NARIC
National Rehabilitation Information Center

reSearch

A collection of research reviews on rehabilitation topics from NARIC and other information resources.

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The use of prescriptive physical therapy in rehabilitation

In this edition of *reSearch* we explore the topic of the prescription of physical therapy in rehabilitation. *reSearch* was originally created as a vehicle to explore disability related topics presented by patrons through our information service via phone, mail, email, and our chat-based reference service. In May, NARIC received an email request for information regarding recommendations for physical therapy for stroke patients:

> I heard that the NIH or one of its organizations recommended that there be three years of physical therapy for stroke patients. If you are aware of this, do you have a reference I could use in a paper? *(05/26/2009)*

Information specialists directed the patron to information and resources related to physical therapy guidelines, recommendations, protocols, and prescriptions.

Research on physical therapy in rehabilitation is extensive. Locating information specific to physical therapy prescriptions proved to be challenging. The research presented in this issue provides a "snapshot" of the prescription of physical therapy for a variety of rehabilitative conditions over a 20 year period. Combined search terms included: physical therapy prescriptions, physical therapy scripts, physical therapy guidelines, physical therapy clinical recommendations, physical therapy modalities, prescribing physical therapy, and physical therapy protocols with additional overlap into occupational therapy in rehabilitation.

Whenever possible, NARIC attempts to utilize and incorporate relevant citations from alternative databases within *reSearch*. In this edition, information specialists incorporated citations from the Physiotherapy Evidence Database (PEDro). PEDro is a free, web-based database of evidence relevant to physiotherapy. The database is available at www.pedro.org.au/index.html, and contains citations of over 14,200 randomized controlled trials, systematic reviews, and evidence-based clinical practice guidelines relevant to physiotherapy. Where possible, abstracts and links to full-text versions of the documents are provided (PEDro Information Leaflet, Retrieved, 10:49 a.m., July 24, 2009, from http://www.pedro.org.au/pedro_leaflet.html).

A listing of approximately 64 additional descriptor terms between the NARIC, CIRRIE, ERIC, Cochrane, PEDro, and PubMed databases can be found at the end of this document.

A search of the REHABDATA database resulted in 37 documents published between 1998 and 2009. A search of CIRRIE and ERIC databases resulted in three documents between 2004 and 2008 and three documents between 1999 and 2005, respectively. The Cochrane and PubMed databases search garnered the most results with 18 documents between 2001 and 2009 and 23 documents from between 1999 and 2009, respectively. Finally, the PEDro database search resulted in six documents between 2000 and 2008. The number of PEDro citations would have been higher if not for the duplicate search results of the other databases. The complete citations are included in this research brief.

Table of Contents

NIDRR Funded Projects Related to the use of prescriptive physical therapy in rehabilitation

In addition to document searches, we searched our NIDRR Program Database to locate grantees/ projects related to the use of perscriptive physical therapy in rehabilitation. The search resulted in 11 NIDRR funded projects — 4 currently funded and 7 which have completed their research activities. Project information and their publications are offered as additional resources for our patrons.

Constraint-Induced Movement Therapy Modified for Rehabilitating Arm Function in Stroke Survivors with Plegic Hands
Project Number: H133G050222
Phone: 205/934-2471
Email: guswatte@uab.edu

Health Activity Rehabilitation Research Training Center (HARRTC)
Project Number: H133P050005
Phone: 573/884-1499
harrtc.missouri.edu

Rehabilitation Research and Training Center on Spinal Cord Injury: Promoting Health and Preventing Complications through Exercise
Project Number: H133B031114
Phone: 202/877-1603
www.sci-health.org

Rehabilitation Research and Training Center on Technology Promoting Integration for Stroke Survivors: Overcoming Social Barriers
Project Number: H133B031127
Phone: 312/238-6197
www.rrtc-stroke.org

The following projects have completed their research activities:

Doctoral Training in Physical Therapy
Project Number: H133P20018
Phone: 319/335-9791
www.vh.org/Welcome/UIHC/UIHCMedDepts/PhysicalTherapy/PTProg/PtProg.html

