrics of the American Physical Therapy Association*. 2018;30(4):240-90. Epub 2018/10/03.
22. Kelley MJ, Shaffer MA, Kuhn JE, et al. Shoulder pain and mobility deficits: adhesive capsulitis. *The Journal of orthopaedic and sports physical therapy*. 2013;43(5):A1-31.
23. Kelly DA, Bucuvalas JC, Alonso EM, et al. Long-term medical management of the pediatric patient after liver transplantation: 2013 practice guideline by the American Association for the Study of Liver Diseases and the American Society of Transplantation. *Liver transplantation : official publication of the American Association for the Study of Liver Diseases and the International Liver Transplantation Society*. 2013;19(8):798-825.
24. Klimo P, Jr., Lingo PR, Baird LC, et al. Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline on the Management of Patients With Positional Plagiocephaly: The Role of Repositioning. *Neurosurgery*. 2016;79(5):E627-e9.
25. Logerstedt DS, Scalzitti D, Risberg MA, et al. Knee Stability and Movement Coordination Impairments: Knee Ligament Sprain Revision 2017. *The Journal of orthopaedic and sports physical therapy*. 2017;47(11):A1-a47.
26. Martin RL, Chimenti R, Cuddeford T, et al. Achilles Pain, Stiffness, and Muscle Power Deficits: Midportion Achilles Tendinopathy Revision 2018. *The Journal of orthopaedic and sports physical therapy*. 2018;48(5):A1-a38. Epub 2018/05/02.

27. Martin RL, Davenport TE, Fraser JJ, et al. Ankle Stability and Movement Coordination Impairments: Lateral Ankle Ligament Sprains Revision 2021. *The Journal of orthopaedic and sports physical therapy*. 2021;51(4):Cpg1-cpg80. Epub 2021/04/02.
28. Martin RL, Davenport TE, Reischl SF, et al. Heel pain-plantar fasciitis: revision 2014. *The Journal of orthopaedic and sports physical therapy*. 2014;44(11):A1-33.
29. Miller RG, Jackson CE, Kasarskis EJ, et al. Practice parameter update: the care of the patient with amyotrophic lateral sclerosis: multidisciplinary care, symptom management, and cognitive/behavioral impairment (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2009;73(15):1227-33.
30. Murray MJ, DeBlock H, Erstad B, et al. Clinical Practice Guidelines for Sustained Neuromuscular Blockade in the Adult Critically Ill Patient. *Critical care medicine*. 2016;44(11):2079-103.
31. Narayanaswami P, Weiss M, Selcen D, et al. Evidence-based guideline summary: diagnosis and treatment of limb-girdle and distal dystrophies: report of the guideline development subcommittee of the American Academy of Neurology and the practice issues review panel of the American Association of Neuromuscular & Electrodiagnostic Medicine. *Neurology*. 2014;83(16):1453-63.
32. National Collaborating Centre for Women's and Children's Health (NICE). Urinary incontinence: the management of urinary incontinence in women. London (UK): National Institute for Health and Care Excellence (NICE); 2013. p. 48.
33. National Institute for Health and Care Excellence (NICE). Cerebral palsy in under 25s: assessment and management, NG62. London (UK): National Institute for Health and Care Excellence (NICE), ; 2017. p. 21.
34. National Institute for Health and Care Excellence (NICE). Nerve transfer to partially restore upper limb function in tetraplegia, ipg610. London (UK): National Institute for Health and Care Excellence (NICE), ; 2018. p. 4.
35. National Institute for Health and Care Excellence (NICE). Parkinson's disease in adults cg71. London (UK): National Institute for Health and Care Excellence (NICE); 2017. p. 30.
36. National Institute for Health and Care Excellence (NICE). Rheumatoid arthritis in adults: management, ng100. London (UK): National Institute for Health and Care Excellence (NICE), ; 2020. p. 32.
37. National Institute for Health and Care Excellence (NICE). Spasticity in under 19s: management, cg145.: National Institute for Health and Care Excellence (NICE), ; 2016. p. 41.
38. National Institute for Health and Care Excellence (NICE). Stroke rehabilitation. Long-term rehabilitation after stroke, cg 162. London (UK): National Institute for Health and Care Excellence (NICE); 2013. p. 45.
39. National Institute for Health and Care Excellence (NICE). The management of hip fracture in adults, cg124. London (UK): National Institute for Health and Care Excellence (NICE), ; 2017. p. 664.
40. National Institute for Health and Care Excellence (NICE). Urinary incontinence and pelvic organ prolapse in women: management ng123. London (UK): National Institute for Health and Care Excellence (NICE), ; 2019. p. 76.
41. North American Spine Society (NASS). *Diagnosis and Treatment of Low Back Pain*. Burr Ridge (IL): North American Spine Society; 2020. p. 217.
42. Scottish Intercollegiate Guidelines Network (SIGN). Management of chronic pain. SIGN 136. Revised edition 2019. Edinburgh (UK): Scottish Intercollegiate Guidelines Network; 2019. p. 77.
43. Scottish Intercollegiate Guidelines Network. Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning ncg118. Edinburgh (UK): Scottish Intercollegiate Guidelines Network,; 2010. p. 108.
44. South Australian Government. Guidelines for treatment, care and support for amputees within the LSS living in the community. Adelaide (South Australia)2016. p. 34.
45. Spanish NHS -Working Group of the Clinical Practice Guideline for the Management of Patients with Parkinson's Disease. Clinical practice guideline for the management of patients with Parkinson's disease. Madrid (Spain): Spanish NHS, Ministry of Health, Social Services and Equality; Institute of Health Sciences of Aragon; 2014. p. 159.
46. Strenk M, Gevedon A, Monfreda J. Cincinnati Children's Hospital Medical Center: Best Evidence Statement Physical therapy during the hemopoietic stem cell transplant process to improve quality of life. Cincinnati OH: Cincinnati Children's Hospital Medical Center; 2014. p. 9.
47. Tawil R, Kissel JT, Heatwole C, et al. Evidence-based guideline summary: Evaluation, diagnosis, and management of facioscapulohumeral muscular dystrophy: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology and the Practice Issues Review Panel of the American Association of Neuromuscular & Electrodiagnostic Medicine. *Neurology*. 2015;85(4):357-64.
48. U.S. Centers for Medicare & Medicaid Services. Glossary - Habilitative/Habilitation Services. Baltimore (MD): U.S. Centers for Medicare & Medicaid Services; 2018.

49. U.S. Centers for Medicare & Medicaid Services. Habilitative/Habilitation Services. Baltimore (MD): U.S. Centers for Medicare & Medicaid Services; 2018.
50. U.S. Department of Health and Human Services NIOH. Physical Medicine and Rehabilitation. Bethesda (MD): U.S. National Library of Medicine; 2004.
51. VA/DoD Management of Concussion-mild Traumatic Brain Injury Working Group. VA/DoD clinical practice guideline for the management of concussion-mild traumatic brain injury. Washington (DC): Department of Veterans Affairs, Department of Defense; 2021. p. 128.
52. VA/DoD Non-Surgical Management of Hip and Knee Osteoarthritis Working Group. VA/DoD clinical practice guideline for the non-surgical management of hip and knee osteoarthritis. Washington (DC): Department of Veterans Affairs, Department of Defense; 2020. p. 127.
53. VA-DoD The Rehabilitation of Individuals with Lower Limb Amputation Work Group. VA/DoD Clinical practice guideline for the rehabilitation of individuals with lower limb amputation Washington (DC): Department of Veterans Affairs, Department of Defense; 2017. p. 123.
54. Ward MM, Deodhar A, Gensler LS, et al. 2019 Update of the American College of Rheumatology/Spondylitis Association of America/Spondyloarthritis Research and Treatment Network Recommendations for the Treatment of Ankylosing Spondylitis and Nonradiographic Axial Spondyloarthritis. *Arthritis & rheumatology* (Hoboken, NJ). 2019;71(10):1599-613. Epub 2019/08/23.
55. Zhang W, Moskowitz RW, Nuki G, et al. OARSI recommendations for the management of hip and knee osteoarthritis, Part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis and cartilage*. 2008;16(2):137-62.

Occupational Therapy

Codes

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CPT/HCPCS

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0552T	Low-level laser therapy, dynamic photonic and dynamic thermokinetic energies, provided by a physician or other qualified health care professional
20560	Needle insertion(s) without injection(s), 1 or 2 muscle(s)
20561	Needle insertion(s) without injection(s), 3 or more muscle(s)
90901	Biofeedback training by any modality (when done for medically necessary indications)
92526	Treatment of swallowing and/or oral feeding function
92605	Evaluation and prescription of non-speech-generating and alternative communication device first hour
92606	Therapeutic services for use of non-speech-generating device with programming
92607	Evaluation of patient with prescription of speech-generating and alternative communication device
92608	Evaluation and prescription of speech-generating and alternative communication device
92609	Therapeutic services for use of speech-generating device with programming
92610	Evaluation of swallowing function
92611	Fluoroscopic and video recorded motion evaluation of swallowing function
92618	Evaluation and prescription of non-speech-generating and alternative communication device
94667	Demonstration and/or evaluation of manual maneuvers to chest wall to assist movement of lung secretions
94668	Manual maneuvers to chest wall to assist movement of lung secretions
97010	Application of hot or cold packs to 1 or more areas
97012	Application of mechanical traction to 1 or more areas
97014	Application of electrical stimulation to 1 or more areas, unattended by therapist
97016	Application of blood vessel compression or decompression device to 1 or more areas
97018	Application of hot wax bath to 1 or more areas
97022	Application of whirlpool therapy to 1 or more areas
97024	Application of heat wave therapy to 1 or more areas
97026	Application of low energy heat (infrared) to 1 or more areas
97028	Application of ultraviolet light to 1 or more areas
97032	Application of electrical stimulation to 1 or more areas
97033	Application of medication through skin using electrical current, each 15 minutes
97034	Therapeutic hot and cold baths to 1 or more areas, each 15 minutes
97035	Application of ultrasound to 1 or more areas, each 15 minutes
97036	Physical therapy treatment to 1 or more areas, Hubbard tank, each 15 minutes
97039	Unlisted modality (specify type and time if constant attendance)
97110	Therapeutic exercise to develop strength, endurance, range of motion, and flexibility, each 15 minutes
97112	Therapeutic procedure to re-educate brain-to-nerve-to-muscle function, each 15 minutes
97113	Water pool therapy with therapeutic exercises to 1 or more areas, each 15 minutes

97116	Walking training to 1 or more areas, each 15 minutes
97124	Therapeutic massage to 1 or more areas, each 15 minutes
97129	One-on-one therapeutic interventions focused on thought processing and strategies to manage activities
97130	Each additional 15 minutes (list separately in addition to code for primary procedure)
97139	Unlisted therapeutic procedure (specify)
97140	Manual (physical) therapy techniques to 1 or more regions, each 15 minutes
97150	Therapeutic procedures in a group setting
97165	Evaluation of occupational therapy, typically 30 minutes
97166	Evaluation of occupational therapy, typically 45 minutes
97167	Evaluation of occupational therapy established plan of care, typically 60 minutes
97168	Re-evaluation of occupational therapy established plan of care, typically 30 minutes
97530	Therapeutic activities to improve function, with one-on-one contact between patient and provider, each 15 minutes
97533	Sensory technique to enhance processing and adaptation to environmental demands, each 15 minutes
97535	Self-care or home management training, each 15 minutes
97537	Community or work reintegration training, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work hardening or conditioning, first 2 hours
97546	Work hardening or conditioning
97750	Physical performance test or measurement with report, each 15 minutes
97755	Assistive technology assessment to enhance functional performance, each 15 minutes
97760	Training in use of orthotics (supports, braces, or splints) for arms, legs and/or trunk, per 15 minutes
97761	Training in use of prosthesis for arms and/or legs, per 15 minutes
97763	Management and/or training in use of orthotics (supports, braces, or splints) for arms, legs, and/or trunk, per 15 minutes
G0281	Electrical stimulation, for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers, and venous stasis ulcers
G0282	Electrical stimulation, to one or more areas, for wound care
G0283	Electrical Stimulation, to one or more areas, for other than wound care
G0295	Electromagnetic therapy, one or more areas, for wound care
G0329	Electromagnetic therapy, to one or more areas for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers and venous stasis ulcers
S8948	Treatment with low level laser (phototherapy) each 15 minutes
S8950	Complex lymphedema therapy, each 15 minutes
S8990	Physical or manipulative therapy for maintenance

Modifiers

96	Habilitative Services
97	Needle insertion(s) without injection(s), 1 or 2 muscle(s)

ICD-10 Diagnosis

Refer to the ICD-10 CM Manual

General Information

Abbreviations

- Activities of daily living (ADLs)
- Congestive heart failure (CHF)
- Heart rate (HR)
- Long-term goals (LTG)
- Range of motion (ROM)
- Right upper extremity (RUE)

Background

Occupational therapy is a skilled, nonsurgical treatment involving the therapeutic use of occupations (see definition below) and goal-oriented physical exercises as well as adaptive equipment, environmental modifications, and education in order to maximize productive function and quality of life. Occupational therapy is goal-directed and collaborative.

Details and Scope

The purpose of this guideline is to establish conceptual principles and documentation requirements for the appropriate initial and subsequent use of outpatient occupational therapy services for habilitation and rehabilitation, and maintenance programs. This guideline does not provide specific clinical requirements or direction for a given episode of occupational therapy. Specific types of occupational therapy interventions may be subject to additional guidelines (please refer to the Adjunctive and Alternative Treatments section of this document). Requirements defined by benefit design (maximum number of occupational therapy visits), state and federal regulations supersede this guideline.

For requests that meet the specific criteria set forth in the clinical guidelines, determination of the appropriate number of visits will depend on some or all of the following case details as applicable to the individual clinical circumstances:

- Functional outcome tool and/or severity of impairment
- History of pertinent surgery
- Comorbidities expected to impact treatment
- Progress toward functional goals (or mitigating factors if lack of progress)
- Existence of additional, achievable, functional goals
- Potential for progress
- Revisions to the plan of care

Requesting providers will need to provide information on such factors in order to support their request for more than an evaluation visit. A peer-to-peer conversation may be required to determine appropriateness in certain cases.

Unless specifically stated in the document, these guidelines do not express any opinion about the appropriate scope of practice for the practitioners who deliver these services and should not be put forth as having such an opinion.

Definitions

- **Acceptable mitigating factors** refers to issues which could realistically contribute to or fully account for the lack of progress/improvement that would otherwise be expected during a course of treatment. These include but are not limited to an intervening fall, injury, illness, surgery, or hospitalization, transportation difficulties, or poor response to the initial treatment plan.
- **Activities of daily living (ADLs)** are tasks that a person generally needs or wants to perform on a daily or routine basis to complete self-care and occupational duties and participate in other daily environments (e.g., school, daycare).
- **Caregiver** refers to someone who regularly looks after or helps with the care of the child or adult (patient) with the disability.
- **Duplicative therapy** refers to treatments by more than one provider (same or different discipline) which are 1) rendered during an overlapping time period, 2) intended to treat the same or similar body parts (e.g., arm and shoulder), and 3) have substantively similar goals (e.g., improved functional shoulder range of motion).
- **Functional progress** refers to progress that directly reflects improvement in specific functional tasks such as mobility and self-care activities.
- **Habilitation** refers to services performed to help patients develop skills and functions for daily living that have not yet been acquired at an age appropriate level ^{1,2} or keep those skills and functions which are at risk of being permanently lost (not merely fluctuating) due to illness or disease without the habilitative service.
- **Maintenance program** is defined as a program provided to the patient expressly to maintain the patient's current condition or to prevent or slow further deterioration due to a disease or illness. The creation, design and instruction of the program must require the skilled knowledge or judgement of a qualified therapist. A prescribed maintenance program can generally be performed by the patient individually or with the assistance of a caregiver. The provision of such a program would be considered a skilled intervention.
- **Occupations** refers to the purposeful activities a person does throughout the lifespan, including but not limited to work, basic self-care activities, instrumental daily activities, exercise and recreational activities.
- **Qualified occupational therapy provider** refers to an occupational therapist or occupational therapy assistant who is duly licensed or certified, respectively, by his/her state to deliver occupational therapy services and who provides such services in accordance with his/her state's occupational therapy practice act. State regulations regarding appropriate providers may supersede this guideline.
- **Rehabilitation** focuses on the maximal restoration of physical and psychological function in persons with injuries, pain syndromes, and/or other physical or cognitive impairments.³
- **Self limited** refers to impairments caused by a disease process or surgical intervention that are expected to resolve in the near term solely with resumption of normal activity and/or an unsupervised home exercise program.
- **Skilled services** are those services which **require a qualified provider to administer the treatment plan**. A service is not considered skilled simply because a qualified provider is performing it.

Note: Illness includes a wide range of conditions. For purposes of clarity, illness includes, but is not limited to, autism spectrum disorder and developmental delay.

Clinical Indications

Initiation of occupational therapy for rehabilitative or habilitative services is considered medically necessary when criteria for both A and B are met:

A. Initial Occupational Therapy Evaluation

Initial occupational therapy evaluation is performed by a qualified occupational therapy provider documenting **ALL** of the following:

- The reason for referral, specifically a condition that causes or contributes to one or more impairments in function as related to activities of daily living that is not self-limited
- A need for occupational therapy to:
 - restore function (rehabilitation), or
 - keep, learn, or improve function that has not yet been acquired at any age appropriate level, or if clinically indicated, prevent loss of function that is at risk of being lost (habilitation)
- A relevant case history including comorbidities expected to impact treatment, a relevant physical examination, and a review of supporting, available documentation
- Functional impairment on at least 1 relevant, validated, therapist-rated, and/or patient reported outcome measure
- Potential for clinically meaningful progress, the assessment of which must be supported by clinical details documented within the evaluation

Note: The expectation of clinically meaningful progress *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function that is at risk of being lost (habilitation).*

B. Individualized Occupational Therapy Plan of Care

Individualized occupational therapy plan requires the skill and training of a qualified occupational therapy provider employing interventions and delivery methods that adhere to the Clinical Appropriateness Framework (outlined in the General Clinical Guideline above). There must be a reasonable expectation that the condition being treated is amenable to such intervention and that clinically meaningful, sustained improvement will be achieved.

Note: The expectation of clinically meaningful, sustained improvement *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function that is at risk of being lost (habilitation).*

This plan must include **ALL** of the following components:

- One or more goals which are:
 - Specific
 - Measurable
 - Likely to be attained in a reasonable amount of time
 - Based on clinically significant improvement in the functional impairment(s) identified on initial evaluation
 - Formulated in collaboration with the patient and/or primary caregiver

Note: There may be additional goals which do not meet the above criteria, but at least one goal must meet these criteria in order for medical necessity to be met.

Examples of appropriate goals:

- Patient to don button-down shirt with min assist using right hand and adaptive equipment (to be achieved in 4 weeks)
- Decrease pain 2/10 to allow full left upper extremity weight-bearing and push-off for independent sit-stand transfer (8 weeks)

- Patient to be independent 100% of time with toileting (estimated time 12 weeks)
- Increase elbow extension ROM to 100 degrees to safely operate overhead machinery at work (LTG 6 weeks)

Examples of inappropriate goals:

- Improve ADLS
 - Patient will improve RUE ROM 20 degrees to increase participation in upper body ADLs
 - Resume baseline work function (12 weeks)
 - Increase elbow ROM to 100 degrees (acceptable as an additional goal but not as the required functional, time-limited goal)
 - QuickDASH score less than 10%
- Recommended frequency and estimated duration of treatment needed to achieve documented goals
 - Patient and/or caregiver education, particularly related to the patient's individual goals
 - A recommendation for evaluation/examination by a physician or otherwise appropriate provider if there is reasonable suspicion that an undiagnosed condition outside therapist's scope of practice is present or limiting current progression towards goals.

Proceeding with occupational therapy services is considered medically necessary when ALL of the following criteria (A-F) are met:

A. Require the skills and training of a qualified occupational therapy provider:

- The skilled intervention(s) must be clearly denoted in the documentation

Examples of skilled intervention documentation:

- Skilled passive ROM to shoulder needed to maintain post-op restrictions and due to high risk of dislocation
- Advancing strengthening exercises, requires skilled monitoring of patient's HR response and activity tolerance due to CHF risk

B. ANY of the following:

- Therapy has produced clinically meaningful improvement on reassessment of one or more of the therapist-rated or patient centered outcome measures documented on initial evaluation

Example of clinically meaningful improvement on outcome measure:

- Statistically significant improvement in outcome tool score with improvement in at least one of the functional parameters of the outcome measure (e.g., reading parameter in the Neck Disability Index)

Examples of non-clinically meaningful improvement on outcome measure:

- Improvements only in non-specific, non-functional parameters of the functional tool (e.g., pain parameter in the Neck Disability Index)
 - Statistically insignificant improvement in outcome tool score
- There is attainment of functional goals established on initial evaluation or otherwise qualitative and sustained functional progress

Examples of functional progress:

- Dexterity improved, now requiring only moderate assistance to manipulate buttons and don shirt with use of adaptive equipment
- Shoulder pain decreased to 5/10 allowing patient to partial weight-bear on left upper extremity.