Health Outcomes of Physical Therapy Treatment in Musculoskeletal Conditions
Project Number: H133F50022
Phone: 617/674-2998
Email: diette@vmsvax.simmons.edu

NYU Clinical Physical Therapy Research Training
Project Number: H133P20006
Phone: 212/998-9415
www.nyu.edu/education/pt

Occupational Therapy Evaluation and Training Module to Guide Practice with Parents with Physical Disabilities
Project Number: H133G010054
Phone: 800/644-2666
www.lookingglass.org

Rehabilitation Research Training in Physical Therapy
Project Number: H133P50002
Phone: 713/794-2069
Email: hf_protas@twu.edu

Rehabilitation Research and Training Center on Stroke Rehabilitation
Project Number: H133B980021
Phone: 312/238-6197
www.rrtc-stroke.org

Research and Training Center on Medical Rehabilitation Services
Project Number: H133B40025
Phone: 202/466-1900
www.intr.net/nrhrc

Full-text copies of these documents may be available through NARIC's document delivery service.

To order any of the documents listed, please note the NARIC Accession Number (starts with a J, O, or R) and call an information specialist at 800/346-2742.

You may also order online at www.naric.com/services/requestform.cfm. There is a charge of five cents for copying and shipping with a $5 minimum on all orders. International shipping fees may apply.

Documents from NARIC's REHABDATA search listed are listed below:

2009

Azen, S.P., Baurley, J., Brown, D.A., Ervin, C., Fowler, E.G., Ge, T., Gordon, J., Kulig, K., Mulroy, S., Pate, P., Sullivan, K.J., Underwood, S.J., & Winstein, C. (2009). **The physical therapy clinical research network (PTClinResNet): Methods, efficacy, and benefits of a rehabilitation research network.** *American Journal of Physical Medicine and Rehabilitation, 87*(11), 937-950.
NARIC Accession Number: J56119
ABSTRACT: Article describes the methods and strategies used in accomplishing the initial goals of building the Physical Therapy Clinical Research Network (PTClinResNet), a clinical research network designed to assess outcomes for health-related mobility associated with evidence-based physical therapy interventions across and within four different disability groups. The network has three specific aims: (1) create the infrastructure necessary to develop and sustain clinical trials research in rehabilitation, (2) generate evidence to evaluate the efficacy of resistance exercise-based physical interventions designed to improve muscle performance and movement skills, and (3) provide education and training opportunities for present and future clinician-researchers and for the rehabilitation community at-large in its support of evidence-based practice. The authors present the network's infrastructure, development, and several examples that highlight the benefits of a clinical research network.

Cowan, R.E., Nash, M.S., & Malone, L.A. (2009). **Exercise is medicine: Exercise prescription after SCI to manage cardiovascular disease risk factors.** *Topics in Spinal Cord Injury Rehabilitation, 14*(3), 69-83.
NARIC Accession Number: J55873
ABSTRACT: Article presents an overview of the Exercise is Medicine initiative, which was launched in 2008 to facilitate widespread adoption of exercise and physical activity as a practical treatment for disease prevention. Discussion includes current exercise recommendations for the non-disabled, evidence for cardiovascular disease risk factor modification in people with spinal cord injury (SCI), and appropriate SCI-related alterations to exercise prescription. Resources for supporting the exercise prescription process for people with SCI are provided.

Serghiou, M., & Whitehead, C. (2009). **A 12-year comparison of common therapeutic interventions in the burn unit.** *Journal of Burn Care & Research, 30*(2), 281-287.
NARIC Accession Number: J56238
ABSTRACT: Article describes a survey that investigated current trends in burn rehabilitation and compares the result with a similar survey performed in 1994. The survey was sent to 100 randomly selected burn care facilities throughout the United States and Canada. Rehabilitation topics examined included evaluation, positioning, splinting, active range of motion (ROM), passive ROM, ambulation, and the cross-training of occupational and physical therapists. Analysis of the responses revealed significant increases in the percentages of burn centers initiating common therapy practices. Positioning, active ROM, passive ROM, and ambulation were all found to have increases in the number of burn centers using these practices. Overall comparison from 1994 to 2006 shows that common therapy techniques are being initiated earlier in the patient's acute burn stay. It is also concluded that there is a clearer definition of roles between physical and occupational therapists because of an overall decrease in the number of therapist cross-trained in burn care.

2008

Agah, A., Ahmad, S.O., Liu, W., Natajara, P., Oelschlager, A., & Pohl, P.S. (2008). **Current clinical practices in stroke rehabilitation: Regional pilot survey.** *Journal of Rehabilitation Research and Development (JRRD), 45*(6), 841-850.
NARIC Accession Number: J55444
ABSTRACT: This study was conducted to gain a better understanding the current physical and occupational therapy practices in stroke rehabilitation in the Midwest. Researchers and clinicians in the field of stroke rehabilitation were interviewed, and past studies in the literature were analyzed. Through these activities, a 37-item questionnaire was developed that was sent to 320 occupational and physical therapists practicing in Kansas and Missouri who focus on the care of people who have had a stroke. A total of 107 respondents returned a completed questionnaire, for a response rate of about 36 percent. The majority of respondents had more than 12 years of experience treating patients with stroke. The preferred approaches for the rehabilitation of people who have had a stroke are the Bobath and Brunnstrom methods, which are being used by 93 percent of physical therapists and 85 percent of occupational therapists.

Even though some variability existed in certain parts of the survey, clinicians generally agreed on different treatment approaches in issues dealing with muscle tone, weakness, and limited range of motion in stroke rehabilitation. Some newer treatment approaches that have been proven to be effective are practiced only by a minority of clinicians. The uncertainty among clinicians in some sections of the survey reveals that more evidence on clinical approaches is needed to ensure efficacious treatments.

Bennett, S., Green-Hill, J., Hoffman, T., McCluskey, A., McKenna, K., & Tooth, L. (2008). **Interventions for stroke rehabilitation: Analysis of the research contained in the OTseeker evidence database.** *Topics in Stroke Rehabilitation, 15*(4), 341-350.
NARIC Accession Number: J55310
ABSTRACT: Study analyzed the stroke content in the OTseeker database in terms of the quantity of the research evidence, the quality of the randomized controlled trials (RCTs), and the types of interventions and outcome measures used. OTseeker refers to the Occupational Therapy Systematic Evaluation of Evidence, a database that contains over 4,000 RCTs and systematic reviews (SRs) regarding the effectiveness of occupational therapy interventions. In 2007, a survey was conducted of stroke-related content in the OTseeker database. The year of publication and intervention categories used in each stroke-related RCT and SR were recorded for each entry. The internal validity of RCTs and the outcome measures used were also recorded. Of the 4,369 articles indexed on OTseeker, 452 (10.3 percent) related to stroke were conducted between 1979 and 2006. The five most frequently studied intervention categories were movement training (43.2 percent), models of service delivery (31.2 percent), physical modalities/orthotics/splinting (30.1 percent), exercise/stretching/strength training (19.5 percent), and skill acquisition/training (9.3 percent). Random allocation (96.1 percent) was the most frequently satisfied internal validity criterion and therapist blinding (3.1 percent) was least often satisfied. The five most frequently used outcome measurement categories were basic and extended activities of daily living (70.1 percent), hand and upper limb function (56.1 percent), walking/gait (44.1 percent), movement/motor function (32.7 percent), and quality of life/general overall health (27.9 percent). Few interventions or outcome measures were focused on activity or participation. This analysis highlights a need for better definitions of interventions and consensus about the best outcome measures.