- Able to toilet self with only stand-by assistance for donning pants 80% of the time
- Patient elbow flexion ROM now 60 degrees (*when documented as progress towards specific functional goal of "Increase elbow ROM to 100 degrees to safely operate machinery at work."* Such progress might then also reasonably be documented as "ROM 60% met" if applied to this same functional goal)

Examples of non-functional progress:

- Upper body dressing ongoing
 - Toileting partially met
 - Goal 60% met (without clear indication of what parameter 60% reflects and what functional goal it applies to)
 - Strength improved to 3/5
 - Shoulder ROM increased 20 degrees
- There is little to no demonstrable progress; however, there are acceptable mitigating factors and a treatment plan has been revised accordingly
 - There is confirmation of functional status being maintained in *cases in which the appropriate purpose of therapy is to prevent loss of function* that is at risk of being lost (habilitation)

C. There is ongoing patient and/or caregiver education and/or training

D. There is at least one unmet functional or caregiver training goal

E. There is an expectation that the remaining goal(s) will be met with additional therapy within a reasonable and defined period of time

F. Progress is commensurate with the duration of treatment rendered

A recommendation for evaluation/examination by a physician or otherwise appropriate provider must be made if there is poor progression toward goals due to new or persistent symptoms

Institution of an occupational therapy maintenance program may be considered medically necessary in specific circumstances (refer to Definitions section)

Exclusions

The following are considered **not medically necessary**:

- Maintenance therapies extending beyond the creation, design, and instruction of a therapy program
- Therapies for which the primary purpose is anything other than rehabilitation or habilitation of a functional impairment due to medical illness, disease, condition, or injury. This includes therapies to improve recreational sports performance or general fitness, provide massage, or athletic taping.

Example of rehabilitation purpose:

- Treatment rendered in order to restore ability to throw overhead pain-free

Examples of recreational/sports purpose:

- Treatment rendered in order to improve endurance to allow pain-free overhead throwing for a 90 pitch-count game
- Treatment rendered in order to achieve (or restore) ability to garden with arms unsupported for 30 minutes without fatigue-related pain

- Progress is not commensurate with the duration of treatment provided (e.g. range of motion improved but only a small amount relative to the length of time patient has been in treatment, and without any reasonable mitigating factor(s) accounting for it.)
- Therapies deemed to be duplicative (see definition above)
- Any and all non-skilled services

References

1. American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons clinical practice guideline on management of hip fractures in the elderly. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2014. p. 521.
2. American Occupational Therapy Association (AOTA). Occupational therapy practice guidelines for adults with serious mental illness. Bethesda (MD): AOTA Press; 2019. p. 113.
3. American Occupational Therapy Association (AOTA). Standards of Practice for Occupational Therapy. 2020/04/30 ed: American Occupational Therapy Association; 2020. p. 1-3.
4. Braveman B, Hunter EG, American Occupational Therapy Association. Occupational therapy practice guidelines for cancer rehabilitation with adults. Bethesda (MD): AOTA Press; 2017. 37 p.
5. Colorado Division of Workers' Compensation. Lower extremity injury medical treatment guidelines. Denver (CO): Colorado Division of Workers' Compensation; 2016. p. 211.
6. Combe B, Landewe R, Daien CI, et al. 2016 update of the EULAR recommendations for the management of early arthritis. 2017;76(6):948-59.
7. Kaldenberg J, Smallfield S, American Occupational Therapy Association (AOTA). Occupational therapy practice guidelines for older adults with low vision. American Journal of Occupational Therapy. 2020;74:119.
8. Kang PB, Morrison L, Iannaccone ST, et al. Evidence-based guideline summary: evaluation, diagnosis, and management of congenital muscular dystrophy: Report of the Guideline Development Subcommittee of the American Academy of Neurology and the Practice Issues Review Panel of the American Association of Neuromuscular & Electrodiagnostic Medicine. Neurology. 2015;84(13):1369-78.
9. Kelly DA, Bucuvalas JC, Alonso EM, et al. Long-term medical management of the pediatric patient after liver transplantation: 2013 practice guideline by the American Association for the Study of Liver Diseases and the American Society of Transplantation. Liver transplantation : official publication of the American Association for the Study of Liver Diseases and the International Liver Transplantation Society. 2013;19(8):798-825.
10. Koenig KP, American Occupational Therapy Association. Occupational therapy practice guidelines for adults with traumatic brain injury. Bethesda (MD): AOTA Press; 2016. 47 p.
11. Leland N, Elliott SJ, Johnson KJ, et al. Occupational therapy practice guidelines for productive aging for community-dwelling older adults. Bethesda (MD): AOTA Press; 2012. 167 p.
12. Miller RG, Jackson CE, Kasarskis EJ, et al. Practice parameter update: the care of the patient with amyotrophic lateral sclerosis: multidisciplinary care, symptom management, and cognitive/behavioral impairment (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2009;73(15):1227-33.
13. Narayanaswami P, Weiss M, Selcen D, et al. Evidence-based guideline summary: diagnosis and treatment of limb-girdle and distal dystrophies: report of the guideline development subcommittee of the American Academy of Neurology and the practice issues review panel of the American Association of Neuromuscular & Electrodiagnostic Medicine. Neurology. 2014;83(16):1453-63.
14. National Institute for Health and Care Excellence (NICE). Cerebral palsy in children and young people. London (UK): National Institute for Health and Care Excellence (NICE); 2017.
15. National Institute for Health and Care Excellence (NICE). Cerebral palsy in under 25s: assessment and management, NG62. London (UK): National Institute for Health and Care Excellence (NICE), ; 2017. p. 21.
16. National Institute for Health and Care Excellence (NICE). Chronic obstructive pulmonary disease in over 16s: diagnosis and management, ng115. London (UK): National Institute for Health and Care Excellence (NICE), ; 2019. p. 69.
17. National Institute for Health and Care Excellence (NICE). Nerve transfer to partially restore upper limb function in tetraplegia, ipg610. London (UK): National Institute for Health and Care Excellence (NICE), ; 2018. p. 4.

18. National Institute for Health and Care Excellence (NICE). Parkinson's disease in adults cg71. London (UK): National Institute for Health and Care Excellence (NICE); 2017. p. 30.
19. National Institute for Health and Care Excellence (NICE). Rheumatoid arthritis in adults: management, ng100. London (UK): National Institute for Health and Care Excellence (NICE), ; 2020. p. 32.
20. National Institute for Health and Care Excellence (NICE). Spasticity in under 19s: management, cg145.: National Institute for Health and Care Excellence (NICE), ; 2016. p. 41.
21. National Institute for Health and Care Excellence (NICE). Stroke rehabilitation. Long-term rehabilitation after stroke, cg 162. London (UK): National Institute for Health and Care Excellence (NICE); 2013. p. 45.
22. National Institute for Health and Care Excellence (NICE). The management of hip fracture in adults, cg124. London (UK): National Institute for Health and Care Excellence (NICE), ; 2017. p. 664.
23. Poole J, Siegel P, Tencza M. Occupational therapy practice guidelines for adults with arthritis and other rheumatic conditions. Bethesda (MD): AOTA Press; 2017. 46 p.
24. Preissner K, American Occupational Therapy Association. Occupational therapy practice guidelines for adults with neurodegenerative diseases. Bethesda (MD): AOTA Press; 2014. 187 p.
25. Royal College of Occupational Therapists Ltd. Occupational therapy in the prevention and management of falls in adults, (2020) Practice guideline. London (UK): Royal College of Occupational Therapists Ltd; 2020. p. 173.
26. Royal College of Occupational Therapists. Occupational therapy for adults undergoing total hip replacement: Practice guideline. London (UK): Royal College of Occupational Therapists,; 2017. p. 180.
27. Scottish Intercollegiate Guidelines Network. Brain injury rehabilitation in adults ncg130. Edinburgh (UK): Scottish Intercollegiate Guidelines Network; 2013. p. 75.
28. Scottish Intercollegiate Guidelines Network. Management of early rheumatoid arthritis ncg123,. Edinburgh (UK): Scottish Intercollegiate Guidelines Network; 2011. p. 35.
29. Scottish Intercollegiate Guidelines Network. Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning ncg118. Edinburgh (UK): Scottish Intercollegiate Guidelines Network,; 2010. p. 108.
30. Siebert C, Smallfield S, Stark S, et al. Occupational therapy practice guidelines for home modifications. Bethesda (MD): AOTA Press; 2014. 109 p.
31. Snodgrass J, Amini D. Occupational therapy practice guidelines for adults with musculoskeletal conditions. Bethesda (MD): AOTA Press; 2017. 77 p.
32. South Australian Government. Guidelines for treatment, care and support for amputees within the LSS living in the community. Adelaide (South Australia)2016. p. 34.
33. Spanish NHS -Working Group of the Clinical Practice Guideline for the Management of Patients with Parkinson's Disease. Clinical practice guideline for the management of patients with Parkinson's disease. Madrid (Spain): Spanish NHS, Ministry of Health, Social Services and Equality; Institute of Health Sciences of Aragon; 2014. p. 159.
34. U.S. Centers for Medicare & Medicaid Services. Glossary - Habilitative/Habilitation Services. Baltimore (MD): U.S. Centers for Medicare & Medicaid Services; 2018.
35. U.S. Centers for Medicare & Medicaid Services. Habilitative/Habilitation Services. Baltimore (MD): U.S. Centers for Medicare & Medicaid Services; 2018.
36. U.S. Department of Health and Human Services NIOH. Physical Medicine and Rehabilitation. Bethesda (MD): U.S. National Library of Medicine; 2004.
37. U.S. Department of Health and Human Services. Occupational Therapy - Clinical Services Bethesda, MD: U.S. Department of Health and Human Services; 2017 [updated 09/15/2017]. Available from: <https://clinicalcenter.nih.gov/rmd/ot/otcliniaservice.html>.
38. VA/DoD Management of Concussion-mild Traumatic Brain Injury Working Group. VA/DoD clinical practice guideline for the management of concussion-mild traumatic brain injury. Washington (DC): Department of Veterans Affairs, Department of Defense; 2021. p. 128.
39. VA-DoD The Rehabilitation of Individuals with Lower Limb Amputation Work Group. VA/DoD Clinical practice guideline for the rehabilitation of individuals with lower limb amputation Washington (DC): Department of Veterans Affairs, Department of Defense; 2017. p. 123.
40. Verrier Piersol C, Jensen L. Occupational therapy practice guidelines for adults with alzheimer's disease and related neurocognitive disorders. Bethesda (MD): AOTA Press; 2017. 45 p.

41. Wolf TJ, Nilsen DM, American Occupational Therapy Association. Occupational therapy practice guidelines for adults with stroke. Bethesda (MD): AOTA Press; 2015. 256 p.

Speech-Language Pathology

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92507	Treatment of speech, language, voice, communication, and/or hearing processing disorder
92508	Group treatment of speech, language, voice, communication, and/or hearing processing disorder
92521	Evaluation of speech fluency
92522	Evaluation of speech sound production
92523	Evaluation of speech sound production with evaluation of language comprehension and expression
92524	Behavioral and qualitative analysis of voice and resonance
92526	Treatment of swallowing and/or oral feeding function
92605	Evaluation and prescription of non-speech-generating and alternative communication device first hour
92606	Therapeutic services for use of non-speech-generating device with programming
92607	Evaluation of patient with prescription of speech-generating and alternative communication device
92608	Evaluation and prescription of speech-generating and alternative communication device
92609	Therapeutic services for use of speech-generating device with programming
92610	Evaluation of swallowing function
92611	Fluoroscopic and video recorded motion evaluation of swallowing function
92618	Evaluation and prescription of non-speech-generating and alternative communication device
92626	Evaluation of hearing rehabilitation first hour
92627	Evaluation of hearing rehabilitation
92630	Hearing training and therapy for hearing loss prior to learning to speak
92633	Hearing training and therapy for hearing loss after speech
97039	Unlisted modality (specify type and time if constant attendance)
97129	One-on-one therapeutic interventions focused on thought processing and strategies to manage activities
97130	Each additional 15 minutes (list separately in addition to code for primary procedure)
S9152	Speech therapy re-evaluation
V5362	Speech screening
V5363	Language screening
V5364	Dysphagia screening

Modifiers

96	Habilitative Services
97	Needle insertion(s) without injection(s), 1 or 2 muscle(s)

ICD-10 Diagnosis

Refer to the ICD-10 CM Manual

General Information

Background

Speech-language pathology is a skilled, nonsurgical treatment primarily concerned with the diagnosis and treatment of disorders of communication, cognition, and swallowing. The scope of practice includes, but is not limited to, disorders of speech fluency, production, resonance, voice, language, feeding, hearing, and swallowing for patients of all ages.¹ Speech-language pathology is a goal-directed, collaborative approach focused on improving function and quality of life.

Speech-language pathologists are the primary providers of speech therapy services in the U.S. They are autonomous professionals who may hold the American-Speech-Language-Hearing Association (ASHA) Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) and who demonstrate continued professional development.¹ In some clinical settings and under some state practice acts, occupational therapists might also be considered qualified to provide certain speech therapy services delineated in this guideline.

Details and Scope

The purpose of this guideline is to establish conceptual principles and documentation requirements for the appropriate initial and subsequent use of outpatient speech-language pathology services for habilitation and rehabilitation, and maintenance programs. This guideline does not provide specific clinical requirements or direction for a given episode of speech therapy. Specific types of speech therapy interventions, such as electrical stimulation for swallowing dysfunction, may be subject to additional guidelines (please refer to the Adjunctive and Alternative Treatments section of this document). Requirements defined by benefit design (maximum number of speech therapy visits), state and federal regulations supersede this guideline.

For requests that meet the specific criteria set forth in the clinical guidelines, determination of the appropriate number of visits will depend on some or all of the following case details as applicable to the individual clinical circumstances:

- Severity of impairment and/or level of independence
- History of pertinent surgery
- Comorbidities expected to impact treatment
- Progress toward functional goals (or mitigating factors if lack of progress)
- Existence of additional, achievable, functional goals as applicable
- Potential for progress
- Revisions to the plan of care

Requesting providers will need to provide information on these factors in order to support their request for more than an evaluation visit. A peer-to-peer conversation may be required to determine appropriateness in certain cases.

Unless specifically stated in the document, these guidelines do not express any opinion about the appropriate scope of practice for the practitioners who deliver these services and should not be put forth as having such an opinion.

Definitions

- **Acceptable mitigating factors** refers to issues which could realistically contribute to or fully account for the lack of progress/improvement that would otherwise be expected during a course of treatment. These include but are not limited to an intervening injury, illness, surgery, or hospitalization, transportation difficulties, or poor response to the initial treatment plan.
- **Caregiver** refers to someone who regularly looks after or helps with the care of the child or adult (patient) with the disability.

- **Duplicative therapy** refers to treatments by more than one provider (same or different discipline) which are 1) rendered during an overlapping time period, 2) intended to treat the same or similar body parts, conditions, or diagnoses, and 3) have substantively similar goals
- **Functional progress** refers to progress that directly reflects improvement in specific functional tasks such as swallowing, speech and cognitive activities.
- **Habilitation** refers to services performed to help patients develop skills and functions for daily living that have not yet been acquired at an age appropriate level ^{1,2} or keep those skills and functions which are at risk of being permanently lost (not merely fluctuating) due to illness or disease without the habilitative service.
- **Individualized clinical assessments** refer to *pre-assessment* (e.g., baseline before laryngectomy, neurosurgery) to determine prognosis and post-procedure plan, *post-assessment* (e.g., after laryngectomy, neurosurgery) to determine therapy needs, or *comprehensive initial assessment*.
- **Maintenance program** is defined as a program provided to the patient expressly to maintain the patient's current condition or to prevent or slow further deterioration due to a disease or illness. The creation, design and instruction of the program must require the skilled knowledge or judgement of a qualified therapist. A prescribed maintenance program can generally be performed by the patient individually or with the assistance of a caregiver, The provision of such would be considered a skilled intervention.
- **Qualified speech-language pathology provider** refers to a speech language pathologist, also known as a speech therapist, who may hold the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) designation from the American-Speech-Language-Hearing Association (ASHA). Speech-language pathology support personnel such as assistants, aides, and associates are individuals who may work under the supervision and direction of a CCC-SLP therapist within the scope of their individual licensures and credentialing and as allowed by applicable state regulations. In some clinical settings and under some state practice acts, occupational therapists might also be considered qualified to provide certain speech therapy services delineated in this guideline
- **Rehabilitation** focuses on the maximal restoration of physical and psychological function in persons with injuries, pain syndromes, and/or other physical or cognitive impairments.²
- **Self-limited** refers to impairments caused by a disease process or surgical intervention that are expected to resolve within a reasonable period of time solely with resumption of normal activity and/or a non-supervised home exercise program.
- **Skilled services are those services which require a qualified provider to administer the treatment plan.** A service is not considered skilled simply because a qualified provider is performing it.

Note: Illness includes a wide range of conditions. For purposes of clarity, illness includes, but is not limited to, autism spectrum disorder and developmental delay.

Clinical Indications

Initiation of speech-language pathology for rehabilitative or habilitative services is considered medically necessary when criteria for both A and B are met.

A. Initial Speech-Language Pathology Evaluation

Initial speech-language pathology evaluation performed by a qualified speech-language pathology provider documenting **ALL** of the following:

- Referral for speech-language pathology from a physician, nurse practitioner or physician assistant, specifically for a condition that causes one or more impairments in swallowing, cognition and/or communication function that is/are not self-limiting
- A need for speech-language pathology to:
 - restore function (i.e., rehabilitation), or

- keep, learn, or improve function that has not yet been acquired at any age appropriate level, or if clinically indicated, prevent loss of function that is at risk of being lost (habilitation)
- Relevant case history including comorbidities expected to impact treatment, examination, and individualized clinical assessment (pre-assessment, post-assessment, **comprehensive initial assessment**)
- Potential for clinically meaningful progress, the assessment of which must be supported by clinical details documented within the evaluation

Note: The expectation of clinically meaningful progress *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function* that is at risk of being lost (habilitation).

- Individualized evaluation(s) of any of the following (as indicated) utilizing linguistically and culturally appropriate standardized and/or formal (non-standardized) measures:
 - Structure and function of anatomy for speech and swallowing, expressive communication, receptive communication
 - Voice
 - Cognitive-communicative skills
 - Functional status of communication, cognition, and/or swallowing

B. Individualized Speech-Language Pathology Plan of Care

Individualized speech-language pathology plan requiring the skill and training of a qualified speech-language pathology provider employing interventions and delivery methods that adhere to the Clinical Appropriateness Framework (outlined in the General Clinical Guideline above). There must be a reasonable expectation that the condition being treated is amenable to such intervention and that clinically meaningful, sustained improvement will be achieved.

Note: The expectation of clinically meaningful, sustained improvement *will not apply for habilitation cases in which the appropriate purpose of therapy is to prevent loss of function* that is at risk of being lost (habilitation).

This plan must include **ALL** of the following components:

- One or more goals which are:
 - Specific
 - Measurable
 - Likely to be attained in a reasonable amount of time
 - Based on clinically significant improvement in the functional impairment(s) identified on initial evaluation
 - Formulated in collaboration with the patient and/or primary caregiver

Note: There may be additional goals which do not meet the above criteria, but at least one goal must meet these criteria in order for medical necessity to be met.

Examples of appropriate goals:

- Patient will tolerate safest yet least restrictive po diet without signs or symptoms of aspiration at 95% with use of compensatory strategies and minimal cues provided. (to be achieved in 12 weeks)
- Patient will use fifteen 2-3 word phrases to express wants and needs independently within a play activity. (8 weeks)
- Patient will independently use trained compensatory speech strategies to improve functional communication at conversational speech level with > 90% accuracy. (expected in 4 weeks)

Examples of inappropriate goals:

- Improved swallow function

- Will increase expressive output to communicate needs (8 weeks)
- Will increase utterance level to 2-3 words
- Patient will improve speech intelligibility
- Recommended frequency and estimated duration of treatment needed to achieve documented goals
- Patient and/or caregiver education, particularly related to the patient's individual goals
- A recommendation for evaluation/examination by a physician or otherwise appropriate provider if there is concern for an undiagnosed condition outside therapist's scope of practice that is likely to impede progress toward goals

Proceeding with speech-language pathology services is considered medically necessary when ALL of the following criteria (A-F) are met:

A. Require the skills and training of a qualified speech language pathology provider:

- The skilled intervention(s) must be clearly denoted in the documentation

B. ANY of the following:

- Therapy has produced clinically meaningful improvement on reassessment of one or more of the therapist-rated or patient-centered outcome measures documented on initial evaluation
- There is attainment of the functional goal(s) established on initial evaluation or otherwise qualitative and sustained functional progress

Examples of functional progress:

- Patient has improved recalled info from 2 to 4 items within a 3-5 sentence paragraph information
- Patient has improved overall intelligibility from 75% to 95% from conversational speech level with use of strategies
- Patient demonstrating problem solving with functional solutions evidenced by requiring moderate cueing from initial max cueing
- Patient has maintained 10-15 mins attention to conversation or task or structured activity vs prior 5-10 mins

Examples of non-functional progress:

- Patient has improved problem solving
- Patient using external memory aide more consistently
- Patient has improved conversational attention
- There is limited or no demonstrable progress; however, there are acceptable mitigating factors and a treatment plan has been revised accordingly
- There is confirmation of functional status being maintained in *cases in which the appropriate purpose of therapy is to prevent loss of function* that is at risk of being lost (habilitation)

C. There is ongoing patient and/or caregiver education and/or training

D. There is at least one unmet functional or caregiver training goal

E. There is an expectation that the remaining goal(s) will be met with additional therapy within a reasonable and defined period of time

F. Progress is commensurate with the duration of treatment rendered

A recommendation for evaluation/examination by a physician or otherwise appropriate provider must be made if there is poor progression toward goals due to new or persistent symptoms

Institution of a speech-language pathology maintenance program may be considered medically necessary in specific circumstances (refer to Definitions section)

Exclusions

The following are considered **not medically necessary**:

- Maintenance therapies extending beyond the creation, design, instruction of a therapy program
- Therapies for which the primary purpose is anything other than rehabilitation or habilitation of a functional impairment due to medical illness, disease, condition or injury. This includes therapies to improve recreational activities such as singing or general vocal performance.
- Progress is not commensurate with the duration of treatment provided (e.g. speech intelligibility improved but only a small amount relative to the length of time patient has been in treatment, and without any reasonable mitigating factor(s) accounting for it.)
- Therapies deemed to be duplicative (see definition above)
- Any and all non-skilled services.

References

1. American Speech-Language Hearing Association (ASHA). Scope of practice in speech-language pathology [Internet] 2016. Available from: <https://www.asha.org/policy/SP2016-00343/>.
2. American Speech-Language-Hearing Association (ASHA). Preferred practice patterns for the profession of speech-language pathology [Internet] 2004 [cited 2021 May 7]. Available from: <https://www.asha.org/policy/PP2004-00191/>.
3. Bassez G, Fossati B, Gamez J, et al. Consensus-based care recommendations for adults with myotonic dystrophy type 2. (2019) Oakland, CA: Myotonic Dystrophy Foundation. [28 p.]. Available from: <https://www.myotonic.org/toolkits-publications>.
4. Bengtsson L, Berggren K, van den Engel-Hoek L, et al. Care guidelines for speech and language pathologists treating adults and children with myotonic dystrophy. (2020) Oakland, CA: Myotonic Dystrophy Foundation. [43 p.]. Available from: <https://www.myotonic.org/toolkits-publications>.
5. Chandrasekhar SS, Randolph GW, Seidman MD, et al. Clinical practice guideline: improving voice outcomes after thyroid surgery. *Otolaryngol Head Neck Surg*. 2013;148(6 Suppl):S1-37.
6. Cohen EE, LaMonte SJ, Erb NL, et al. American Cancer Society head and neck cancer survivorship care guideline. *CA Cancer J Clin*. 2016;66(3):203-39.
7. Corben LA, Lynch D, Pandolfo M, et al. Consensus clinical management guidelines for Friedreich ataxia. *Orphanet journal of rare diseases*. 2014;9(Article no. 184):[11 p.].
8. Department of Defense (US), Department of Veterans Affairs, Management of Concussion-mild Traumatic Brain Injury Working Group. VA/DoD clinical practice guideline for the management of concussion-mild traumatic brain injury, version 2.0. (2016). [133 p.]. Available from: <https://www.healthquality.va.gov/guidelines/rehab/mtbi/index.asp>.

9. Department of Defense (US), Department of Veterans Affairs, Management of Stroke Rehabilitation Work Group. VA/DoD clinical practice guideline for the management of stroke rehabilitation, version 4.0. (2019). [170 p.]. Available from: <https://www.healthquality.va.gov/guidelines/Rehab/stroke/>.
10. Guideline Development Group (GRG). Stroke in childhood: clinical guideline for diagnosis, management, and rehabilitation (2017) Royal College of Paediatrics and Child Health and the Stroke Association. [197 p.]. Available from: <https://www.rcpch.ac.uk/resources/stroke-in-childhood-clinical-guideline>.
11. Habilitation/habilitative services [Internet] Healthcare.gov: U.S. Centers for Medicare & Medicaid Services; [cited 2021 April 8]. Available from: <https://www.healthcare.gov/glossary/habilitative-habilitation-services/>.
12. Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association Management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American Thyroid Association Guidelines Task Force on thyroid nodules and differentiated thyroid cancer. *Thyroid*. 2016;26(1):1-133.
13. Irish J, Kim J, Waldron J, et al. Organizational guidance for the care of patients with head and neck cancer in Ontario. Guideline 5-3ORG version 2. (2019) Toronto, ON: Cancer Care Ontario; Program in Evidence-Based Care (PEBC). Available from: <https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/58936>.
14. Kang PB, Morrison L, Iannaccone ST, et al. Evidence-based guideline summary: evaluation, diagnosis, and management of congenital muscular dystrophy. Report of the Guideline Development Subcommittee of the American Academy of Neurology and the Practice Issues Review Panel of the American Association of Neuromuscular & Electrodiagnostic Medicine. (2015 [Reaffirmed July 21, 2018]) Minneapolis, MN: American Academy of Neurology. [12 p.]. Available from: <https://www.aan.com/Guidelines/home/GuidelineDetail/683>.
15. Marshall S, Bayley M, S. M, et al. Guideline for concussion/mild traumatic brain injury and prolonged symptoms: 3rd edition for adults over 18 years of age [Internet] Toronto, ON: Ontario Neurotrauma Foundation; 2018 [cited 2021 May 7]. Available from: <https://onf.org/knowledge-mobilization/acquired-brain-injury/guidelines-for-concussion-and-moderate-to-severe-traumatic-brain-injury/>.
16. Miller RG, Jackson CE, Kasarskis EJ, et al. Practice parameter update: the care of the patient with amyotrophic lateral sclerosis: multidisciplinary care, symptom management, and cognitive/behavioral impairment (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. (2009 [Reaffirmed on April 30, 2014, April 25, 2017, and January 11, 2020]) Minneapolis, MN: American Academy of Neurology. [8 p.]. Available from: <https://www.aan.com/Guidelines/home/GuidelineDetail/371>.
17. National Institute for Health and Care Excellence (NICE). Cerebral palsy in under 25s: assessment and management (NG62). (2017). [48 p.]. Available from: <https://www.nice.org.uk/guidance/ng62>.
18. National Institute for Health and Care Excellence (NICE). Developmental follow-up of children and young people born preterm (NG72). (2017). [30 p.]. Available from: <https://www.nice.org.uk/guidance/ng72>.
19. National Institute for Health and Care Excellence (NICE). Suspected neurological conditions: recognition and referral (NG127). (2019 [Updated July 4 2019]). [77 p.]. Available from: <https://www.nice.org.uk/guidance/ng127>.
20. National Institutes of Health. U.S. National Library of Medicine. MedlinePlus. Rehabilitation [Internet] [Updated Dec 9 2020] [cited 2021 May 5]. Available from: <https://medlineplus.gov/rehabilitation.html#summary>.
21. Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2019;50(12):e344-e418.
22. Reed N, Zemek R, Dawson J, et al. Living guideline for diagnosing and managing pediatric concussion [Internet] Toronto, ON: Ontario Neurotrauma Foundation; 2019 [cited 2021 May 7]. Available from: <https://onf.org/knowledge-mobilization/acquired-brain-injury/guidelines-for-concussion-and-moderate-to-severe-traumatic-brain-injury/>.
23. Rinaldi B, Vaisfeld A, Amarri S, et al. Guideline recommendations for diagnosis and clinical management of Ring14 syndrome- first report of an ad hoc task force. *Orphanet journal of rare diseases*. 2017;12(1):[11 p.].
24. Royal College of Physicians. National clinical guideline for stroke. 5th edition. (2016) London, United Kingdom: Royal College of Physicians [178 p.]. Available from: <https://www.strokeaudit.org/Guideline/Full-Guideline.aspx>.
25. Scottish Intercollegiate Guidelines Network (SIGN). Assessment, diagnosis and interventions for autism spectrum disorders: a national clinical guideline [Publication no. 145]. (2016) Edinburgh, Scotland: Scottish Intercollegiate Guidelines Network; NHS Quality Improvement Scotland. [83 p.]. Available from: <https://www.sign.ac.uk/our-guidelines/assessment-diagnosis-and-interventions-for-autism-spectrum-disorders/>.
26. Stachler RJ, Francis DO, Schwartz SR, et al. Clinical practice guidelines hoarseness (dysphonia) (update). *Otolaryngol Head Neck Surg*. 2018;158(1 Suppl):S1-S42.

27. Stroke Foundation. Clinical guidelines for stroke management [Internet] Melbourne, Australia©2021 [cited 2021 May 12]. Available from: <https://informme.org.au/en/Guidelines/Clinical-Guidelines-for-Stroke-Management>.
28. Winstein CJ, Stein J, Arena R, et al. Guidelines for adult stroke rehabilitation and recovery: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2016;47(6):e98-e169.
29. Working Group. Consensus-based care recommendations for adults with myotonic dystrophy type 1. (2018) Oakland, CA: Myotonic Dystrophy Foundation. [56 p.]. Available from: <https://www.myotonic.org/toolkits-publications>.
30. Zapata Aldana E, Nathalie Angeard N, Ashizawa A, et al. Consensus-based care recommendations for children with myotonic dystrophy type 1. (2019) Oakland, CA: Myotonic Dystrophy Foundation. [56 p.]. Available from: <https://www.myotonic.org/toolkits-publications>.

Adjunctive & Alternative Treatments Physical Therapy and Occupational Therapy Adjunctive Treatments

Codes

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

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0552T	Low-level laser therapy, dynamic photonic and dynamic thermokinetic energies, provided by a physician or other qualified health care professional
20560	Needle insertion(s) without injection(s), 1 or 2 muscle(s)
20561	Needle insertion(s) without injection(s), 3 or more muscle(s)
90901	Biofeedback training by any modality (when done for medically necessary indications)
90912	Biofeedback training for bowel or bladder control, initial 15 minutes
90913	Biofeedback training for bowel or bladder control, additional 15 minutes
92526	Treatment of swallowing and/or oral feeding function
92605	Evaluation and prescription of non-speech-generating and alternative communication device first hour
92606	Therapeutic services for use of non-speech-generating device with programming
92607	Evaluation of patient with prescription of speech-generating and alternative communication device
92608	Evaluation and prescription of speech-generating and alternative communication device
92609	Therapeutic services for use of speech-generating device with programming
92610	Evaluation of swallowing function
92611	Fluoroscopic and video recorded motion evaluation of swallowing function
92618	Evaluation and prescription of non-speech-generating and alternative communication device
94667	Demonstration and/or evaluation of manual maneuvers to chest wall to assist movement of lung secretions
94668	Manual maneuvers to chest wall to assist movement of lung secretions
96001	Three-dimensional, video-taped, computer-based gait analysis during walking
97010	Application of hot or cold packs to 1 or more areas
97012	Application of mechanical traction to 1 or more areas
97014	Application of electrical stimulation to 1 or more areas, unattended by therapist
97016	Application of blood vessel compression or decompression device to 1 or more areas
97018	Application of hot wax bath to 1 or more areas
97022	Application of whirlpool therapy to 1 or more areas
97024	Application of heat wave therapy to 1 or more areas
97026	Application of low energy heat (infrared) to 1 or more areas
97028	Application of ultraviolet light to 1 or more areas
97032	Application of electrical stimulation to 1 or more areas
97033	Application of medication through skin using electrical current, each 15 minutes
97034	Therapeutic hot and cold baths to 1 or more areas, each 15 minutes
97035	Application of ultrasound to 1 or more areas, each 15 minutes

97036	Physical therapy treatment to 1 or more areas, Hubbard tank, each 15 minutes
97039	Unlisted modality (specify type and time if constant attendance)
97110	Therapeutic exercise to develop strength, endurance, range of motion, and flexibility, each 15 minutes
97112	Therapeutic procedure to re-educate brain-to-nerve-to-muscle function, each 15 minutes
97113	Water pool therapy with therapeutic exercises to 1 or more areas, each 15 minutes
97116	Walking training to 1 or more areas, each 15 minutes
97124	Therapeutic massage to 1 or more areas, each 15 minutes
97129	One-on-one therapeutic interventions focused on thought processing and strategies to manage activities
97130	each additional 15 minutes (list separately in addition to code for primary procedure)
97139	Unlisted therapeutic procedure (specify)
97140	Manual (physical) therapy techniques to 1 or more regions, each 15 minutes
97150	Therapeutic procedures in a group setting
97161	Evaluation of physical therapy, typically 20 minutes
97162	Evaluation of physical therapy, typically 30 minutes
97163	Evaluation of physical therapy, typically 45 minutes
97164	Re-evaluation of physical therapy, typically 20 minutes
97165	Evaluation of occupational therapy, typically 30 minutes
97166	Evaluation of occupational therapy, typically 45 minutes
97167	Evaluation of occupational therapy established plan of care, typically 60 minutes
97168	Re-evaluation of occupational therapy established plan of care, typically 30 minutes
97530	Therapeutic activities to improve function, with one-on-one contact between patient and provider, each 15 minutes
97533	Sensory technique to enhance processing and adaptation to environmental demands, each 15 minutes
97535	Self-care or home management training, each 15 minutes
97537	Community or work reintegration training, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work hardening or conditioning, first 2 hours
97546	Work hardening or conditioning
97750	Physical performance test or measurement with report, each 15 minutes
97755	Assistive technology assessment to enhance functional performance, each 15 minutes
97760	Training in use of orthotics (supports, braces, or splints) for arms, legs and/or trunk, per 15 minutes
97761	Training in use of prosthesis for arms and/or legs, per 15 minutes
97763	Management and/or training in use of orthotics (supports, braces, or splints) for arms, legs, and/or trunk, per 15 minutes
G0281	Electrical stimulation, for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers, and venous stasis ulcers
G0282	Electrical stimulation, to one or more areas, for wound care
G0283	Electrical Stimulation, to one or more areas, for other than wound care
G0295	Electromagnetic therapy, one or more areas, for wound care
G0329	Electromagnetic therapy, to one or more areas for chronic stage III and stage IV pressure ulcers, arterial ulcers, diabetic ulcers and venous stasis ulcers
S8940	Therapeutic horseback riding, per session
S8948	Treatment with low level laser (phototherapy) each 15 minutes
S8950	Complex lymphedema therapy, each 15 minutes
S8990	Physical or manipulative therapy for maintenance
S9090	Vertebral axial decompression (lumbar traction), per session

Modifiers

96	Habilitative Services
97	Needle insertion(s) without injection(s), 1 or 2 muscle(s)

ICD-10 Diagnosis

Refer to the ICD-10 CM Manual

General Information

Background

Physical therapy and occupational therapy adjunctive treatments are distinct, therapeutic interventions or methods used by therapists to aid in their treatment of patients. Adjunctive treatments are primarily but not exclusively passive measures which are mechanical, electrical, magnetic or thermal in nature. They must be used as a complement to a more comprehensive and active therapy program and may be performed by both qualified providers of occupational and physical therapy depending on the indication. Examples include diathermy, dry needling, and hippotherapy. Performance of all services is subject to state regulations including therapy practice acts and should be rendered in accordance with those.

Scope

The purpose of this guideline is to establish appropriate use criteria for specific physical therapy and occupational therapy adjunctive treatments that complement the conceptual principles and documentation requirements established by the parent physical or occupational therapy guidelines.

Clinical indications for the appropriate use of services in these guidelines are intended to be limited to those that would be within the treatment scope of practice for qualified allied health services providers specifically physical and occupational therapists. Medical indications for the appropriate use of physical and occupational therapy adjunctive treatments are out of scope of these guidelines.

Indications and criteria for the appropriate acquisition of durable medical equipment (DME) used in provision of adjunctive therapies is also out of scope.

Therapies deemed to be duplicative (see definition in the parent physical or occupational therapy guidelines) will be considered not medically necessary.

Unless specifically stated in the document, these guidelines do not express any opinion about the appropriate scope of practice for the practitioners who deliver these services and should not be put forth as having such an opinion.

Definitions

- **Active Therapeutic Movement®** – device-based treatment that aims to train patients to move in ways that are pain free and to activate and strengthen core stabilization muscles, facilitating the coordination of body movement by developing spatial and kinesthetic awareness of body-segment relationships
- **Diathermy** – an electromagnetic modality used to apply superficial heat to injured tissues in order to increase blood flow and reduce swelling. It is typically used to treat muscle spasms, joint stiffness, muscle and joint pain.
- **Dry needling** – a skilled intervention that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments. Dry needling is a technique used to treat dysfunctions in skeletal muscle, fascia, and connective tissue, and diminish persistent peripheral nociceptive input, and reduce or restore impairments of body structure and function leading to improved activity and participation (source: APTA).

- **Elastic taping** – the application of specialized adhesive tape to specific body parts to lift the skin (microscopically), commonly with the intent of increasing proprioceptive awareness/feedback, reducing swelling and inflammation, improving blood flow, or facilitating lymphatic drainage.
- **Electrical stimulation, unattended** – treatment modality whereby an electrical current is delivered to the body with the use of a stimulator device and electrodes. Unattended refers to the situation in which the provider may be present for and involved in the set-up but whose presence is not required during the administration of the treatment.
- **Gait analysis, instrumented** – use of dynamic electromyography (EMG), biofeedback, computers, gait labs or other devices to evaluate patients' walking patterns
- **Hippotherapy** – a form of therapy that involves horseback riding under supervised and controlled circumstances, typically for children with neuromotor and/or psychologic disabilities. It is often intended to improve gross motor function, balance, muscle spasticity, and/or cognitive function.
- **Hot/Cold packs** – application of warm/hot or cold packs to a body part for the purposes of conductive treatment of superficial tissues. Heat is commonly used to increase blood flow or mobility. Cold is often used to reduce pain, inflammation and swelling.
- **Interactive metronome®** – assessment and training tool that measures & improves Neurotiming, or the synchronization of neural impulses within key brain networks for cognitive, communicative, sensory & motor performance (source: www.interactivemetronome.com)
- **Iontophoresis** – the use of an electrical gradient to deliver medicine, typically anti-inflammatory agents, into the body via the skin.
- **Lee Silverman Voice Treatment BIG®** – proprietary program of intensive physical and occupational therapy of at least one month duration involving large, full-body exercises to improve functional movement and self-care tasks of people with Parkinson's disease and other neurological conditions. It requires company-certification of providers.
- **Low level laser therapy** – the use of a laser or light to enhance tissue repair and/or reduce inflammation and pain.
- **Mechanical traction for spinal disorders** – instrumented-assisted treatment used to distract the spine and relieve axial pressure from a particular spinal region (primarily cervical and lumbar) in patients with painful spinal-related disorders (e.g., herniated discs, radiculopathy)
- **MEDEK (Dynamic Method of Kinetic Stimulation)®** – also known as Cuevas MEDEK Exercises (CME)®, "is a psychomotor therapy based on dynamic challenging exercises [sic], manually applied for children affected on their developmental motor functions."
- **Motion analysis, instrumented** – use of dynamic electromyography (EMG), biofeedback, computers, motion labs or other devices to evaluate patients' movement patterns
- **Phonophoresis** – the use of ultrasound to deliver medicine, typically anti-inflammatory agents, into the body via the skin.
- **Sensory integration** – technique used to enhance sensory processing and promote adaptive responses to environmental demands (per APTA/Optom coding guide), such as use of weighted vests.
- **Therapeutic magnetic resonance** – the use of pulsed electromagnetic fields (PEMF) at low frequency and low intensity to reduce inflammation and arthritic pain.
- **Ultraviolet phototherapy** – application of ultraviolet light to a patient's skin, primarily for the treatment of skin disorders and wound healing
- **Vasopneumatic compression devices** – devices applied to a joint as a means of delivering cryotherapy to reduce swelling and inflammation after surgery or injury, or applied to a limb for the treatment of lymphedema
- **Whirlpool** – a warm water pool in which the water is continuously moving and into which the patient or a specific body part is submerged.