2007

Cup, E.H., Hendricks, H.T., Munneke, M., Oosterndorp, R.A., Pieterse, A.J., ten Broek-Pastoor, J.M., van der Wilt, G.J., & van Engelen, B.G. (2007). **Exercise therapy and other types of physical therapy for patients with neuromuscular diseases: A systematic review.** *Archives of Physical Medicine and Rehabilitation, 88*(11), 1452-1464.
NARIC Accession Number: J53546
ABSTRACT: Article reviews the literature on exercise therapy and other physical therapy modalities for patients with neuromuscular disease (NMD) to support neurologists, physicians, and physical therapists in their clinical decision making. Two reviewers selected and rated the methodological quality of the randomized clinical trials (RCTs), controlled clinical trials (CCTs), and other designs included in the study. Initially, 58 studies were included: 12 RCTs, 5 CCTs, and 41 other designs. After methodological assessment, 19 other designs were excluded from further analysis. The studies were classified based on type of NMD and type of intervention. Participants included adults with one of the following types of NMD: (1) motoneuron diseases, (2) motor nerve root and peripheral nerve disorders, (3) neuromuscular transmission disorders, or (4) muscle disorders. Intervention categories included: (1) muscle strengthening exercises, (2) aerobic exercises, (3) breathing exercises, (4) other interventions, or (5) a combination of these modalities. A level of evidence was attributed for each subgroup of NMD and each type of intervention. Level II evidence ("likely to be effective") was found for strengthening exercises in combination with aerobic exercises for patients with muscle disorders. Level III evidence ("indications of effectiveness") was found for aerobic exercises in patients with muscle disorders and for the combination of muscle strengthening and aerobic exercises in a heterogeneous group of muscle disorders. Finally, there is Level III evidence for breathing exercises for patients with myasthenia gravis and for patients with myotonic muscular dystrophy.

Khurana, Seema, R., (*Ed.*). (2007). **Up-to-date advances in rehabilitation: Review issue.** *Physical Medicine and Rehabilitation Clinics of North America, 18*(4), i-xiv, 631-961.
NARIC Accession Number: R08880
ABSTRACT: This journal issues contains 12 articles describing to up-to-date advances in the field of physical medicine and rehabilitation. Topics include: stroke rehabilitation, spinal cord injury rehabilitation, traumatic brain injury rehabilitation, the electromyographer's guide

to the motor unit, electrodiagnosis of carpal tunnel syndrome, review of upper and lower extremity musculoskeletal pain problems, chronic pain, orthotic and prosthetic prescriptions, cerebral palsy, rehabilitation of children and adults who have neuromuscular diseases, cancer rehabilitation, and rehabilitation methods for the burn injured individual. Three of the articles are available for document delivery under accession numbers J53585 through J53587.

2006

Ashburn, A., & Lennon, S. (2006). **Contemporary therapy in stroke rehabilitation.** *Disability and Rehabilitation, 28*(13-14), 809-897.
NARIC Accession Number: R08769
ABSTRACT: This journal issue highlights three key themes that therapists in stroke rehabilitation need to consider in their clinical practice. Articles in the first theme explore practice in the context of recovery and training with evidence-based discussion around patterns of recovery, plateau, intensity of practice, feedback and strategies for facilitating self-management. The second theme focuses on cognitive influences, addressing the impact of dual tasking on functional performance, and the implication of motor neglect in rehabilitation. The third theme comprises studies on specific aspects of physical therapy such as the content of therapy, gait training, strength training, and the influence of spasticity on movement. Individual articles are available for document delivery under accession numbers J51276 through J51285.

Baum, C.M., Dromerick, A.W., Edwards, D.F., Hahn, M.G., Perlmutter, M.S., & Sheedy, C. (2006). **Screening patients with stroke for rehabilitation needs: Validation of the post-stroke rehabilitation guidelines.** *Neurorehabilitation and Neural Repair, 20*(1), 42-48.
NARIC Accession Number: J50530
ABSTRACT: The authors screened 53 patients who were admitted to an acute stroke unit for the presence of cognitive and sensory impairments and then compared the results with the patients' medical charts. Cognitive status, vision and hearing, unilateral visual neglect, speech and language, functional status, and level of depression were evaluated. Formal screening detected significantly more impairments than were noted in the charts. Only three patients had no impairments identified on screening, the remaining 50 patients had at least 1 impairment detected by screening that was not documented in the chart. Eighteen patients (35 percent) had three or more undocumented impairments. The findings suggest that in the absence of formal screening, much impairment goes unrecognized and perhaps untreated.