- **Whole body advanced exercise** – Total body-focused structured exercise intended to optimize a patient's preoperative general physical state in order to maximize their post-operative recovery.
- **Whole body vibration** – use of a vibrating platform on which the patient sits or stands while doing prescribed exercises.

Clinical Indications

Physical therapy and occupational therapy adjunctive treatments are considered to be **MEDICALLY NECESSARY** when a clinically significant net benefit above and beyond conventional therapies has been determined from currently available evidence. The provision of such adjunctive treatments must also meet the Caelon clinical criteria for the rendering of physical or occupational therapy and is limited to the clinical indications noted below, documentation of which must be in the medical record.

Sensory Integration Therapy

Sensory integration therapy is considered medically necessary for patients diagnosed with Autism Spectrum Disorders (ASD).

Note: Sensory integration therapy is considered not medically necessary for all other clinical scenarios (see Exclusions).

Additional services

Other services covered by CPT codes listed in the coding section which are not better accounted for by a more specific service or indication listed in this guideline may be considered medically necessary when **ALL** of the following criteria are met:

- The anticipated benefit of the recommended intervention outweighs any potential harms that may result such that there is a clinically significant, net benefit.
- Current literature and/or standards of rehabilitative or habilitative practice support that the recommended intervention offers the greatest net benefit among competing alternatives.

Note: for the purposes of this criterion, "current literature" typically requires a minimum of one well-designed randomized controlled trial that demonstrates clinically significant net benefit relative to or as a supplement to the current standard of care.

- Based on the clinical evaluation, current literature, and standards of rehabilitative or habilitative practice, there exists a reasonable likelihood that the intervention will directly or indirectly lead to an improved outcome for the patient.

Exclusions

The following physical therapy and occupational therapy adjunctive treatments are considered to be **not medically necessary** because a clinically significant net benefit above and beyond conventional therapies could not be determined based on currently available evidence, evidence expressly demonstrated there was not a net benefit, and/or it is a non skilled service.

- **Active Therapeutic Movements®** is considered not medically necessary in all clinical scenarios.
- **Diathermy** is considered not medically necessary in all clinical scenarios.
- **Dry needling** is considered not medically necessary in all clinical scenarios.
- **Elastic taping** is considered not medically necessary in all clinical scenarios.
- **Electrical stimulation, unattended** is considered not medically necessary in all clinical scenarios.
- **Gait analysis, instrumented** is considered not medically necessary in all clinical scenarios.

- **Hippotherapy** is considered not medically necessary in all clinical scenarios.
- **Hot and/or cold pack** is considered not medically necessary in all clinical scenarios .
- **Interactive metronome®** is considered not medically necessary in all clinical indications.
- **Iontophoresis** is considered not medically necessary in all clinical scenarios.
- **Lee Silverman Voice Treatment BIG® is considered not medically necessary in all clinical scenarios.**
- **Low level laser** is considered not medically necessary in all clinical scenarios.
- **Mechanical traction for spinal disorders** is considered not medically necessary in all clinical scenarios.
- **MEDEK® (Dynamic Method of Kinetic Stimulation), Cuevas MEDEK Exercises (CME)®** is considered not medically necessary in all clinical scenarios.
- **Motion analysis, instrumented** is considered not medically necessary in all clinical scenarios.
- **Phonophoresis** is considered not medically necessary in all clinical scenarios.
- **Sensory integration therapy** is considered not medically necessary in all other clinical scenarios. (see Indications)
- **Therapeutic magnetic resonance** is considered not medically necessary in all clinical scenarios.
- **Ultraviolet phototherapy** is considered not medically necessary in all clinical scenarios.
- **Vasopneumatic compression device** is considered not medically necessary in all clinical scenarios .
- **Whirlpool** is considered not medically necessary in all clinical scenarios.
- **Whole body advanced exercise** is considered not medically necessary in all clinical scenarios.
- **Whole body vibration** is considered not medically necessary in all clinical scenarios.

References

1. Abdul Alim M, Domeij-Arverud E, Nilsson G, et al. Achilles tendon rupture healing is enhanced by intermittent pneumatic compression upregulating collagen type I synthesis. *Knee Surg Sports Traumatol Arthrosc.* 2018;26(7):2021-9.
2. Abraha I, Rimland JM, Trotta FM, et al. Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop series. *BMJ open.* 2017;7(3):e012759.
3. Abu Dabrh AM, Steffen MW, Asi N, et al. Nonrevascularization-based treatments in patients with severe or critical limb ischemia. *Journal of vascular surgery.* 2015;62(5):1330-9.e13.
4. Ahmed H, Shaphe Md A, Iqbal A, et al. Effect of Trunk Stabilization Exercises using a Gym Ball with or without Electromyography-Biofeedback in Patients with Chronic Low Back Pain: An Experimental Study. *Physikalische Medizin Rehabilitationsmedizin Kurortmedizin.* 2016;26(2):79-83.
5. Ahn JY, Kim H, Park CB. Effects of Whole-Body Vibration on Upper Extremity Function and Grip Strength in Patients with Subacute Stroke: A Randomised Single-Blind Controlled Trial. *Occup Ther Int.* 2019;2019:5820952.
6. Al-Boloushi Z, Lopez-Royo MP, Arian M, et al. Minimally invasive non-surgical management of plantar fasciitis: A systematic review. *J Bodywork Mov Ther.* 2019;23(1):122-37.
7. Albornoz-Cabello M, Maya-Martin J, Dominguez-Maldonado G, et al. Effect of interferential current therapy on pain perception and disability level in subjects with chronic low back pain: A randomized controlled trial. *Clinical rehabilitation.* 2017;31(2):242-9.
8. Albornoz-Cabello M, Pérez-Mármol JM, Barrios Quinta CJ, et al. Effect of adding interferential current stimulation to exercise on outcomes in primary care patients with chronic neck pain: a randomized controlled trial. *Clinical rehabilitation.* 2019;33(9):1458-67. Epub 2019/04/23.
9. Ali SS, Ahmed SI, Khan M, et al. Comparing the effects of manual therapy versus electrophysical agents in the management of knee osteoarthritis. *Pak.* 2014;27(4 Suppl):1103-6.

10. Al-Jabri T, Tan JYQ, Tong GY, et al. The role of electrical stimulation in the management of avascular necrosis of the femoral head in adults: a systematic review. *BMC musculoskeletal disorders*. 2017;18(1):319.
11. Almeida CC, Silva V, Júnior GC, et al. Transcutaneous electrical nerve stimulation and interferential current demonstrate similar effects in relieving acute and chronic pain: a systematic review with meta-analysis. *Braz J Phys Ther*. 2018;22(5):347-54. Epub 2018/02/11.
12. Almeida N, Paladini LH, Korelo RG, et al. Immediate Effects of the Combination of Interferential Therapy Parameters on Chronic Low Back Pain: A Randomized Controlled Trial. *Pain practice : the official journal of World Institute of Pain*. 2020;20(6):615-25. Epub 2020/03/29.
13. Al-Qubaeissy KY, Fatoye FA, Goodwin PC, et al. The Effectiveness of Hydrotherapy in the Management of Rheumatoid Arthritis: A Systematic Review. *Musculoskelet*. 2013;11(1):3-18.
14. Altan, L., M. Kasapoğlu Aksoy, and E. Kösegil Öztürk, Efficacy of diclofenac & thiocolchioside gel phonophoresis comparison with ultrasound therapy on acute low back pain; a prospective, double-blind, randomized clinical study. *Ultrasonics*, 2019. 91: p. 201-205.
15. Alvarez OM, Wendelken ME, Markowitz L, et al. Effect of High-pressure, Intermittent Pneumatic Compression for the Treatment of Peripheral Arterial Disease and Critical Limb Ischemia in Patients Without a Surgical Option. *Wounds : a compendium of clinical research and practice*. 2015;27(11):293-301.
16. Anwer S, Quddus N, Miraj M, et al. Effectiveness of electromyographic biofeedback training on quadriceps muscle strength in osteoarthritis of knee. *Hong Kong Physiotherapy Journal*. 2011;29(2):86-93.
17. Arias-Buria, J.L., et al., Cost-effectiveness Evaluation of the Inclusion of Dry Needling into an Exercise Program for Subacromial Pain Syndrome: Evidence from a Randomized Clinical Trial. *Pain Med*, 2018.
18. Arias-Buria, J.L., et al., Exercises and Dry Needling for Subacromial Pain Syndrome: A Randomized Parallel-Group Trial. *J Pain*, 2017. 18(1): p. 11-18.
19. Asiri F, Tedla JS, Alshahrani MS, et al. Effects of patient-specific three-dimensional lumbar traction on pain and functional disability in patients with lumbar intervertebral disc prolapse. *Niger J Clin Pract*. 2020;23(4):498-502.
20. Aukee P, Immonen P, Penttinen J, et al. Increase in pelvic floor muscle activity after 12 weeks' training: a randomized prospective pilot study. *Urology*. 2002;60(6):1020-3; discussion 3-4.
21. Awad LN, Reisman DS, Pohlig RT, et al. Reducing The Cost of Transport and Increasing Walking Distance After Stroke: A Randomized Controlled Trial on Fast Locomotor Training Combined With Functional Electrical Stimulation. *Neurorehabil Neural Repair*. 2016;30(7):661-70.
22. Awotidebe AW, Inglis-Jassiem G, Young T. Does Low-level Laser Therapy Provide Additional Benefits to Exercise in Patients with Shoulder Musculoskeletal Disorders? A Meta-analysis of Randomised Controlled Trials. *Ortop*. 2019;21(6):407-16.
23. Aydin, T., et al., The Effectiveness of Dry Needling and Exercise Therapy in Patients with Dizziness Caused By Cervical Myofascial Pain Syndrome; Prospective Randomized Clinical Study. *Pain Med*, 2018.
24. Azatcam G, Atalay NS, Akkaya N, et al. Comparison of effectiveness of Transcutaneous Electrical Nerve Stimulation and Kinesio Taping added to exercises in patients with myofascial pain syndrome. *J Back Musculoskeletal Rehabil*. 2017;30(2):291-8.
25. Babu AS, Mathew E, Danda D, et al. Management of patients with fibromyalgia using biofeedback: a randomized control trial. *Indian J Med Sci*. 2007;61(8):455-61.
26. Barrett CL, Mann GE, Taylor PN, et al. A randomized trial to investigate the effects of functional electrical stimulation and therapeutic exercise on walking performance for people with multiple sclerosis. *Multiple Sclerosis*. 2009;15(4):493-504.
27. Barton B, Schnitz, A, Smith, I, et al. A systematic review of sensory-based treatments for children with disabilities. *Research in developmental disabilities*. 2015;37:64-80.
28. Başkurt, F, Ozcan A, Algun C. Comparison of effects of phonophoresis and iontophoresis of naproxen in the treatment of lateral epicondylitis. *Clin Rehabil*, 2003. 17(1): p. 96-100.
29. Beinotti F, Correia N, Borges G. Effects of horseback riding therapy on quality of life in patients post stroke. *Topics in stroke rehabilitation*. 2013;20(3):226-32.
30. Bertotto A, Schwartzman R, Uchoa S, et al. Effect of electromyographic biofeedback as an add-on to pelvic floor muscle exercises on neuromuscular outcomes and quality of life in postmenopausal women with stress urinary incontinence: A randomized controlled trial. *Neurourol Urodyn*. 2017;36(8):2142-7.
31. Biajar A, Mollayeva T, Sokoloff S, et al. Assistive technology to enable sleep function in patients with acquired brain injury: Issues and opportunities. *British Journal of Occupational Therapy*. 2017;80(4):225-49.

32. Bidonde J, Busch AJ, van der Spuy I, et al. Whole body vibration exercise training for fibromyalgia. *The Cochrane database of systematic reviews*. 2017;9:Cd011755.
33. Bier JD, Scholten-Peeters WGM, Staal JB, et al. Clinical Practice Guideline for Physical Therapy Assessment and Treatment in Patients With Nonspecific Neck Pain. *Physical therapy*. 2018;98(3):162-71.
34. Bieuzen F, Bleakley CM, Costello JT. Contrast water therapy and exercise induced muscle damage: a systematic review and meta-analysis. *PLoS ONE*. 2013;8(4):e62356.
35. Binder AI. Neck pain. *Clin Evid (Online)*. 2008;04:04.
36. Bisset L, Paungmali A, Vicenzino B, et al., A systematic review and meta-analysis of clinical trials on physical interventions for lateral epicondylalgia. *Br J Sports Med*, 2005. 39(7): p. 411-22; discussion 411-22.
37. Bistolfi A, Zanovello J, Ferracini R, et al. Evaluation of the Effectiveness of Neuromuscular Electrical Stimulation After Total Knee Arthroplasty: A Meta-Analysis. *American Journal of Physical Medicine and Rehabilitation*. 2018;97(2):123-30.
38. Blanpied PR, Gross AR, Elliott JM, et al. Neck Pain: Revision 2017. *The Journal of orthopaedic and sports physical therapy*. 2017;47(7):A1-a83.
39. Bleakley C, McDonough S, MacAuley D. The Use of Ice in the Treatment of Acute Soft-Tissue Injury: A Systematic Review of Randomized Controlled Trials. *Am J Sports Med*. 2004;32(1):251-61. PMID: 38141451
40. Bodison SCP, L. D. Specific Sensory Techniques and Sensory Environmental Modifications for Children and Youth With Sensory Integration Difficulties: A Systematic Review. *BioMed research international*. 2018;72(1):7201190040p1-p11.
41. Bono CM, Ghiselli G, Gilbert TJ, et al. An evidence-based clinical guideline for the diagnosis and treatment of cervical radiculopathy from degenerative disorders. *Spine J*. 2011;11(1):64-72.
42. Boyaci A, Tutoglu A, Boyaci N, et al. Comparison of the efficacy of ketoprofen phonophoresis, ultrasound, and short-wave diathermy in knee osteoarthritis. *Rheumatol Int*, 2013. 33(11): p. 2811-8.
43. Boyles, R, Fowler R, Ramsey D, et al. Effectiveness of trigger point dry needling for multiple body regions: a systematic review. *J Man Manip Ther*, 2015. 23(5): p. 276-93.
44. Bradley L, Hart BB, Mandana S, et al. Electromyographic biofeedback for gait training after stroke. *Clinical rehabilitation*. 1998;12(1):11-22.
45. Bremner CB, Holcomb WR, Brown CD, et al. The Effectiveness of Neuromuscular Electrical Stimulation in Improving Voluntary Activation of the Quadriceps: A Critically Appraised Topic. *J Sport Rehabil*. 2017;26(4):316-23.
46. Brennan, K, Allen B, Maldonado Y. Dry Needling Versus Cortisone Injection in the Treatment of Greater Trochanteric Pain Syndrome: A Noninferiority Randomized Clinical Trial. *J Orthop Sports Phys Ther*, 2017. 47(4): p. 232-239.
47. Bunketorp-Kall L, Nilsson M, Blomstrand C. Multimodal rehabilitation in the late phase after stroke enhances the life situation of informal caregivers. *Topics in stroke rehabilitation*. 2018;25(3):161-7.
48. Bunketorp-Kall L, Samuelsson H, Pekny T, et al. Long-Term Improvements After Multimodal Rehabilitation in Late Phase After Stroke: A Randomized Controlled Trial. *Stroke*. 2017;48(7):1916-24.
49. Burch F, Tarro J, Greenberg J, et al. Evaluating the benefits of patterned stimulation in the treatment of osteoarthritis of the knee. A multi-center, randomized, single-blind, controlled study with an independent masked evaluator. *Osteoarthritis and Cartilage*. 2008;16(8):865-72.
50. Bynum R, Garcia O, Herbst E, et al. Effects of dry needling on spasticity and range of motion: A systematic review. *Am J Occup Ther*. 2021;75 (1) (no pagination)(7501205030).
51. Cagnie B, Castelein B, Pollie F, et al. Evidence for the Use of Ischemic Compression and Dry Needling in the Management of Trigger Points of the Upper Trapezius in Patients with Neck Pain: A Systematic Review. *Am J Phys Med Rehabil*, 2015. 94(7): p. 573-83.
52. Calvo-Lobo C, Pacheco-da-Costa S, Martinez-Martinez J, et al. Dry Needling on the Infraspinatus Latent and Active Myofascial Trigger Points in Older Adults With Nonspecific Shoulder Pain: A Randomized Clinical Trial. *J Geriatr Phys Ther*, 2018. 41(1): p. 1-13.
53. Campa-Moran I, Rey-Gudin E, Fernandez-Carnero J, et al. Comparison of Dry Needling versus Orthopedic Manual Therapy in Patients with Myofascial Chronic Neck Pain: A Single-Blind, Randomized Pilot Study. *Pain Res Treat*, 2015. 2015: p. 327307.
54. Casanueva B, Rivas P, Rodero B, et al. Short-term improvement following dry needle stimulation of tender points in fibromyalgia. *Rheumatol Int*, 2014. 34(6): p. 861-6.
55. Case-Smith J, Weaver L, Fristad M. A systematic review of sensory processing interventions for children with autism spectrum disorders. *Autism : the international journal of research and practice*. 2015;19(2):133-48.

56. Castro-Sánchez A, García López H, Fernández Sánchez M, et al. Improvement in clinical outcomes after dry needling versus myofascial release on pain pressure thresholds, quality of life, fatigue, pain intensity, quality of sleep, anxiety, and depression in patients with fibromyalgia syndrome. *Disabil Rehabil.* 2019;41(19):2235-46. Epub 2018/04/24.
57. Castro-Sánchez A, García-López H, Mataran-Penarrocha G, et al. Effects of Dry Needling on Spinal Mobility and Trigger Points in Patients with Fibromyalgia Syndrome. *Pain Physician*, 2017. 20(2): p. 37-52.
58. Celik D, Karaborklu Argut S, Coban O, et al. The clinical efficacy of kinesio taping in shoulder disorders: a systematic review and meta analysis. *Clinical rehabilitation.* 2020;34(6):723-40.
59. Cerezo-Tellez E, Torres-Lacomba M, et al., Dry needling of the trapezius muscle in office workers with neck pain: a randomized clinical trial. *J Man Manip Ther*, 2016. 24(4): p. 223-32.
60. Cerezo-Tellez E, Torres-Lacomba M, et al. Effectiveness of dry needling for chronic nonspecific neck pain: a randomized, single-blinded, clinical trial. *Pain*, 2016. 157(9): p. 1905-17.
61. Cetin N, Aytar A, Atalay A, et al. Comparing hot pack, short-wave diathermy, ultrasound, and TENS on isokinetic strength, pain, and functional status of women with osteoarthritic knees: a single-blind, randomized, controlled trial. *American journal of physical medicine & rehabilitation.* 2008;87(6):443-51.
62. Chacon-Mikahil MPT, Luther A, Gabriel J, et al. The Impact of Total Body Prehabilitation on Post-Operative Outcomes After Major Abdominal Surgery: A Systematic Review. *Nutrients.* 2018;42(9):2781-91.
63. Chang W, Chen F, Lee C, et al. Effects of Kinesio Taping versus McConnell Taping for Patellofemoral Pain Syndrome: A Systematic Review and Meta-Analysis. *Evid Based Complement Alternat Med.* 2015;2015:471208.
64. Charles D, Hudgins T, MacNaughton J, et al. A systematic review of manual therapy techniques, dry cupping and dry needling in the reduction of myofascial pain and myofascial trigger points. *J Bodywork Mov Ther.* 2019;23(3):539-46.
65. Chen L, Zhou Z, Li Y, et al. Transcutaneous Electrical Nerve Stimulation in Patients With Knee Osteoarthritis: Evidence From Randomized-controlled Trials. *The Clinical journal of pain.* 2016;32(2):146-54.
66. Chen R, Li X, Guan L, et al. Effectiveness of neuromuscular electrical stimulation for the rehabilitation of moderate-to-severe COPD: a meta-analysis. *Int J Chron Obstruct Pulmon Dis.* 2016;11:2965-75.
67. Cheng Y, Hsu C, Lin Y. The effect of mechanical traction on low back pain in patients with herniated intervertebral disks: a systemic review and meta-analysis. *Clinical rehabilitation.* 2020;34(1):13-22. Epub 2019/08/29.
68. Cherian J, Kapadia B, Bhave A, et al. Use of Transcutaneous Electrical Nerve Stimulation Device in Early Osteoarthritis of the Knee. *J Knee Surg.* 2015;28(4):321-7.
69. Chou R, Huffman L, American College of Physicians, et al. Nonpharmacologic therapies for acute and chronic low back pain: A review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. *Annals of Internal Medicine.* 2007;147(7):492-504.
70. Clijisen R, Brunner A, Barbero M, Clarys P, Taeymans J. Effects of low-level laser therapy on pain in patients with musculoskeletal disorders: a systematic review and meta-analysis. *Eur J Phys Rehabil Med.* 2017;53(4):603-610.
71. Colborne G, Olney S, Griffin M. Feedback of ankle joint angle and soleus electromyography in the rehabilitation of hemiplegic gait. *Archives of Physical Medicine & Rehabilitation.* 1993;74(10):1100-6.
72. Colorado Division of Workers' Compensation. Chronic pain disorder medical treatment guideline. Denver (CO): Colorado Division of Workers' Compensation; 2017. p. 178.
73. Colorado Division of Workers' Compensation. Lower extremity injury medical treatment guidelines. Denver (CO): Colorado Division of Workers' Compensation; 2016. p. 211.
74. Corvillo I, Varela E, Armijo F, et al. Efficacy of aquatic therapy for multiple sclerosis: a systematic review. *European journal of physical and rehabilitation medicine.* 2017;53(6):944-52.
75. Costello JT, Donnelly AE. Cryotherapy and joint position sense in healthy participants: a systematic review. [Review] [57 refs]. *J Athlet Train.* 2010;45(3):306-16. PMID: 20446845
76. Cotchett M, Landorf K, Munteanu S. Effectiveness of dry needling and injections of myofascial trigger points associated with plantar heel pain: a systematic review. *J Foot Ankle Res*, 2010. 3: p. 18.
77. Couch KS, Corbett L, Gould L, et al. The International Consolidated Venous Ulcer Guideline Update 2015: Process Improvement, Evidence Analysis, and Future Goals. *Ostomy/wound management.* 2017;63(5):42-6.
78. Couto, C., et al., Paraspinal stimulation combined with trigger point needling and needle rotation for the treatment of myofascial pain: a randomized sham-controlled clinical trial. *Clin J Pain*, 2014. 30(3): p. 214-23.
79. Cuenca Zaldivar JN, Calvo S, Bravo-Esteban E, et al. Effectiveness of dry needling for upper extremity spasticity, quality of life and function in subacute phase stroke patients. *Acupuncture in Medicine.* 2020.

80. Cui XJ, Yao M, Ye XL, et al. Shi-style cervical manipulations for cervical radiculopathy: A multicenter randomized-controlled clinical trial. *Medicine (Baltimore)*. 2017;96(31):e7276.
81. Cullen N, Bayley M, Bayona N, et al. Management of heterotopic ossification and venous thromboembolism following acquired brain injury. *Brain Injury*. 2007;21(2):215-30.
82. Daly JJ, Roenigk K, Holcomb J, et al. A randomized controlled trial of functional neuromuscular stimulation in chronic stroke subjects. *Stroke*. 2006;37(1):172-8.
83. Daly JJ, Zimelman J, Roenigk KL, et al. Recovery of coordinated gait: randomized controlled stroke trial of functional electrical stimulation (FES) versus no FES, with weight-supported treadmill and over-ground training. *Neurorehabil Neural Repair*. 2011;25(7):588-96.
84. de Freitas GR, Szpoganicz C, Ilha J. Does Neuromuscular Electrical Stimulation Therapy Increase Voluntary Muscle Strength After Spinal Cord Injury? A Systematic Review. *Top Spinal Cord Inj Rehabil*. 2018;24(1):6-17.
85. De Meulemeester K, et al., Comparing Trigger Point Dry Needling and Manual Pressure Technique for the Management of Myofascial Neck/Shoulder Pain: A Randomized Clinical Trial. *J Manipulative Physiol Ther*, 2017. 40(1): p. 11-20.
86. de Oliveira FCL, Pairet de Fontenay B, Bouyer LJ, et al. Kinesiotaping for the Rehabilitation of Rotator Cuff-Related Shoulder Pain: A Randomized Clinical Trial. *Sports Health*. 2020.
87. de Paula Gomes CAF, Politti F, de Souza Bacelar Pereira C, et al. Exercise program combined with electrophysical modalities in subjects with knee osteoarthritis: a randomised, placebo-controlled clinical trial. *BMC musculoskeletal disorders*. 2020;21(1):258. Epub 2020/04/22.
88. del Pozo-Cruz BA, J. C.; Parraca, J. A.; del Pozo-Cruz, J., et al., Using whole-body vibration training in patients affected with common neurological diseases: a systematic literature review. *Journal of Alternative & Complementary Medicine*. 2012;18(1):29-41.
89. Delitto A, George SZ, Van Dillen LR, et al. Low back pain. *J Orthop Sports Phys Ther*. 2012;42(4):A1-57.
90. Dennis M, Graham C, Smith J, et al. Which stroke patients gain most from intermittent pneumatic compression: further analyses of the CLOTS 3 trial. *International journal of stroke : official journal of the International Stroke Society*. 2015;10 Suppl A100:103-7.
91. Dennis M, Sandercock P, Graham C, et al. The Clots in Legs Or sTockings after Stroke (CLOTS) 3 trial: a randomised controlled trial to determine whether or not intermittent pneumatic compression reduces the risk of post-stroke deep vein thrombosis and to estimate its cost-effectiveness. *Health Technol Assess*. 2015;19(76):1-90.
92. Dennis M, Sandercock P, Reid J, et al. Effectiveness of intermittent pneumatic compression in reduction of risk of deep vein thrombosis in patients who have had a stroke (CLOTS 3): a multicentre randomised controlled trial. *Lancet*. 2013;382(9891):516-24.
93. Department of Veterans Affairs and the Department of Defense Va/DoD. VA/DoD Clinical Practice Guideline for Diagnosis and Treatment of Low Back Pain. Washington, DC: Department of Veterans Affairs and the Department of Defense Va/DoD; 2017. p. 110.
94. Department of Veterans Affairs Department of Defense (VA/DoD). VA/DoD Clinical Practice Guideline for the Primary Care Management of Headache. Washington (DC): Department of Veterans Affairs Department of Defense,; 2020. p. 150.
95. Desmeules F, Boudreault J, Roy JS, et al. Efficacy of transcutaneous electrical nerve stimulation for rotator cuff tendinopathy: a systematic review. *Physiotherapy*. 2016;102(1):41-9.
96. Devoogdt N, Van Kampen M, Geraerts I, et al. Different physical treatment modalities for lymphoedema developing after axillary lymph node dissection for breast cancer: a review. *European journal of obstetrics, gynecology, and reproductive biology*. 2010;149(1):3-9.
97. Diab AA, Moustafa IM. The efficacy of lumbar extension traction for sagittal alignment in mechanical low back pain: a randomized trial. *Journal of back and musculoskeletal rehabilitation*. 2013;26(2):213-20.
98. Dickinson RN, Kuhn JE, Bergner JL, et al. A systematic review of cost-effective treatment of postoperative rotator cuff repairs. [Review]. *J Shoulder Elbow Surg*. 2017;26(5):915-22. PMID: 28314695
99. Dini D, Del Mastro L, Gozza A, et al. The role of pneumatic compression in the treatment of postmastectomy lymphedema. A randomized phase III study. 1998;1(2):187-90.
100. Dion S, Wong JJ, Cote P, et al. Are Passive Physical Modalities Effective for the Management of Common Soft Tissue Injuries of the Elbow?: A Systematic Review by the Ontario Protocol for Traffic Injury Management (OPTIMA) Collaboration. *Clinical Journal of Pain*. 2017;33(1):71-86.

101. Domeij-Arverud E, Labruto F, Latifi A, et al. Intermittent pneumatic compression reduces the risk of deep vein thrombosis during post-operative lower limb immobilisation: a prospective randomised trial of acute ruptures of the Achilles tendon. *Bone Joint J.* 2015;97-b(5):675-80.
102. D'Sylva JM, J.; Gross, A.; Burnie, S. J., et al., Cervical Overview, Group. Manual therapy with or without physical medicine modalities for neck pain: a systematic review. *Manual Therapy.* 2010;15(5):415-33.
103. Dunning, J., et al., Periosteal Electrical Dry Needling as an Adjunct to Exercise and Manual Therapy for Knee Osteoarthritis: A Multi-Center Randomized Clinical Trial. *Clin J Pain,* 2018.
104. Dursun E, Dursun N, Alican D. Effects of biofeedback treatment on gait in children with cerebral palsy. *Disability & Rehabilitation.* 2004;26(2):116-20.
105. Dursun N, Dursun E, Kilic Z. Electromyographic biofeedback-controlled exercise versus conservative care for patellofemoral pain syndrome. *Archives of physical medicine and rehabilitation.* 2001;82(12):1692-5.
106. Edwards PK, Ebert JR, Littlewood C, et al. A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair. *J Orthop Sports Phys Ther.* 2017;47(12):931-44.
107. Eid MA, Aly SM, El-Shamy SM. Effect of Electromyographic Biofeedback Training on Pain, Quadriceps Muscle Strength, and Functional Ability in Juvenile Rheumatoid Arthritis. *American journal of physical medicine & rehabilitation.* 2016;95(12):921-30.
108. Elboim-Gabyzon M, Rozen N, Laufer Y. Does neuromuscular electrical stimulation enhance the effectiveness of an exercise programme in subjects with knee osteoarthritis? A randomized controlled trial. *Clinical rehabilitation.* 2013;27(3):246-57.
109. Enck P, Van der Voort IR, Klosterhalfen S. Biofeedback therapy in fecal incontinence and constipation. *Neurogastroenterol Motil.* 2009;21(11):1133-41.
110. Eroksuz R, Bahadır G, Turan M, et al. Quadriceps muscle function after rehabilitation with cryotherapy in patients with anterior cruciate ligament reconstruction. *International journal of biometeorology.* 2014;49(6):733-9. Epub 2015/04/29. PMID: 25299442
111. Espejo-Antunez, L., et al., Dry needling in the management of myofascial trigger points: A systematic review of randomized controlled trials. *Complement Ther Med,* 2017. 33: p. 46-57.
112. Espi-Lopez, G.V., et al., Effectiveness of Inclusion of Dry Needling in a Multimodal Therapy Program for Patellofemoral Pain: A Randomized Parallel-Group Trial. *J Orthop Sports Phys Ther,* 2017. 47(6): p. 392-401.
113. Feldman JL, Stout NL, Wanchai A, et al. Intermittent pneumatic compression therapy: a systematic review. *Lymphology.* 2012;45(1):13-25.
114. Feng JP, Xiong YT, Fan ZQ, et al. Efficacy of intermittent pneumatic compression for venous thromboembolism prophylaxis in patients undergoing gynecologic surgery: A systematic review and meta-analysis. *Oncotarget.* 2017;8(12):20371-9.
115. Fernandez-Carnero, J., et al., Effectiveness of Different Deep Dry Needling Dosages in the Treatment of Patients With Cervical Myofascial Pain: A Pilot RCT. *Am J Phys Med Rehabil,* 2017. 96(10): p. 726-733.
116. Ferrarello F, Bianchi VAM, Baccini M, et al. Tools for observational gait analysis in patients with stroke: A systematic review. *Phys Ther.* 2013;93(12):1673-85.
117. Ferreira RM, Duarte JA, Gonçalves RS. Non-pharmacological and non-surgical interventions to manage patients with knee osteoarthritis: An umbrella review. *Acta Reumatol Port.* 2018;43(3):182-200. Epub 2018/11/11.
118. Ferreira RM, Torres RT, Duarte JA, et al. Non-Pharmacological and Non-Surgical Interventions for Knee Osteoarthritis: A Systematic Review and Meta-Analysis. *Acta Reumatol.* 2019;44(3):173-217.
119. Fitzgerald GK, Piva SR, Irrgang JJ. A modified neuromuscular electrical stimulation protocol for quadriceps strength training following anterior cruciate ligament reconstruction. *J Orthop Sports Phys Ther.* 2003;33(9):492-501.
120. Forbes D, Blake CM, Thiessen EJ, et al. Light therapy for improving cognition, activities of daily living, sleep, challenging behaviour, and psychiatric disturbances in dementia. *The Cochrane database of systematic reviews.* 2014(2):Cd003946.
121. France S, Bown J, Nowosiłskij M, et al., Evidence for the use of dry needling and physiotherapy in the management of cervicogenic or tension-type headache: a systematic review. *Cephalalgia,* 2014. 34(12): p. 994-1003.
122. Freiwald J, Hoppe MW, Beermann W, et al. Effects of supplemental heat therapy in multimodal treated chronic low back pain patients on strength and flexibility. *Clinical Biomechanics.* 2018;57:107-13. PMID: 2000898553
123. Fritz JM, Thackeray A, Brennan GP, et al. Exercise only, exercise with mechanical traction, or exercise with over-door traction for patients with cervical radiculopathy, with or without consideration of status on a previously described subgrouping rule: a randomized clinical trial. *J Orthop Sports Phys Ther.* 2014;44(2):45-57.
124. Ga H, Choi J, Park C, et al. Dry needling of trigger points with and without paraspinal needling in myofascial pain syndromes in elderly patients. *J Altern Complement Med,* 2007. 13(6): p. 617-24.

125. Gallego-Sendarrubias GM, Rodríguez-Sanz D, Calvo-Lobo C, et al. Efficacy of dry needling as an adjunct to manual therapy for patients with chronic mechanical neck pain: a randomised clinical trial. *Acupuncture in medicine : journal of the British Medical Acupuncture Society*. 2020;38(4):244-54. Epub 2020/03/24.
126. Gam AN, Thorsen H, Lønnberg F. The effect of low-level laser therapy on musculoskeletal pain: a meta-analysis. *Pain*. 1993;52(1):63-66.
127. García, I., et al., Comparative effectiveness of ultrasonophoresis and iontophoresis in impingement syndrome: a double-blind, randomized, placebo controlled trial. *Clin Rehabil*, 2016. 30(4): p. 347-58.
128. Gattie E, Cleland JA, Pandya J, et al. Dry Needling Adds No Benefit to the Treatment of Neck Pain: A Sham-Controlled Randomized Clinical Trial With 1-Year Follow-up. *J Orthop Sports Phys Ther*. 2021;51(1):37-45. Epub 2021/01/02.
129. Gattie E, Cleland J, Snodgrass S. The Effectiveness of Trigger Point Dry Needling for Musculoskeletal Conditions by Physical Therapists: A Systematic Review and Meta-analysis. *J Orthop Sports Phys Ther*, 2017. 47(3): p. 133-149.
130. Gibson W, Wand BM, O'Connell NE. Transcutaneous electrical nerve stimulation (TENS) for neuropathic pain in adults. *The Cochrane database of systematic reviews*. 2017;9:Cd011976.
131. Godek P, Murawski P, Rucinski W, et al. Biological, mechanical or physical? Conservative treatment of cervical radiculopathy. *Ortop*. 2020;22(6):409-19.
132. Gomes C, Dibai-Filho AV, Moreira WA, et al. Effect of Adding Interferential Current in an Exercise and Manual Therapy Program for Patients With Unilateral Shoulder Impingement Syndrome: A Randomized Clinical Trial. *Journal of manipulative and physiological therapeutics*. 2018;41(3):218-26. Epub 2018/02/21.
133. Gor-Garcia-Fogeda MD, Cano De La Cuerda R, Carratala Tejada M, et al. Observational gait assessments in people with neurological disorders: A systematic review. *Archives of physical medicine and rehabilitation*. 2016;97(1):131-40.
134. Graham N, Gross A, Goldsmith CH, et al. Mechanical traction for neck pain with or without radiculopathy. *The Cochrane database of systematic reviews*. 2008(3):Cd006408. Epub 2008/07/23.
135. Griffin JW, Newsome LS, Stralka SW, et al. Reduction of chronic posttraumatic hand edema: a comparison of high voltage pulsed current, intermittent pneumatic compression, and placebo treatments. *Phys Ther*. 1990;70(5):279-86.
136. Gunay Ucurum S, Kaya DO, Kayali Y, et al. Comparison of different electrotherapy methods and exercise therapy in shoulder impingement syndrome: A prospective randomized controlled trial. *Acta orthopaedica et traumatologica turcica*. 2018;52(4):249-55. Epub 2018/04/29.
137. Guyatt GH, Akl EA, Crowther M, et al. Executive summary: Antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. *Chest*. 2012;141(2 SUPPL.):7S-47S.
138. Haghighat S, Lotfi-Tokaldany M, Yunesian M, et al. Comparing two treatment methods for post mastectomy lymphedema: complex decongestive therapy alone and in combination with intermittent pneumatic compression. 2010;1(1):25-33.
139. Hahne AJ, Ford JJ, McMeeken JM. Conservative management of lumbar disc herniation with associated radiculopathy: a systematic review. *Spine*. 2010;35(11):E488-504.
140. Haik MN, Albuquerque-Sendin F, Moreira RF, et al. Effectiveness of physical therapy treatment of clearly defined subacromial pain: a systematic review of randomised controlled trials. *BJSM online*. 2016;50(18):1124-34.
141. Hajibandeh S, Hajibandeh S, Antoniou GA, et al. Neuromuscular electrical stimulation for the prevention of venous thromboembolism. *The Cochrane database of systematic reviews*. 2017;11:Cd011764.
142. Hall M. Low back pain (acute). *BMJ clinical evidence*. 2008;2008.
143. Hall M, Mackie A, Ribeiro D. Effects of dry needling trigger point therapy in the shoulder region on patients with upper extremity pain and dysfunction: a systematic review with meta-analysis. *Physiotherapy*, 2018. 104(2): p. 167-177.
144. Haslerud S, Magnussen LH, Joensen J, Lopes-Martins RA, Bjordal JM. The efficacy of low-level laser therapy for shoulder tendinopathy: a systematic review and meta-analysis of randomized controlled trials. *Physiother Res Int*. 2015;20(2):108-125.
145. Hauger AV, Reiman MP, Bjordal JM, et al. Neuromuscular electrical stimulation is effective in strengthening the quadriceps muscle after anterior cruciate ligament surgery. *Knee Surg Sports Traumatol Arthrosc*. 2018;26(2):399-410.
146. Hawk C, Whalen W, Farabaugh RJ, et al. Best Practices for Chiropractic Management of Patients with Chronic Musculoskeletal Pain: A Clinical Practice Guideline. *J Altern Complement Med*. 2020;26(10):884-901. Epub 2020/08/05.
147. He C, Ma H. Effectiveness of trigger point dry needling for plantar heel pain: a meta-analysis of seven randomized controlled trials. *J Pain Res*, 2017. 10: p. 1933-1942.
148. Hemmen B, Seelen HA. Effects of movement imagery and electromyography-triggered feedback on arm hand function in stroke patients in the subacute phase. *Clinical rehabilitation*. 2007;21(7):587-94.