Brown, K.E., Furman, J.M., Marchetti, G.F., Whitney, S.L., & Wrisley, D.M. (2006). **Physical therapy for central vestibular dysfunction.** *Archives of Physical Medicine & Rehabilitation, 87*(1), 76-81.
NARIC Accession Number: J50350
ABSTRACT: Article describes the functional and disability outcomes for patients with central vestibular disorders following physical therapy (PT) intervention. Participants were divided into subgroups based on the following diagnostic categories: stroke, cerebellar dysfunction, post-traumatic central disorders, mixed central and peripheral vestibulopathy, and central vestibulopathy. Patients completed the Activities-Specific Balance Confidence Scale, the Dizziness Handicap Inventory, the Dynamic Gait Index, the Timed Up & Go test, and the Five Times Sit-to-Stand Test before and after the intervention. Analysis of the scores revealed that, as a group, patients with central vestibular dysfunctions improved in both subjective and objective measures of balance after PT intervention. Patients with cerebellar dysfunction improved the least.

Fragala-Pinkham, Maria A., & Haley, Stephen, M. (2006). **Interpreting change scores of tests and measures used in physical therapy.** *Physical Therapy, 86*(5), 735-743.
NARIC Accession Number: J50688
ABSTRACT: Case example illustrates how to determine and interpret a "clinically significant change" in the outcome measures used in physical therapy, not only based on changes beyond expected measurement error, but also on the identification of changes that make a real difference in the lives of patients and families. The authors describe how to use item maps within an item response theory model to enhance the interpretation of change at a content level. Recommendations are provided for physical therapists who are interpreting changes in the context of clinical practice, case reports, and interventions in research. These recommendations include a greater application of indexes that help interpret the meaning of clinically significant change to multiple clinical, research, consumer, and payer communities.

Millar, J., & Turnbull, G.I. (2006). **A proactive physical management model of Parkinson's disease.** *Topics in Geriatric Rehabilitation, 22*(2), 162-171.
NARIC Accession Number: J50872
ABSTRACT: Because the progressive nature of Parkinson's disease (PD) does not fit the rehabilitation paradigm where the goal is to restore function, this article presents an alternative approach to the physical management of PD. Currently, rehabilitation professionals are rarely involved until a catastrophic event occurs, such as a hip fracture from a fall. By that time, rehabilitation is lengthy and incomplete. The proposed proactive model attempts to maintain optimal function and is divided into three phases. The first phase emphasizes health promotion when symptoms are not disabling. The second phase confronts problems as they arise and serves to maintain function. In the last phase, functional adaptation is addressed.

2005

Avery, J., Bosse, M.J., Castillo, R.C., MacKenzie, E.J., & Webb, L.X. (2005). **Use and perceived need of physical therapy following severe lower-extremity trauma.** *Archives of Physical Medicine & Rehabilitation, 86*(9), 1722-1728.
NARIC Accession Number: J49395
ABSTRACT: Study examined the utilization of physical therapy (PT), the level of perceived need for PT, and the proportion of patients with perceived need who received no PT in a group of patients with severe lower-extremity trauma who were treated at level I trauma centers. Data were collected from patients during the initial admission and at 3, 6, 12, and 24 months after discharge. Patients reported the number of PT visits, inpatient rehabilitation admissions, and their perceived need for PT. Perceived need for PT was also assessed by an orthopedic surgeon and a physical therapist. Results showed that amputation and reconstruction patients used comparable amounts of PT. The proportion of patients with perceived need for PT receiving no PT services increased over the study period, from 23 to 46 percent at first follow-up to over 68 percent by two years. Factors associated with increased risk for having a perceived need but receiving no therapy included lack of private insurance, pain, lower levels of education, lower fitness levels at time of injury, being a smoker, and having severe muscle injury.

Brosseau, Lucie, (Ed.). (2005). **Ottawa panel evidence-based clinical practice guidelines for post-stroke rehabilitation.** *Topics in Stroke Rehabilitation, 13*(2), 1-269.
NARIC Accession Number: R08763
ABSTRACT: Journal issue focuses on guidelines for clinical stroke rehabilitation practices developed by a panel of experts in Ottawa, Canada. Clinical practices guidelines are presented for: therapeutic exercises, task-oriented training, biofeedback, gait training, balance training, sensory intervention, constraint-induced movement therapy, shoulder subluxation, electrical stimulation, transcutaneous electrical nerve stimulation, therapeutic ultrasound, acupuncture, and intensity and organization of rehabilitation. All figures and tables cited in this issue are included in the CD-ROM attached to the inside back cover. Individual articles may be available for document delivery.

2004

Bweir, S., Petrofsky, A.K., & Petrofsky, J.S. (2004). **Stroke: Present therapy and treatment part 2.** *PALAESTRA: Forum of Sport, Physical Education, and Recreation for Those with Disabilities, 20*(3), 35-43.
NARIC Accession Number: J48316
ABSTRACT: Article provides an overview of the acute therapy and long-term rehabilitation phases of treatment following stroke. Common types of therapy and exercise include: stretch and range of motion exercises, exercises to build strength and endurance, and therapeutic exercises to improve neuromuscular coordination.

Costa, F., Fletcher, G., Franklin, B.A., Gordon, N.F., Gulanick, M., Roth, E.J., & Shephard, T. (2004). **Physical activity and exercise recommendations for stroke survivors: An American Heart Association scientific statement from the council on clinical cardiology, subcommittee on exercise, cardiac rehabilitation, and prevention; the council on cardiovascular nursing; the council on nutrition, physical activity, and metabolism; and the stroke council.** *Circulation, 109*(16), 2031-2041.
NARIC Accession Number: J49796
Available in PDF: http://circ.ahajournals.org/cgi/reprint/109/16/2031
ABSTRACT: Information and recommendations are presented for healthcare professionals who counsel

stroke survivors on the value of exercise training and participation in physical activity. The following key points are addressed: post-stroke sequelae and comorbid conditions, goals of physical rehabilitation, cardiorespiratory response to acute exercise, effects of exercise training and rehabilitation programs, the pre-exercise evaluation, recommendations for exercise programming, barriers to physical activity and exercise training, the importance of comprehensive stroke and cardiovascular disease risk reduction, and directions for future research.

Stein, J. (2004). **Motor recovery strategies after stroke.** *Topics in Stroke Rehabilitation, 11*(2), 12-22.
NARIC Accession Number: J47671
ABSTRACT: Article describes a number of exercise techniques that have been incorporated into traditional stroke rehabilitation and have been shown to improve motor function after stroke. These strategies include: constraint induced movement therapy, robot-aided rehabilitation, virtual reality, treadmill training, biofeedback, functional electrical stimulation, exercise intensity, and acupuncture. Medications to enhance recovery, growth factors, and stem cells have been proposed as possible adjunctive treatments.

2003

Clumpner, J., Heinemann, A.W., King, C., Pe, K., Roth, E.J., & Rychlik, K. (2003). **The impact of stroke practice guidelines on knowledge and practice patterns of health care professionals.** *Journal of Evaluation in Clinical Practice, 9*(2), 203-212.
NARIC Accession Number: J50082
ABSTRACT: Study evaluated the impact of a 1-hour lecture about post-stroke rehabilitation guidelines on the stroke knowledge and referral practice patterns of healthcare professionals. Participants completed a knowledge and referral practices questionnaire before and again six months after the lecture. Results showed that simply providing information about the guidelines did not increase knowledge and referrals. Those who completed a follow-up assessment knew more about the guidelines at the initial assessment than did those who did not complete the follow-up assessment. Doctors knew more about stroke rehabilitation than non-doctors, both at pre-test and at follow-up. Respondents who made more referrals at follow-up had a higher knowledge level at pre-test.

Edgar, D., King, S., & Simons, M. (2003). **Occupational therapy and physiotherapy for the patient with burns: Principles and management guidelines.** *Journal of Burn Care & Rehabilitation, 24*(5), 323-335.
NARIC Accession Number: J46316
ABSTRACT: Article describes the development of guidelines that establish standards for occupational therapy and physical therapy intervention in the care of burn patients. Content areas include respiratory management, edema management, splinting and positioning, physical function, scar management, and psychosocial and mutual elements. The Australian and New Zealand Burn Association have endorsed the guidelines and an abridged version is included in the article.