149. Hirvonen HE, Mikkelsen MK, Kautiainen H, et al. Effectiveness of different cryotherapies on pain and disease activity in active rheumatoid arthritis. A randomised single blinded controlled trial. *Clin Exp Rheumatol*. 2006;24(3):295-301. PMID: 16870097
150. Ho KM, Tan JA. Stratified meta-analysis of intermittent pneumatic compression of the lower limbs to prevent venous thromboembolism in hospitalized patients. *Circulation*. 2013;128(9):1003-20.
151. Hopkins JT, Stencil R. Ankle cryotherapy facilitates soleus function. *J Orthop Sports Phys Ther*. 2002;32(12):622-7. PMID: 12492271
152. Hou CR, Tsai LC, Cheng KF, et al. Immediate effects of various physical therapeutic modalities on cervical myofascial pain and trigger-point sensitivity. *Archives of Physical Medicine & Rehabilitation*. 2002;83(10):1406-14. PMID: 12370877
153. Houghton PE. Electrical stimulation therapy to promote healing of chronic wounds: a review of reviews. *Chronic Wound Care Management and Research*. 2017;4:25-44.
154. Howlett OA, Lannin NA, Ada L, et al. Functional electrical stimulation improves activity after stroke: a systematic review with meta-analysis. *Archives of Physical Medicine & Rehabilitation*. 2015;96(5):934-43.
155. Hoy MM, Egan MY, Feder KP. A systematic review of interventions to improve handwriting. *Can J Occup Ther*. 2011;78(1):13-25.
156. Hsieh YLY, Sun C, Chan S, et al. Effects of hippotherapy on body functions, activities and participation in children with cerebral palsy based on ICF-CY assessments. *Disability and rehabilitation*. 2017;39(17):1703-13.
157. Huang Z, Ma J, Chen J, et al., 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.
158. Hubbard TJ, Aronson SL, Denegar CR. Does Cryotherapy Hasten Return to Participation? A Systematic Review. *J Athlet Train*. 2004;39(1):88-94. PMID: 38478725
159. Huisstede BM, et al. Carpal Tunnel Syndrome: Effectiveness of Physical Therapy and Electrophysical Modalities. An Updated Systematic Review of Randomized Controlled Trials. *Arch Phys Med Rehabil*, 2018. 99(8): p. 1623-1634.e23.
160. Institute of Health Economics. *Toward Optimized Practice. Guideline for the evidence-informed primary care management of low back pain*. Alberta, Canada: Institute of Health Economics,; 2011. p. 37.
161. Jang H, Lee H. Meta-analysis of pain relief effects by laser irradiation on joint areas. *Photomed Laser Surg*. 2012;30(8):405-417.
162. Jauregui JJ, Cherian JJ, Gwam CU, et al. A Meta-Analysis of Transcutaneous Electrical Nerve Stimulation for Chronic Low Back Pain. *Surg Technol Int*. 2016;28:296-302.
163. Jellad A, Ben Salah Z, Boudokhane S, et al. The value of intermittent cervical traction in recent cervical radiculopathy. *Annals of Physical & Rehabilitation Medicine*. 2009;52(9):638-52.
164. Jonsdottir J, Cattaneo D, Recalcati M, et al. Task-oriented biofeedback to improve gait in individuals with chronic stroke: motor learning approach. *Neurorehabil Neural Repair*. 2010;24(5):478-85.
165. Jordan J, Konstantinou K, O'Dowd J. Herniated lumbar disc. *Clin Evid (Online)*. 2009;26:26.
166. Jung KS, Jung JH, In TS, et al. Effects of Weight-shifting Exercise Combined with Transcutaneous Electrical Nerve Stimulation on Muscle Activity and Trunk Control in Patients with Stroke. *Occup Ther Int*. 2016;23(4):436-43.
167. Kadı MR, Hepgüler S, Atamaz FC, et al. Is interferential current effective in the management of pain, range of motion, and edema following total knee arthroplasty surgery? A randomized double-blind controlled trial. *Clinical rehabilitation*. 2019;33(6):1027-34. Epub 2019/02/16.
168. Kaiser MG, Eck JC, Groff MW, et al. Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 17: bone growth stimulators as an adjunct for lumbar fusion. *J Neurosurg Spine*. 2014;21(1):133-9.
169. Kamali F, Mohamadi M, Fakheri L, et al. Dry needling versus friction massage to treat tension type headache: A randomized clinical trial. *Journal of Bodywork & Movement Therapies*, 2018: p. 1-5.
170. Kang H, Jung J, Yu J. Effects of Hippotherapy on the Sitting Balance of Children with Cerebral Palsy: a Randomized Control Trial. *Journal of Physical Therapy Science*. 2012;24(9):833-6.
171. Karaka AM, Gok H. Effectiveness of pulsed electromagnetic field therapy on pain, functional status, and quality of life in patients with chronic non-specific neck pain: A prospective, randomized-controlled study. *Turkish Journal of Physical Medicine and Rehabilitation*. 2020;66(2):140-6.
172. Khazzam MS, Pearl ML. AAOS Clinical Practice Guideline: Management of Glenohumeral Joint Osteoarthritis. *The Journal of the American Academy of Orthopaedic Surgeons*. 2020;28(19):790-4. Epub 2020/08/18.

173. Kibar S, Konak H, Ay S, et al. The Effectiveness of Combined Transcutaneous Electrical Nerve Stimulation and Interferential Current Therapy on Chronic Low Back Pain: A Randomized, Double-Blind, Sham-Controlled Study. *Fiziksel Tıp ve Rehabilitasyon Bilimleri Dergisi*. 2020;23:32-40.
174. Kietrys, D.M., et al., Effectiveness of dry needling for upper-quarter myofascial pain: a systematic review and meta-analysis. *J Orthop Sports Phys Ther*, 2013. 43(9): p. 620-34.
175. Kilfoil, R.L., et al., Acetic acid iontophoresis for the treatment of insertional Achilles tendonitis. *BMJ Case Rep*, 2014. 2014.
176. Kim TH, Sung T, Cho HY. Task-related training combined with transcutaneous electrical nerve stimulation promotes upper limb functions in patients with chronic stroke. *Tohoku J Exp Med*. 2013;231(2):93-100.
177. Kim TH, Lee CR, Choi TY, et al. Intramuscular stimulation therapy for healthcare: a systematic review of randomised controlled trials. *Acupunct Med*, 2012. 30(4): p. 286-90.
178. Kocak FA, Tunc H, Sutbeyaz ST, et al. Comparison of the short-term effects of the conventional motorized traction with non-surgical spinal decompression performed with a DRX9000 device on pain, functionality, depression, and quality of life in patients with low back pain associated with lumbar disc herniation: A single-blind randomized-controlled trial. *Turkish Journal of Physical Medicine and Rehabilitation*. 2018;64(1):17-27.
179. Kozanoglu E, Basaran S, Paydas S, et al. Efficacy of pneumatic compression and low-level laser therapy in the treatment of postmastectomy lymphoedema: a randomized controlled trial. 2009;1(2):117-24.
180. Kuligowski T, Debiec-Bak A, Skrzek A. Effectiveness of Traction in Young Patients Representing Different Stages of Degenerative Disc Disease. *Ortop*. 2019;21(3):187-95.
181. Kwon JY, Chang HJ, Yi SH, et al. Effect of hippotherapy on gross motor function in children with cerebral palsy: a randomized controlled trial. *Journal of alternative and complementary medicine (New York, NY)*. 2015;21(1):15-21.
182. Lam FML, R. W.; Chung, R. C.; Pang, M. Y. The effect of whole body vibration on balance, mobility and falls in older adults: a systematic review and meta-analysis. *Maturitas*. 2012;72(3):206-13.
183. Lane K, Jespersen D, McKenzie DC. The effect of a whole body exercise programme and dragon boat training on arm volume and arm circumference in women treated for breast cancer. *European journal of cancer care*. 2005;14(4):353-8.
184. Larke D, Campbell A, Jensen L, et al. Responsiveness of clinical and laboratory measures to intervention effects in children with developmental coordination disorder. *Pediatr*. 2015;27(1):44-51.
185. Lau RW, Teo T, Yu F, et al. Y. Effects of whole-body vibration on sensorimotor performance in people with Parkinson disease: a systematic review. *Phys Ther*. 2011;91(2):198-209.
186. Laufer Y, Shtraker H, Elboim Gabyzon M. The effects of exercise and neuromuscular electrical stimulation in subjects with knee osteoarthritis: a 3-month follow-up study. *Clin Interv Aging*. 2014;9:1153-61.
187. Leal NF, Carrara HH, Vieira KF, et al. Physiotherapy treatments for breast cancer-related lymphedema: a literature review. *Revista latino-americana de enfermagem*. 2009;17(5):730-6.
188. Lechner HE, Kakebeeke T, Hegemann D, et al. The effect of hippotherapy on spasticity and on mental well-being of persons with spinal cord injury. *Archives of Physical Medicine & Rehabilitation*. 2007;88(10):1241-8.
189. Lee CH, Heo SJ, Park SH, et al. The Functional and Morphological Changes of the Cervical Intervertebral Disc after Applying Lordotic Curve Controlled Traction: A Double-Blind Randomized Controlled Study. *International Journal of Environmental Research & Public Health [Electronic Resource]*. 2019;16(12):19.
190. Lee D, Lee G, Jeong J. Mirror Therapy with Neuromuscular Electrical Stimulation for improving motor function of stroke survivors: A pilot randomized clinical study. *Technol Health Care*. 2016;24(4):503-11.
191. Lenzi J, Nardone A, Passacantilli E, et al. Posterior Cervical Transfacet Fusion with Facetal Spacer for the Treatment of Single-Level Cervical Radiculopathy: A Randomized, Controlled Prospective Study. *World Neurosurg*. 2017;100:7-14.
192. Leon-Hernandez J, Martin-Pintado-Zugasti A, Frutos L, et al. Immediate and short-term effects of the combination of dry needling and percutaneous TENS on post-needling soreness in patients with chronic myofascial neck pain. *Braz J Phys Ther*, 2016. 20(5): p. 422-431.
193. Levine M, McElroy K, Stakich V, et al. Comparing conventional physical therapy rehabilitation with neuromuscular electrical stimulation after TKA. *Orthopedics*. 2013;36(3):e319-24.
194. Li J, Song Y. Transcutaneous electrical nerve stimulation for postoperative pain control after total knee arthroplasty: A meta-analysis of randomized controlled trials. *Medicine (Baltimore)*. 2017;96(37):e8036.
195. Li H, Lv H, Lin T. Comparison of efficacy of eight treatments for plantar fasciitis: A network meta-analysis. *J Cell Physiol*, 2018.
196. Li ZJ, Wang Y, Zhang HF, et al. Effectiveness of low-level laser on carpal tunnel syndrome: A meta-analysis of previously reported randomized trails *Medicine*. 2016;95(31).

197. Liao LR, Huang M, Lam F, et al. Effects of whole-body vibration therapy on body functions and structures, activity, and participation poststroke: a systematic review. *Phys Ther*. 2014;94(9):1232-51.
198. Lim EC, Tay MG. Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis. *Br J Sports Med*. 2015;49(24):1558-1566.
199. Lin S, Sun Q, Wang H, et al. Influence of transcutaneous electrical nerve stimulation on spasticity, balance, and walking speed in stroke patients: A systematic review and meta-analysis. *J Rehabil Med*. 2018;50(1):3-7.
200. Lin S, Zhu B, Huang G, et al. Short-Term Effect of Kinesiotaping on Chronic Nonspecific Low Back Pain and Disability: A Meta-Analysis of Randomized Controlled Trials. *Physical therapy*. 2020;100(2):238-54.
201. Liu L, Huang QM, Liu QG, et al. Effectiveness of dry needling for myofascial trigger points associated with neck and shoulder pain: a systematic review and meta-analysis. *Arch Phys Med Rehabil*, 2015. 96(5): p. 944-55.
202. 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*, 2018. 99(1): p. 144-152 e2.
203. Llamas-Ramos, R., et al., Comparison of the short-term outcomes between trigger point dry needling and trigger point manual therapy for the management of chronic mechanical neck pain: a randomized clinical trial. *J Orthop Sports Phys Ther*, 2014. 44(11): p. 852-61.
204. Logan CA, Bhashyam AR, Tisosky AJ, et al. Systematic Review of the Effect of Taping Techniques on Patellofemoral Pain Syndrome. *Sports Health*. 2017;9(5):456-461.
205. Lu J, Xu g, Wang Y. Effects of whole body vibration training on people with chronic stroke: a systematic review and meta-analysis. *Topics in stroke rehabilitation*. 2015;22(3):161-8.
206. Lucena-Anton D, Moral-Munoz, JA. Effects of a hippotherapy intervention on muscle spasticity in children with cerebral palsy: A randomized controlled trial. *Complementary therapies in clinical practice*. 2018;31:188-92.
207. Lurie F, Schwartz M. Patient-centered outcomes of a dual action pneumatic compression device in comparison to compression stockings for patients with chronic venous disease. *Journal of vascular surgery Venous and lymphatic disorders*. 2017;5(5):699-706.e1.
208. Macario A, Pergolizzi JV. Systematic literature review of spinal decompression via motorized traction for chronic discogenic low back pain. *Pain Practice*. 2006;6(3):171-8.
209. Machado, E., et al., A systematic review of different substance injection and dry needling for treatment of temporomandibular myofascial pain. *Int J Oral Maxillofac Surg*, 2018. 47(11): p. 1420-1432.
210. Mahmoudzadeh A, Rezaeian ZS, Karimi A, et al. The effect of dry needling on the radiating pain in subjects with discogenic low-back pain: A randomized control trial. *J Res Med Sci*, 2016. 21: p. 86.
211. Mahony RT, Malone PA, Nalty J, et al. Randomized clinical trial of intra-anal electromyographic biofeedback physiotherapy with intra-anal electromyographic biofeedback augmented with electrical stimulation of the anal sphincter in the early treatment of postpartum fecal incontinence. *American Journal of Obstetrics & Gynecology*. 2004;191(3):885-90.
212. Malanga GA, Yan N, Stark J. Mechanisms and efficacy of heat and cold therapies for musculoskeletal injury. [Review]. *Postgrad Med*. 2015;127(1):57-65. PMID: 25526231
213. Mandel AR, Nymark JR, Balmer SJ, et al. Electromyographic versus rhythmic positional biofeedback in computerized gait retraining with stroke patients. *Archives of Physical Medicine & Rehabilitation*. 1990;71(9):649-54.
214. Marazzi S, Kiper P, Palmer K, et al. Effects of vibratory stimulation on balance and gait in Parkinson's disease: A systematic review and meta-analysis. *European Journal of Physical and Rehabilitation Medicine*. 2021;57(2):254-64.
215. Martimbianco ALC, Torloni MR, Andriolo BN, et al. Neuromuscular electrical stimulation (NMES) for patellofemoral pain syndrome. *The Cochrane database of systematic reviews*. 2017;12:Cd011289.
216. Martin RL, Davenport TE, Reischl SF, et al. Heel pain-plantar fasciitis: revision 2014. *The Journal of orthopaedic and sports physical therapy*. 2014;44(11):A1-33.
217. Maund E, Craig D, Suekarran S, et al. Management of frozen shoulder: A systematic review and cost-effectiveness analysis. *Health Technology Assessment*. 2012;16(11):i-xvi+1-243.
218. Mayer JM, Mooney V, Matheson LN, et al. Continuous low-level heat wrap therapy for the prevention and early phase treatment of delayed-onset muscle soreness of the low back: a randomized controlled trial. *Archives of Physical Medicine & Rehabilitation*. 2006;87(10):1310-7. PMID: 17023239
219. Mayoral O, Salvat I, Martin MT, et al. Efficacy of myofascial trigger point dry needling in the prevention of pain after total knee arthroplasty: a randomized, double-blinded, placebo-controlled trial. *Evid Based Complement Alternat Med*, 2013. 2013: p. 694941.

220. McClurg D, Ashe RG, Lowe-Strong AS. Neuromuscular electrical stimulation and the treatment of lower urinary tract dysfunction in multiple sclerosis--a double blind, placebo controlled, randomised clinical trial. *NeuroUrol Urodyn*. 2008;27(3):231-7.
221. McGibbon NH, Benda W, Duncan BR, et al. Immediate and long-term effects of hippotherapy on symmetry of adductor muscle activity and functional ability in children with spastic cerebral palsy. *Archives of physical medicine and rehabilitation*. 2009;90(6):966-74.
222. Mills PB, Dossa F. Transcutaneous Electrical Nerve Stimulation for Management of Limb Spasticity: A Systematic Review. *American journal of physical medicine & rehabilitation*. 2016;95(4):309-18.
223. Mitchell UH, Helgeson K, Mintken P. Physiological effects of physical therapy interventions on lumbar intervertebral discs: A systematic review. *Physiother*. 2017;33(9):695-705.
224. Mohktar MS, Ibrahim F, Mohd Rozi NF, et al. A quantitative approach to measure women's sexual function using electromyography: a preliminary study of the Kegel exercise. *Med Sci Monit*. 2013;19:1159-66.
225. Montalvo AM, Cara EL, Myer GD. Effect of kinesiology taping on pain in individuals with musculoskeletal injuries: systematic review and meta-analysis. *Phys Sportsmed*. 2014;42(2):48-57.
226. Moran PS, Teljeur C, Harrington P, et al. A systematic review of intermittent pneumatic compression for critical limb ischaemia. *Vascular medicine (London, England)*. 2015;20(1):41-50.
227. Moreau NG, Bodkin AW, Bjornson K, et al. Effectiveness of Rehabilitation Interventions to Improve Gait Speed in Children With Cerebral Palsy: Systematic Review and Meta-analysis. *Phys Ther*. 2016;96(12):1938-54.
228. Moreland JD, Thomson MA, Fuoco AR. Electromyographic biofeedback to improve lower extremity function after stroke: a meta-analysis. *Archives of Physical Medicine & Rehabilitation*. 1998;79(2):134-40.
229. Moretti E, Tenorio A, Holanda L, et al. Efficacy of the whole-body vibration for pain, fatigue and quality of life in women with fibromyalgia: a systematic review. *Disability & Rehabilitation*. 2018;40(9):988-96.
230. Moustafa IM, Diab AA, Taha S, et al. Addition of a Sagittal Cervical Posture Corrective Orthotic Device to a Multimodal Rehabilitation Program Improves Short- and Long-Term Outcomes in Patients With Discogenic Cervical Radiculopathy. *Archives of Physical Medicine & Rehabilitation*. 2016;97(12):2034-44.
231. Moustafa IM, Diab AA. Extension traction treatment for patients with discogenic lumbosacral radiculopathy: a randomized controlled trial. *Clinical rehabilitation*. 2013;27(1):51-62.
232. Nabavi N, Mohseni Bandpei MA, Mosallanezhad Z, et al. The Effect of 2 Different Exercise Programs on Pain Intensity and Muscle Dimensions in Patients With Chronic Low Back Pain: A Randomized Controlled Trial. *Journal of Manipulative and Physiological Therapeutics*. 2018;41(2):102-10.
233. Nagata C, Tanabe H, Takakura S, et al. Randomized controlled trial of enoxaparin versus intermittent pneumatic compression for venous thromboembolism prevention in Japanese surgical patients with gynecologic malignancy. *The journal of obstetrics and gynaecology research*. 2015;41(9):1440-8.
234. Nakano J, Yamabayashi C, Scott A, et al. The effect of heat applied with stretch to increase range of motion: a systematic review. *Physical therapy in sport : official journal of the Association of Chartered Physiotherapists in Sports Medicine*. 2012;13(3):180-8.
235. National Institute for Health and Care Excellence (NICE). Cerebral palsy in under 25s: assessment and management, NG62. London (UK): National Institute for Health and Care Excellence (NICE), ; 2017. p. 21.
236. National Institute for Health and Care Excellence (NICE). Electrical stimulation to improve muscle strength in chronic respiratory conditions, chronic heart failure and chronic kidney disease ipg677. London (UK): National Institute for Health and Care Excellence; 2020. p. 4.
237. National Institute for Health and Care Excellence (NICE). Low back pain and sciatica in over 16s: assessment and management ng59. London (UK): National Institute for Health and Care Excellence; 2016. p. 859.
238. Navarro-Santana MJ, Sanchez-Infante J, Gómez-Chiguano GF, et al. Effects of trigger point dry needling on lateral epicondylalgia of musculoskeletal origin: a systematic review and meta-analysis. *Clinical rehabilitation*. 2020;34(11):1327-40. Epub 2020/06/25.
239. Nazligul T, Akpınar P, Aktas I, et al. The effect of interferential current therapy on patients with subacromial impingement syndrome: a randomized, double-blind, sham-controlled study. *Eur J Phys Rehabil Med*. 2018;54(3):351-7. Epub 2017/09/13.
240. Nelson EA, Hillman A, Thomas K. Intermittent pneumatic compression for treating venous leg ulcers. *The Cochrane database of systematic reviews*. 2014(5):Cd001899.
241. Nelson LA, Macdonald M, Stall C, et al. Effects of interactive metronome therapy on cognitive functioning after blast-related brain injury: a randomized controlled pilot trial. *Neuropsychology*. 2013;27(6):666-79.

242. Nelson NL. Kinesio taping for chronic low back pain: A systematic review. *J Bodyw Mov Ther.* 2016;20(3):672-681.
243. Ng MML, Leung MCP, Poon DMY. The Effects of Electro-Acupuncture and Transcutaneous Electrical Nerve Stimulation on Patients with Painful Osteoarthritic Knees: A Randomized Controlled Trial with Follow-Up Evaluation. *Journal of Alternative and Complementary Medicine.* 2003;9(5):641-9.
244. North American Spine Society. *Diagnosis and Treatment of Low Back Pain.* Burr Ridge (IL): North American Spine Society; 2020. p. 217.
245. O'Connell S, Bashar K, Broderick BJ, et al. The Use of Intermittent Pneumatic Compression in Orthopedic and Neurosurgical Postoperative Patients: A Systematic Review and Meta-analysis. *Annals of surgery.* 2016;263(5):888-9.
246. O'Dell MW, Kim G, Finnen LR, et al. Clinical implications of using the arm motor ability test in stroke rehabilitation. *Archives of physical medicine and rehabilitation.* 2011;92(5):830-6.
247. O'Donnell TF, Jr., Passman MA, Marston WA, et al. Management of venous leg ulcers: clinical practice guidelines of the Society for Vascular Surgery (R) and the American Venous Forum. *Journal of vascular surgery.* 2014;60(2 Suppl):3s-59s.
248. Oh Y, Joung YS, Jang B, et al. Efficacy of Hippotherapy Versus Pharmacotherapy in Attention-Deficit/Hyperactivity Disorder: A Randomized Clinical Trial. *Journal of alternative and complementary medicine (New York, NY).* 2018;24(5):463-71.
249. Ong J, Claydon LS. The effect of dry needling for myofascial trigger points in the neck and shoulders: a systematic review and meta-analysis. *J Bodyw Mov Ther,* 2014. 18(3): p. 390-8.
250. Oresanya L, Mazzei M, Bashir R, et al. Systematic review and meta-analysis of high-pressure intermittent limb compression for the treatment of intermittent claudication. *Journal of vascular surgery.* 2018;67(2):620-8.e2.
251. Ouyang JH, Chang KH, Hsu WY, et al., Non-elastic taping, but not elastic taping, provides benefits for patients with knee osteoarthritis: systemic review and meta-analysis. *Clin Rehabil.* 2018;32(1):3-17.
252. Page MJ, Green S, Kramer S, et al. Electrotherapy modalities for adhesive capsulitis (frozen shoulder). *Cochrane Database of Systematic Reviews.* 2014(10):CD011324.
253. Page MJ, Green S, Mrocki MA, et al. Electrotherapy modalities for rotator cuff disease. *Cochrane Database of Systematic Reviews.* 2016(6):CD012225.
254. Page M, Green S, Kramer S, et al. Electrotherapy modalities for adhesive capsulitis (frozen shoulder). *Cochrane Database Syst Rev,* 2014(10): p. CD011324.
255. Palmer S, Domaille M, Cramp F, et al. Transcutaneous electrical nerve stimulation as an adjunct to education and exercise for knee osteoarthritis: A randomized controlled trial. *Arthritis Care and Research.* 2014;66(3):387-94.
256. Pambianco G, Orchard T, Landau P. Deep vein thrombosis: prevention in stroke patients during rehabilitation. *Archives of physical medicine and rehabilitation.* 1995;76(4):324-30.
257. Parreira PoC, Costa LaC, Hespanhol LC, et al. Current evidence does not support the use of Kinesio Taping in clinical practice: a systematic review. *J Physiother.* 2014;60(1):31-39.
258. Pavon JM, Adam SS, Razouki ZA, et al. Effectiveness of Intermittent Pneumatic Compression Devices for Venous Thromboembolism Prophylaxis in High-Risk Surgical Patients: A Systematic Review. *The Journal of arthroplasty.* 2016;31(2):524-32.
259. Pecos-Martin, D., et al., Effectiveness of dry needling on the lower trapezius in patients with mechanical neck pain: a randomized controlled trial. *Arch Phys Med Rehabil,* 2015. 96(5): p. 775-81.
260. Pérez-Merino, L., et al., Evaluation of the effectiveness of three physiotherapeutic treatments for subacromial impingement syndrome: a randomised clinical trial. *Physiotherapy,* 2016. 102(1): p. 57-63.
261. Perez-Palomares, S., et al., Contribution of Dry Needling to Individualized Physical Therapy Treatment of Shoulder Pain: A Randomized Clinical Trial. *J Orthop Sports Phys Ther,* 2017. 47(1): p. 11-20.
262. Pitto RP, Hamer H, Heiss-Dunlop W, et al. Mechanical prophylaxis of deep-vein thrombosis after total hip replacement a randomised clinical trial. 2004;1(5):639-42.
263. Popovic MR, Kapadia N, Zivanovic V, et al. Functional electrical stimulation therapy of voluntary grasping versus only conventional rehabilitation for patients with subacute incomplete tetraplegia: a randomized clinical trial. *Neurorehabil Neural Repair.* 2011;25(5):433-42.
264. Pourmomeny AA, Zadmehe H, Mirshamsi M, et al. Prevention of synkinesis by biofeedback therapy: a randomized clinical trial. *Otol Neurotol.* 2014;35(4):739-42.
265. Powell J, Pandyan AD, Granat M, et al. Electrical stimulation of wrist extensors in poststroke hemiplegia. *Stroke.* 1999;30(7):1384-9.

266. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med.* 2017;166(7):514-30.
267. Rajfur J, Pasternok M, Rajfur K, et al. Efficacy of Selected Electrical Therapies on Chronic Low Back Pain: A Comparative Clinical Pilot Study. *Med Sci Monit.* 2017;23:85-100. Epub 2017/01/08.
268. Rasmussen HM, Pedersen NW, Overgaard S, et al. The use of instrumented gait analysis for individually tailored interdisciplinary interventions in children with cerebral palsy: a randomised controlled trial protocol. *BMC pediatrics.* 2015;15:202.
269. Rastegar, S., et al., Comparison of dry needling and steroid injection in the treatment of plantar fasciitis: a single-blind randomized clinical trial. *Int Orthop,* 2018. 42(1): p. 109-116.
270. Rattanatharn R, Sanjaroensuttikul N, Anadirekkul P, et al. Effectiveness of lumbar traction with routine conservative treatment in acute herniated disc syndrome. *J Med Assoc Thai.* 2004;87 Suppl 2:S272-7.
271. Rayegani SM, Raeissadat SA, Sedighipour L, et al. Effect of neurofeedback and electromyographic-biofeedback therapy on improving hand function in stroke patients. *Topics in stroke rehabilitation.* 2014;21(2):137-51.
272. Resende L, Merriwether E, Rampazo É P, et al. Meta-analysis of transcutaneous electrical nerve stimulation for relief of spinal pain. *European journal of pain (London, England).* 2018;22(4):663-78. Epub 2017/12/29.
273. Rezaeian T, Mosallanezhad Z, Nourbakhsh MR, et al. Effects of Dry Needling Technique Into Trigger Points of the Sternocleidomastoid Muscle in Migraine Headache: A Randomized Controlled Trial. *American journal of physical medicine & rehabilitation.* 2020;99(12):1129-37. Epub 2020/06/17.
274. Rhee JM, Shamji MF, Erwin WM, et al. Nonoperative management of cervical myelopathy: a systematic review. *Spine (Phila Pa 1976).* 2013;38(22 Suppl 1):S55-67.
275. Rigby JH, Mortensen BB, Draper DO. Wireless Versus Wired Iontophoresis for Treating Patellar Tendinopathy: A Randomized Clinical Trial. *J Athl Train,* 2015. 50(11): p. 1165-73.
276. Ritter M, Colson KA, Park J. Reading intervention using interactive metronome in children with language and reading impairment: A preliminary investigation. *Communication Disorders Quarterly.* 2013;34(2):106-19.
277. Rogan S, Taeymans J, Luginbuehl H, et al. Therapy modalities to reduce lymphoedema in female breast cancer patients: a systematic review and meta-analysis. *Breast cancer research and treatment.* 2016;159(1):1-14.
278. Roper TA, Redford S, Tallis RC. Intermittent compression for the treatment of the oedematous hand in hemiplegic stroke: A randomized controlled trial. *Age and Ageing.* 1999;28(1):9-14.
279. Rosenbaum P. A randomized controlled trial of the impact of therapeutic horse riding on the quality of life, health, and function of children with cerebral palsy. *Developmental Medicine & Child Neurology.* 2009;51(2):88-.
280. Runeson L, Haker E. Iontophoresis with cortisone in the treatment of lateral epicondylalgia (tennis elbow)--a double-blind study. *Scand J Med Sci Sports,* 2002. 12(3): p. 136-42.
281. Ryang We S, Koog YH, Jeong KI, et al. Effects of pulsed electromagnetic field on knee osteoarthritis: a systematic review. *Rheumatology (Oxford).* 2013;52(5):815-24.
282. Sa-Caputo DCC-C, R.; Carvalho-Lima, R. P.; Arnobio, A, et al., Systematic review of whole body vibration exercises in the treatment of cerebral palsy: Brief report. *Dev Neurorehabil.* 2016;19(5):327-33.
283. Sa-Caputo DC, Costa-Cavalcanti R, Carvalho-Lima RP, et al. Whole-body vibration exercise improves functional parameters in patients with osteogenesis imperfecta: a systematic review with a suitable approach. *African journal of traditional, complementary, and alternative medicines : AJTCAM.* 2017;14(3):199-208.
284. Sadeghi M, Sawatzky B. Effects of vibration on spasticity in individuals with spinal cord injury: a scoping systematic review. *American journal of physical medicine & rehabilitation.* 2014;93(11):995-1007.
285. Salt E, Wright C, Kelly S, et al. A systematic literature review on the effectiveness of non-invasive therapy for cervicobrachial pain. *Manual Therapy.* 2011;16(1):53-65.
286. Saltychev M, Dutton RA, Laimi K, et al. Effectiveness of conservative treatment for patellofemoral pain syndrome: A systematic review and meta-analysis. *J Rehabil Med.* 2018;50(5):393-401.
287. Salvioli S, Guidi M, Marcotulli G. The effectiveness of conservative, non-pharmacological treatment, of plantar heel pain: A systematic review with meta-analysis. *Foot (Edinb),* 2017. 33: p. 57-67.
288. Sanchez AMC, Lopez HG, Sanchez MF, et al. Improvement in clinical outcomes after dry needling versus myofascial release on pain pressure thresholds, quality of life, fatigue, pain intensity, quality of sleep, anxiety, and depression in patients with fibromyalgia syndrome. *Disability and Rehabilitation.* 2019;41(19):2235-46.

289. Saquetto MB, Pereira FF, Queiroz RS, et al. Effects of whole-body vibration on muscle strength, bone mineral content and density, and balance and body composition of children and adolescents with Down syndrome: a systematic review. *Osteoporosis International*. 2018;29(3):527-33.
290. Saquetto M, Carvalho V, Silva C, et al. The effects of whole body vibration on mobility and balance in children with cerebral palsy: a systematic review with meta-analysis. *Journal of Musculoskeletal Neuronal Interactions*. 2015;15(2):137-44.
291. Saracoglu I, Emuk Y, Taspinar F. Does taping in addition to physiotherapy improve the outcomes in subacromial impingement syndrome? A systematic review. *Physiother Theory Pract*. 2018;34(4):251-263.
292. Savage NJ, Fritz JM, Kircher JC, et al. The prognostic value of electrodiagnostic testing in patients with sciatica receiving physical therapy. *Eur Spine J*. 2015;24(3):434-43.
293. Savage NJ, Fritz JM, Thackeray A. The relationship between history and physical examination findings and the outcome of electrodiagnostic testing in patients with sciatica referred to physical therapy. *J Orthop Sports Phys Ther*. 2014;44(7):508-17.
294. Scarcella JB, Cohn BT. The effect of cold therapy on the postoperative course of total hip and knee arthroplasty patients. *American Journal of Orthopedics*. 1995;24(11):847-52. PMID: 25343248
295. Schaaf RC, Dumont RL, Arbesman M, et al. Efficacy of Occupational Therapy Using Ayres Sensory Integration(R): A Systematic Review. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*. 2018;72(1):7201190010p1-p10.
296. Schimmel JJ, de Kleuver M, Horsting PP, et al. No effect of traction in patients with low back pain: a single centre, single blind, randomized controlled trial of Intervertebral Differential Dynamics Therapy. *Eur Spine J*. 2009;18(12):1843-50.
297. Schoen SA, Lane SJ, Mailloux Z, et al. A systematic review of ayres sensory integration intervention for children with autism. *Autism Res*. 2019;12(1):6-19.
298. Schwandner T, Hemmelmann C, Heimerl T, et al. Triple-target treatment versus low-frequency electrostimulation for anal incontinence: a randomized, controlled trial. *Dtsch Arztebl Int*. 2011;108(39):653-60.
299. Schwenk M, Howe C, Saleh A, et al. Frailty and technology: A systematic review of gait analysis in those with frailty. *Gerontology*. 2013;60(1):79-89.
300. Scottish Intercollegiate Guidelines Network. Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning ncg118. Edinburgh (UK): Scottish Intercollegiate Guidelines Network.; 2010. p. 108.
301. Shaffer RJ, Jacokes LE, Cassily JF, et al. Effect of interactive metronome training on children with ADHD. *American Journal of Occupational Therapy*. 2001;55(2):155-62.
302. Shao Y, Qi K, Zhou QH, et al. Intermittent pneumatic compression pump for breast cancer-related lymphedema: a systematic review and meta-analysis of randomized controlled trials. *Oncology research and treatment*. 2014;37(4):170-4.
303. Shariffar S, Shuster JJ, Bishop MD. Adding electrical stimulation during standard rehabilitation after stroke to improve motor function. A systematic review and meta-analysis. *Annals of physical and rehabilitation medicine*. 2018;61(5):339-44.
304. Singh SK, Agrawal R, Akbani R. Comparison of the Effect of High Voltage Pulsed Current v/s Interferential Therapy on Pain and Womac in Patients with Knee Osteoarthritis. *Indian Journal of Physiotherapy and Occupational Therapy*. 2019;13(4).
305. Solomons L, Lee JJY, Bruce M, et al. Intramuscular stimulation vs sham needling for the treatment of chronic midportion Achilles tendinopathy: A randomized controlled clinical trial. *PLoS ONE [Electronic Resource]*. 2020;15(9):e0238579.
306. Startzman AN, Fowler O, Carreira D. Proximal Hamstring Tendinosis and Partial Ruptures. *Orthopedics*. 2017;40(4):e574-e82. Epub 2017/02/15. PMID: 28195608
307. Stefanou, A., et al., A randomized study comparing corticosteroid injection to corticosteroid iontophoresis for lateral epicondylitis. *J Hand Surg Am*, 2012. 37(1): p. 104-9.
308. Stergiou A, Tzoufi M, Ntzani E, et al. Therapeutic Effects of Horseback Riding Interventions: A Systematic Review and Meta-analysis. *American journal of physical medicine & rehabilitation*. 2017;96(10):717-25.
309. Sterling, M., et al., Dry-needling and exercise for chronic whiplash-associated disorders: a randomized single-blind placebo-controlled trial. *Pain*, 2015. 156(4): p. 635-43.
310. Stewart F, Berghmans B, Bø K, et al. Electrical stimulation with non-implanted devices for stress urinary incontinence in women. *The Cochrane database of systematic reviews*. 2017;12(12):Cd012390. Epub 2017/12/23.
311. Stieven FF, Ferreira GE, Wiebusch M, et al. Dry Needling Combined With Guideline-Based Physical Therapy Provides No Added Benefit in the Management of Chronic Neck Pain: A Randomized Controlled Trial. *J Orthop Sports Phys Ther*. 2020;50(8):447-54. Epub 2020/04/10.
312. Taylor RL, O'Brien L, Brown T. A scoping review of the use of elastic therapeutic tape for neck or upper extremity conditions. *J Hand Ther*. 2014;27(3):235-245; quiz 246.

313. Tessari M, Tisato V, Rimondi E, et al. Effects of intermittent pneumatic compression treatment on clinical outcomes and biochemical markers in patients at low mobility with lower limb edema. *Journal of vascular surgery Venous and lymphatic disorders*. 2018;6(4):500-10.
314. Thackeray A, Fritz JM, Childs JD, et al. The Effectiveness of Mechanical Traction Among Subgroups of Patients With Low Back Pain and Leg Pain: A Randomized Trial. *J Orthop Sports Phys Ther*. 2016;46(3):144-54.
315. Thoomes EJ, Scholten-Peeters W, Koes B, et al. The effectiveness of conservative treatment for patients with cervical radiculopathy: a systematic review. *Clinical Journal of Pain*. 2013;29(12):1073-86.
316. Tosun A, Ture S, Askin A, et al. Effects of Low-Frequency repetitive transcranial magnetic stimulation and neuromuscular electrical stimulation on upper extremity motor recovery in the early period after stroke: A preliminary study. *Topics in stroke rehabilitation*. 2017;24(5):361-7.
317. Tuncay F, Borman P, Taser B, et al. Role of electrical stimulation added to conventional therapy in patients with idiopathic facial (Bell) palsy. *American journal of physical medicine & rehabilitation*. 2015;94(3):222-8.
318. Unlu Z, Tasci S, Tarhan S, et al. Comparison of 3 physical therapy modalities for acute pain in lumbar disc herniation measured by clinical evaluation and magnetic resonance imaging. *J Manipulative Physiol Ther*. 2008;31(3):191-8.
319. Uygur, E., et al., Dry needling in lateral epicondylitis: a prospective controlled study. *Int Orthop*, 2017. 41(11): p. 2321-2325.
320. van der Heijden GJ, Beurskens AJ, Koes BW, et al. The efficacy of traction for back and neck pain: a systematic, blinded review of randomized clinical trial methods. *Phys Ther*. 1995;75(2):93-104.
321. van Tulder M, Becker A, Bekkering T, et al. Chapter 3. European guidelines for the management of acute nonspecific low back pain in primary care. *Eur Spine J*. 2006;15 Suppl 2:S169-91.
322. Vanti C, Panizzolo A, Turone L, et al. Effectiveness of Mechanical Traction for Lumbar Radiculopathy: A Systematic Review and Meta-Analysis. *Physical therapy*. 2021;101(3). Epub 2021/01/01.
323. Vassão PG, de Souza MC, Silva BA, et al. Photobiomodulation via a cluster device associated with a physical exercise program in the level of pain and muscle strength in middle-aged and older women with knee osteoarthritis: a randomized placebo-controlled trial. *Lasers in medical science*. 2020;35(1):139-48. Epub 2019/05/31.
324. Velazquez-Saornil, J., et al., Efficacy of quadriceps vastus medialis dry needling in a rehabilitation protocol after surgical reconstruction of complete anterior cruciate ligament rupture. *Medicine (Baltimore)*, 2017. 96(17): p. e6726.
325. Vier C, de Almeida MB, Neves ML, et al. The effectiveness of dry needling for patients with orofacial pain associated with temporomandibular dysfunction: a systematic review and meta-analysis. *Braz J Phys Ther*, 2018.
326. Vignon P, Dequin PF, Renault A, et al. Intermittent pneumatic compression to prevent venous thromboembolism in patients with high risk of bleeding hospitalized in intensive care units: the CIREA1 randomized trial. *Intensive care medicine*. 2013;39(5):872-80.
327. Vroomen PC, de Krom MC, Slofstra PD, et al. Conservative treatment of sciatica: a systematic review. *J Spinal Disord*. 2000;13(6):463-9.
328. Wang HT, Yuan JQ, Zhang B, et al. Phototherapy for treating foot ulcers in people with diabetes. *Cochrane Database of Systematic Reviews*. 2017;2017 (6) (no pagination)(CD011979).
329. Watling RH, S. Effectiveness of Ayres Sensory Integration(R) and Sensory-Based Interventions for People With Autism Spectrum Disorder: A Systematic Review. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*. 2015;69(5):6905180030p1-12.
330. Wegner I, Widyahening IS, van Tulder MW, et al. Traction for low-back pain with or without sciatica. *The Cochrane database of systematic reviews*. 2013(8):Cd003010.
331. Weiner DK, Rudy TE, Glick RM, et al. Efficacy of percutaneous electrical nerve stimulation for the treatment of chronic low back pain in older adults. *J Am Geriatr Soc*. 2003;51(5):599-608.
332. Weitlauf N, McPheeters M, Warren Z. Interventions Targeting Sensory Challenges in Autism Spectrum Disorder: A Systematic Review. *Pediatrics*. 2017;139(6).
333. Willy RW, Högglund LT, Barton CJ, et al. Patellofemoral Pain. *J Orthop Sports Phys Ther*. 2019;49(9):Cpg1-cpg95. Epub 2019/09/03.
334. Winge R, Bayer L, Gottlieb H, et al. Compression therapy after ankle fracture surgery: a systematic review. *European journal of trauma and emergency surgery : official publication of the European Trauma Society*. 2017;43(4):451-9.
335. Winkelman JW, Armstrong MJ, Allen RP, et al. Practice guideline summary: Treatment of restless legs syndrome in adults: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. *Neurology*. 2016;87(24):2585-93.