2002

Cavallini, A., Micieli, G., & Quaglini, S. (2002**). Guideline compliance improves stroke outcome: A preliminary study in four districts in the Italian region of Lombardia.** *Stroke, 33*(5), 1341-1347.
NARIC Accession Number: J44174
ABSTRACT: Study examines the relationship between compliance with American Heart Association guidelines and survival and effectiveness of treatment on disability for first-ever ischemic stroke patients. Outcome data were collected at discharge and at three and six months after stroke onset. A 15 percent decrease in mortality was detected at the six month follow-up. Compliance with guideline recommendations during the acute and early stages was found to significantly improve stroke survival. Also, better functional outcome was observed in the presence of a higher level of compliance.

Dudley, T.K., Duncan, P.W., Hamilton, B., Hoenig, H., Horner, R.D., LaClair, B.J., Reker, D.M., & Samsa, G.P. (2002). **Adherence to post-acute rehabilitation guidelines is associated with functional recovery in stroke.** *Stroke, 33*(1), 167-178.
NARIC Accession Number: J43823
ABSTRACT: Study was conducted to determine if adherence to post-acute rehabilitation guidelines is associated with better functional outcomes among stroke patients. The primary outcome measure was the Functional Independence Measure (FIM) motor score at six months post-stroke. Secondary outcomes included the Lawton Instrumental Activities of Daily Living (IADL), the Medical Outcomes Study Short Form (SF-36) physi-

cal functioning, and the Stroke Impact Scale (SIS). Analysis of data revealed that level of compliance with rehabilitation guidelines was significantly associated with FIM motor, IADL, and SIS scores. Guideline compliance was not related to the SF-36 physical function score.

Ma, H., & Trombly, C.A. (2002). **A synthesis of the effects of occupational therapy for persons with stroke, Part II: Remediation of impairments.** *American Journal of Occupational Therapy, 56*(3), 260-274.
NARIC Accession Number: J44287
ABSTRACT: Article is the second of a two-part review of research on the effects of occupational therapy for persons who have had a stroke. Part I synthesized findings on the restoration of role, task, and activity performance. Part II synthesizes research regarding the effects of occupational therapy on psychosocial, cognitive, and sensorimotor impairments. Twenty-nine studies involving 832 participants met the criteria for inclusion in the review. No studies directly addressed the effects of occupational therapy on depression after stroke. Eight studies researched cognitive-perceptual abilities and indicated that (1) homemaking tasks resulted in greater improvement of cognitive ability than paper-and-pencil drills and (2) tasks that forced awareness of neglected space improved unilateral neglect. Fifteen studies addressed the effects of occupational therapy on various motor skills and suggested that coordinated movement improved under the following conditions: (1) following written and illustrated guidelines for movement exercise, (2) using meaningful goal objects as targets, (3) practicing movements with specific goals, (4) moving both arms simultaneously but independently, and (5) imaging functional use of the affected limb.

Pomeroy, V.M., & Tallis, R.C. (2002). **Restoring movement and functional ability after stroke: Now and the future.** *Physiotherapy, 88*(1), 3-17.
NARIC Accession Number: J43534
ABSTRACT: Paper discusses the status of research findings related to using physical therapy to restore functional ability and movement following stroke. Reviews existing research literature which indicates physical therapy improves outcome but is unclear about which interventions produce specific results. Describes methods to improve the research evidence base to guide physical therapy intervention in the future.

2001

(2001). **Guide to physical therapist practice, second edition.** *Physical Therapy, 81*(1), 1-768.
NARIC Accession Number: R08060
ABSTRACT: Volume presenting a patient/client management model for physical therapy (PT) and describing preferred practice patterns for selected conditions. Topics include the nature of PT and the types of tests, measures, and interventions used by physical therapists. Preferred practice patterns are described for musculoskeletal, neuromuscular, cardiopulmonary, and integumentary conditions. Appendices present standards of practice, ethical guidelines, and guidelines for PT documentation.