336. Wren TAL, Gorton GE, Ounpuu S, et al. Efficacy of clinical gait analysis: A systematic review. *Gait and Posture*. 2011;34(2):149-53.
337. Wu D, Qian L, Zorowitz RD, et al. Effects on decreasing upper-limb poststroke muscle tone using transcranial direct current stimulation: a randomized sham-controlled study. *Archives of Physical Medicine & Rehabilitation*. 2013;94(1):1-8.
338. Yañez-Álvarez A, Bermúdez-Pulgarín B, Hernández-Sánchez S, et al. Effects of exercise combined with whole body vibration in patients with patellofemoral pain syndrome: a randomised-controlled clinical trial. *BMC musculoskeletal disorders*. 2020;21(1):582. Epub 2020/08/30.
339. Ye W, Jia C, Jiang J, et al. Effectiveness of Elastic Taping in Patients With Knee Osteoarthritis: A Systematic Review and Meta-Analysis. *American journal of physical medicine & rehabilitation*. 2020;99(6):495-503.
340. Yesil H, Hegguler S, Dundar U, et al. Does the Use of Electrotherapies Increase the Effectiveness of Neck Stabilization Exercises for Improving Pain, Disability, Mood, and Quality of Life in Chronic Neck Pain?: A Randomized, Controlled, Single-Blind Study. *Spine (Phila Pa 1976)*. 2018;43(20):E1174-e83. Epub 2018/04/14.
341. You G, Liang H, Yan T. Functional electrical stimulation early after stroke improves lower limb motor function and ability in activities of daily living. *NeuroRehabilitation*. 2014;35(3):381-9.
342. Young IA, Michener LA, Cleland JA, et al. Manual therapy, exercise, and traction for patients with cervical radiculopathy: a randomized clinical trial. *Phys Ther*. 2009;89(7):632-42.
343. Yu GH, Lee JS, Kim SK, et al. Effects of interactive metronome training on upper extremity function, ADL and QOL in stroke patients. *NeuroRehabilitation*. 2017;41(1):161-8.
344. Zafar HA, Anwer S, Al-Eisa E. Therapeutic effects of whole-body vibration training in knee osteoarthritis: a systematic review and meta-analysis. *Archives of Physical Medicine & Rehabilitation*. 2015;96(8):1525-32.
345. Zarei H, Bervis S, Piroozi S, et al. Added Value of Gluteus Medius and Quadratus Lumborum Dry Needling in Improving Knee Pain and Function in Female Athletes With Patellofemoral Pain Syndrome: A Randomized Clinical Trial. *Archives of Physical Medicine & Rehabilitation*. 2020;101(2):265-74.
346. Zeng C, Li H, Yang T, et al. Electrical stimulation for pain relief in knee osteoarthritis: systematic review and network meta-analysis. *Osteoarthritis Cartilage*. 2015;23(2):189-202. Epub 2014/12/17.
347. Zhang D, Li F, Li X, et al. Effect of Intermittent Pneumatic Compression on Preventing Deep Vein Thrombosis Among Stroke Patients: A Systematic Review and Meta-Analysis. *Worldviews on evidence-based nursing*. 2018;15(3):189-96.
348. Zhang H, Kan L, Zhang C, et al. The effect of whole body vibration therapy on the physical function of people with type ii diabetes mellitus: A systematic review. *Journal of Physical Therapy Science*. 2016;28(9):2675-80.
349. Zhang W, Moskowitz RW, Nuki G, et al. OARSI recommendations for the management of hip and knee osteoarthritis, Part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis and Cartilage*. 2008;16(2):137-62.
350. Zhu Y, Feng Y, Peng L. Effect of transcutaneous electrical nerve stimulation for pain control after total knee arthroplasty: A systematic review and meta-analysis. *J Rehabil Med*. 2017;49(9):700-4.

Speech Therapy Alternative Treatments

Codes

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

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92507	Treatment of speech, language, voice, communication, and/or hearing processing disorder
92508	Group treatment of speech, language, voice, communication, and/or hearing processing disorder
92521	Evaluation of speech fluency
92522	Evaluation of speech sound production
92523	Evaluation of speech sound production with evaluation of language comprehension and expression
92524	Behavioral and qualitative analysis of voice and resonance
92526	Treatment of swallowing and/or oral feeding function
92605	Evaluation and prescription of non-speech-generating and alternative communication device first hour
92606	Therapeutic services for use of non-speech-generating device with programming
92607	Evaluation of patient with prescription of speech-generating and alternative communication device
92608	Evaluation and prescription of speech-generating and alternative communication device
92609	Therapeutic services for use of speech-generating device with programming
92610	Evaluation of swallowing function
92611	Fluoroscopic and video recorded motion evaluation of swallowing function
92618	Evaluation and prescription of non-speech-generating and alternative communication device
92626	Evaluation of hearing rehabilitation first hour
92627	Evaluation of hearing rehabilitation
92630	Hearing training and therapy for hearing loss prior to learning to speak
92633	Hearing training and therapy for hearing loss after speech
97039	Unlisted modality (specify type and time if constant attendance)
97129	One-on-one therapeutic interventions focused on thought processing and strategies to manage activities
97130	Each additional 15 minutes (list separately in addition to code for primary procedure)
S9152	Speech therapy re-evaluation
V5362	Speech screening
V5363	Language screening
V5364	Dysphagia screening

Modifiers

96	Habilitative Services
97	Needle insertion(s) without injection(s), 1 or 2 muscle(s)

ICD-10 Diagnosis

Refer to the ICD-10 CM Manual

General Information

Background

Speech therapists use several alternative methods, techniques and devices to aid in their traditional treatment of patients with a range of speech, language, swallowing and cognitive conditions. They must be used as a component of a more comprehensive speech therapy program and may be performed by a qualified provider of speech therapy services. Examples include thermal tactile stimulation and expiratory muscle strengthening using a device. Performance of all services is subject to state regulations including therapy practice acts and should be rendered in accordance with those.

Scope

The purpose of this guideline is to establish appropriate use criteria for specific speech therapy treatments that complements the conceptual principles and documentation requirements for speech therapy established by the parent speech-language pathology guidelines.

Clinical indications for the appropriate use of services in these guidelines are intended to be limited to those that would be within the treatment scope of practice for qualified allied health services providers specifically speech therapists or occupational therapists. Medical indications for the appropriate use of speech therapy alternative treatments are out of scope of these guidelines.

Indications and criteria for the appropriate acquisition of durable medical equipment (DME) used in provision of alternative therapies are also out of scope for these guidelines.

Therapies deemed to be duplicative (see definition in the parent speech-language pathology guidelines) will be considered not medically necessary.

Unless specifically stated in the document, these guidelines do not express any opinion about the appropriate scope of practice for the practitioners who deliver these services and should not be put forth as having such an opinion.

Definitions

- **Blue dye test** – Clinical test that involves putting colored dye, historically FD&C Blue Number 1 food coloring, in a patient's food or tube feedings to aid in the clinical assessment of aspiration.
- **Electrical stimulation** – application of electrical current to the skin (transcutaneous electrical stimulation) in the region of the larynx in order to stimulate muscles involved in swallowing.
- **Expiratory muscle strengthening therapy (with device)** – exercise performed with the aid of an external device (e.g., threshold device) aimed at improving the strength and endurance of expiratory muscles of breathing for the purpose of treating speech, voice, and/or swallowing dysfunction.
- **Integrative yoga therapy** – method of holistic therapy that incorporates yoga into traditional speech therapy for the purpose of improving posture, balance, speech motor system, attention and focus to improve swallowing function, used most commonly in pediatric populations.
- **Lee Silverman Voice Treatment** – proprietary speech therapy program that involves an intensive program of voice exercises to improve voice quality and communication of people with Parkinson's disease and other neurological conditions. It requires company-certification of providers.
- **Myofascial release therapy for dysphagia** – form of manual therapy that attempts to relieve soft tissue, particularly fascial, restriction affecting swallowing for the purpose of improving swallow dysfunction.
- **Neurodevelopmental technique for dysphagia** – a treatment approach focused on the neurological basis of movement which involves guided or facilitated movements to improve function in patients with neuromotor conditions.

- **Oral motor exercises for dysphagia** – exercises aimed at improving the strength, coordination, range of motion, and responsiveness of the affected oro-motor muscles for the purpose of treating oral pharyngeal dysphagia.
- **Parkinson Voice Project** – proprietary speech therapy program, involving individual and group therapy techniques, for people with Parkinson’s and Parkinson’s-plus syndromes. Provider training is company sponsored. Parkinson Voice Project is the company that offers the training. The program is called SPEAK OUT!® & The LOUD Crowd®.⁴
- **Thermal tactile stimulation for dysphagia** – method of speech therapy that uses the application of a cold stimulant to the faucial pillars to facilitate the activation of the swallow mechanism and improve swallowing function.

Clinical Indications

None.

Additional Services

Other services covered by CPT codes listed in the coding section which are not better accounted for by a more specific service or indication listed in this guideline may be considered medically necessary when **ALL** of the following criteria are met:

- The anticipated benefit of the recommended intervention outweighs any potential harms that may result such that there is a clinically significant, net benefit.
- Current literature and/or standards of rehabilitative or habilitative practice support that the recommended intervention offers the greatest net benefit among competing alternatives.

Note: for the purposes of this criterion, “current literature” requires a minimum of one well-designed randomized controlled trial that demonstrates clinically significant, net benefit relative to or as a supplement to the current standard of care.

- Based on the clinical evaluation, current literature, and standards of rehabilitative or habilitative practice, there exists a reasonable likelihood that the intervention will directly or indirectly lead to an improved outcome for the patient.

Exclusions

The following complementary and/or emerging speech therapy treatments are considered to be **not medically necessary**, because a clinically significant net benefit above and beyond conventional therapies could not be determined based on currently available evidence, or current evidence expressly demonstrates there is not a net benefit.

- **Blue dye test** is considered not medically necessary for all clinical scenarios.
- **Electrical stimulation/Biofeedback** is considered not medically necessary in all clinical scenarios.
- **Expiratory muscle strengthening with a device** is considered not medically necessary in all clinical scenarios.
- **Integrative yoga therapy** is considered not medically necessary in all clinical scenarios.
- **Lee Silverman Voice Treatment** is considered not medically necessary in all clinical scenarios.
- **Myofascial release therapy for dysphagia** is considered not medically necessary in all clinical scenarios of dysphagia.
- **Neurodevelopmental technique for dysphagia** is considered not medically necessary in all clinical scenarios of dysphagia.

- **Oral motor exercises for dysphagia** are considered not medically necessary in all clinical scenarios of dysphagia.
- **Parkinson Voice Project** is considered not medically necessary in all clinical scenarios.
- **Thermal tactile stimulation for dysphagia** is considered not medically necessary in all clinical scenarios of dysphagia.

References

1. Alali D, Ballard K, Bogaardt H. Treatment effects for dysphagia in adults with multiple sclerosis: a systematic review. *Dysphagia*. 2016;31(5):610-8.
2. Arvedson J, Clark H, Lazarus C, et al. Evidence-based systematic review: effects of oral motor interventions on feeding and swallowing in preterm infants. *Am J Speech Lang Pathol*. 2010;19(4):321-40.
3. Arvedson J, Clark H, Lazarus C, et al. The effects of oral-motor exercises on swallowing in children: an evidence-based systematic review. *Dev Med Child Neurol*. 2010;52(11):1000-13.
4. Bath PM, Lee HS, Everton LF. Swallowing therapy for dysphagia in acute and subacute stroke. *Cochrane Database Syst Rev*. 2018;10:CD000323.
5. Battel I, Calvo I, Walshe M. Interventions involving biofeedback to improve swallowing in people with parkinson disease and dysphagia: a systematic review. *Arch Phys Med Rehabil*. 2021;102(2):314-22.
6. Baydoun M, Oberoi D, Flynn M, et al. Effects of yoga-based interventions on cancer-associated cognitive decline: a systematic review. *Curr Oncol Rep*. 2020;22(Article No. 10):[10 p.].
7. Bechet S, Hill F, Gilheaney O, et al. Diagnostic accuracy of the modified Evan's blue dye test in detecting aspiration in patients with tracheostomy: a systematic review of the evidence. *Dysphagia*. 2016;31(6):721-9.
8. Benfield JK, Everton LF, Bath PM, et al. Does therapy with biofeedback improve swallowing in adults with dysphagia? a systematic review and meta-analysis. *Arch Phys Med Rehabil*. 2018;100(3):P551-61.
9. Berlowitz DJ, Tamplin J. Respiratory muscle training for cervical spinal cord injury. *Cochrane Database Syst Rev*. 2013(7):CD008507.
10. Brooks M, McLaughlin E, Shields N. Expiratory muscle strength training improves swallowing and respiratory outcomes in people with dysphagia: a systematic review. *Int J Speech Lang Pathol*. 2017;21(1):89-100.
11. Burns MI, Miller RM. The effectiveness of neuromuscular electrical stimulation (NMES) in the treatment of pharyngeal dysphagia: a systematic review. *J Med Speech Lang Pathol*. 2011;19(1):13-24.
12. Butler C, Darrah J. Effects of neurodevelopmental treatment (NDT) for cerebral palsy: an AACPD evidence report. *Dev Med Child Neurol*. 2001;43(11):778-90.
13. Cardoso JR, Teixeira EC, Moreira MD, et al. Effects of exercises on Bell's palsy: systematic review of randomized controlled trials. *Otol Neurotol*. 2008;29(4):557-60.
14. Carnaby-Mann GD, Crary MA. Examining the evidence on neuromuscular electrical stimulation for swallowing: a meta-analysis. *Arch Otolaryngol Head Neck Surg*. 2007;133(6):564-71.
15. Chen YW, Chang KH, Chen HC, et al. The effects of surface neuromuscular electrical stimulation on post-stroke dysphagia: a systemic review and meta-analysis. *Clin Rehabil*. 2016;30(1):24-35.
16. Chiang CF, Lin MT, Hsiao MY, et al. Comparative efficacy of noninvasive neurostimulation therapies for acute and subacute poststroke dysphagia: a systematic review and network meta-analysis. *Arch Phys Med Rehabil*. 2019;100(4):739-50.e4.
17. Clark H, Lazarus C, Arvedson J, et al. Evidence-based systematic review: effects of neuromuscular electrical stimulation on swallowing and neural activation. *Am J Speech Lang Pathol*. 2009;18(4):361-75.
18. Coleman JJ, Frymark T, Franceschini NM, et al. Assessment and treatment of cognition and communication skills in adults with acquired brain injury via telepractice: a systematic review. *Am J Speech Lang Pathol*. 2015;24(2):295-315.
19. Cotelli M, Manenti R, Brambilla M, et al. Cognitive telerehabilitation in mild cognitive impairment, Alzheimer's disease and frontotemporal dementia: a systematic review. *J Telemed Telecare*. 2017;25(2):67-79..
20. Cousins N, MacAulay F, Lang H, et al. A systematic review of interventions for eating and drinking problems following treatment for head and neck cancer suggests a need to look beyond swallowing and trismus. *Oral Oncol*. 2013;49(5):387-400.
21. Dewar R, Love S, Johnston LM. Exercise interventions improve postural control in children with cerebral palsy: a systematic review. *Dev Med Child Neurol*. 2015;57(6):504-20.

22. Dziewas R, Allescher HD, Aroyo I, et al. Diagnosis and treatment of neurogenic dysphagia - S1 guideline of the German Society of Neurology. *Neurol.* 2021;3(Article No. 23):[30 p.].
23. Enrichi C, Battel I, Zanetti C, et al. Clinical criteria for tracheostomy decannulation in subjects with acquired brain injury. *Respir Care.* 2017;62(10):1255-63.
24. Essat M, Archer R, Williams I, et al. Interventions to promote oral nutritional behaviours in people living with neurodegenerative disorders of the motor system: a systematic review. *Clin Nutr.* 2020;39(8):2547-56.
25. Foley N, Teasell R, Salter K, et al. Dysphagia treatment post stroke: a systematic review of randomised controlled trials. *Age Ageing.* 2008;37(3):258-64.
26. Grassi A, Sgherri G, Chorna O, et al. Early intervention to improve sucking in preterm newborns: a systematic review of quantitative studies. *Adv Neonat Care.* 2018;19(2):97-109.
27. Kaneoka A, Yang S, Inokuchi H, et al. Presentation of oropharyngeal dysphagia and rehabilitative intervention following esophagectomy: a systematic review. *Dis Esophagus.* 2018;31(8):[11 p.].
28. Knutsen J, Wolfe A, Burke BL, et al. A systematic review of telemedicine in autism spectrum disorders. *Rev J Autism Dev Disord.* 2016;3(4):330-44.
29. Kollen BJ, Lennon S, Lyons B, et al. The effectiveness of the Bobath concept in stroke rehabilitation: what is the evidence? *Stroke.* 2009;40(4):e89-97.
30. Lopez-Liria R, Parra-Egeda J, Vega-Ramirez FA, et al. Treatment of dysphagia in Parkinson's disease: a systematic review. *Int J Environ Res Public Health.* 2020;17(11):[13 p.].
31. Mancopes R, Smaoui S, Steele CM. Effects of expiratory muscle strength training on videofluoroscopic measures of swallowing: a systematic review. *Am J Speech Lang Pathol.* 2020;29(1):335-56.
32. Michielsen M, Vaughan-Graham J, Holland A, et al. The Bobath concept - a model to illustrate clinical practice. *Disabil Rehabil.* 2019;41(17):2080-92.
33. Molini-Avejonas DR, Rondon-Melo S, Amato CA, et al. A systematic review of the use of telehealth in speech, language and hearing sciences. *J Telemed Telecare.* 2015;21(7):367-76.
34. Mulheren R, Azola A, Gonzalez-Fernandez M. Avoiding the downward spiral after stroke: early identification and treatment of dysphagia. *Curr Phys Med Rehabil Rep.* 2020;8:469-77.
35. Nordio S, Innocenti T, Agostini M, et al. The efficacy of telerehabilitation in dysphagic patients: a systematic review. *Acta Otorhinolaryngol Ital.* 2018;38(2):79-85.
36. Park JS, Hwang NK. Chin tuck against resistance exercise for dysphagia rehabilitation: a systematic review. *J Oral Rehabil.* 2021;48(8):968-77.
37. Rietberg MB, Veerbeek JM, Gosselink R, et al. Respiratory muscle training for multiple sclerosis. *Cochrane Database Syst Rev.* 2017;12:CD009424.
38. Scherpenhuizen A, van Waes AM, Janssen LM, et al. The effect of exercise therapy in head and neck cancer patients in the treatment of radiotherapy-induced trismus: a systematic review. *Oral Oncol.* 2015;51(8):745-50.
39. Schwarz M, Ward EC, Ross J, et al. Impact of thermo-tactile stimulation on the speed and efficiency of swallowing: a systematic review. *Int J Lang Commun Disord.* 2018;53(4):675-88.
40. Scutt P, Lee HS, Hamdy S, et al. Pharyngeal electrical stimulation for treatment of poststroke dysphagia: individual patient data meta-analysis of randomised controlled trials. *Stroke Res Treat.* 2015;2015(Article ID 429053):[8 p.].
41. Sjogreen L, Gonzalez Lindh M, Broden M, et al. Oral sensory-motor intervention for children and adolescents (3-18 years) with dysphagia or impaired saliva control secondary to congenital or early-acquired disabilities: a review of the literature, 2000 to 2016. *Ann Otol Rhinol Laryngol.* 2018;127(12):978-85.
42. Speyer R, Baijens L, Heijnen M, et al. Effects of therapy in oropharyngeal dysphagia by speech and language therapists: a systematic review. *Dysphagia.* 2010;25(1):40-65.
43. Tan C, Liu Y, Li W, et al. Transcutaneous neuromuscular electrical stimulation can improve swallowing function in patients with dysphagia caused by non-stroke diseases: a meta-analysis. *J Oral Rehabil.* 2013;40(6):472-80.
44. Tanksale R, Sofronoff K, Sheffield J, et al. Evaluating the effects of a yoga-based program integrated with third-wave cognitive behavioral therapy components on self-regulation in children on the autism spectrum: A pilot randomized controlled trial. *Autism.* 2021;25(4):995-1008.
45. Templeman L, Roberts F. Effectiveness of expiratory muscle strength training on expiratory strength, pulmonary function and cough in the adult population: a systematic review. *Physiotherapy.* 2020;106:43-51.

46. Tian X, Yi LJ, Zhang L, et al. Oral motor intervention improved the oral feeding in preterm infants: evidence based on a meta-analysis with trial sequential analysis. *Medicine (Baltimore)*. 2015;94(31):e1310.
47. Wu F, Liu Y, Ye G, et al. Respiratory muscle training improves strength and decreases the risk of respiratory complications in stroke survivors: a systematic review and meta-analysis. *Arch Phys Med Rehabil*. 2020;101(11):1991-2001.

History

Status	Review Date	Effective Date	Action
Revised	08/29/2022; 09/21/2022	04/09/2023* *not for LA Medicaid	Independent Multispecialty Physician Panel (IMPP) review. Updates to Background and Definitions. Definition and exclusion added for Lee Silverman Voice Treatment BIG®.
Revised	08/31/2021	06/12/2022	Independent Multispecialty Physician Panel (IMPP) review. Updates to Definitions. Examples added for clarification. Revised indications: Dry Needling.
Revised	-	05/01/2021	Removed CPT codes 97597, 97598, 97602.
Created	05/11/2020	12/01/2020	IMPP review. Original effective date.