Bombardier, C., & Li, L.C. (2001). **Physical therapy management of low back pain: An exploratory survey of therapist approaches.** *Physical Therapy, 81*(4), 1018-1028.
NARIC Accession Number: J41887
ABSTRACT: Study examining the clinical management of acute and subacute lumbar impairment by physical therapists since the release in 1994 of guidelines for the management of lumbar impairment by the U.S. Agency for Health Care Policy and Research (AHCPR). Data are from 274 responses to a 1998 survey of physical therapists practicing in Ontario. Results show that patient education, exercise, and electrotherapeutic and thermal modalities were the preferred interventions for acute lumbar impairments (symptom onset > five weeks) with or without sciatica. Exercise and work modification were preferred for subacute lumbar impairment (symptom onset of five weeks or longer). Only 46.3 percent of respondents agreed or strongly agreed that practice guidelines were useful for managing lumbar impairment.

Brander, V.A., Mullarkey, C.F., & Stulberg, S.D. (2001). **Rehabilitation after total joint replacement for osteoarthritis: An evidence-based approach.** *Physical Medicine & Rehabilitation: State of the Art Reviews, 15*(1), 175-197.
NARIC Accession Number: J41546
ABSTRACT: Article reviewing studies of rehabilitation interventions following total joint replacement surgery of the hip and knee. Approximately 120 articles were reviewed and evaluated for accuracy of methodology, statistical analysis, and validity of conclusions.

Articles from 1966 to 1999 were reviewed, but only studies relevant to current practice are presented. Recommendations are also presented based on the authors' clinical experience, identified as such. Interventions examined include preoperative exercise (aerobic training, strengthening, and physical therapy); preoperative patient education; early post-operative rehabilitation (weight-bearing and range of motion restrictions, use of continuous passive motion machines, management of perceived leg length discrepancies, exercise, pain management, and patient and family education); postoperative home or inpatient rehabilitation; and long-term rehabilitation (exercise). Evidence concerning the impact of activity and exercise on implant longevity is also reviewed.

Johnson, L.J., & Miller, M. (2001). **Functional testing: Approaches and injury management integration.** *Work, 16*(1), 7-11.
NARIC Accession Number: J41465
ABSTRACT: Article discussing the usefulness of the information supplied by functional capacity evaluations (FCEs) for management of work-related injuries or illness. FCE usefulness is discussed in relation to American Physical Therapy Association (APTA) guidelines for performance of FCEs, machine-based testing, therapist expertise, legal credibility of the FCE and its use as court testimony, FCEs in conjunction with independent medical evaluations (IMEs), and use of the FCE to determine capacity to return to work/return to function.

Philadelphia Panel (9 clinical specialty experts and the Ottawa Methods Group). (2001). **Philadelphia panel evidence-based clinical practice guidelines on selected rehabilitation interventions: Overview and methodology.** *Physical Therapy, 81*(10), 1629-1640.
NARIC Accession Number: J43125
ABSTRACT: Article describes the methodology used to develop evidence-based clinical guidelines (EBCPGs) for rehabilitation interventions for pain in four areas: neck, shoulder, low back, and knee. An expert panel of nine individuals (the Philadelphia Panel) assessed the evidence with a standardized approach that emphasized the clinical benefits of patient-important outcomes. Eight positive recommendations were developed. The target users of these EBCPGs are physical therapists, physiatrists, orthopedic surgeons, rheumatologists, family physicians, and neurologists. Additional details of the study can be found in NARIC's collection under accession numbers J43126 through J43129.

Scalzitti, D.A. (2001). **Evidence-based guidelines: Application to clinical practice.** *Physical Therapy, 81*(10), 1622-1628.
NARIC Accession Number: J43124
ABSTRACT: Article discusses the development and implementation of evidence-based clinical practice guidelines (EBCPGs) for management of musculoskeletal conditions. Reviews the benefits and limitations of the four types of clinical practice guidelines: evidence-based, expert-based, outcome-based, and preference-based. Focuses on responsibility of the physical therapy clinician to combine clinical evidence with expertise and patient preference in managing individual patients.

Scudds, R.J., & Simmonds, M.J. (2001). **Pain, disability, and physical therapy in older adults: Issues of patients and pain, practitioners and practice.** *Topics in Geriatric Rehabilitation, 16*(3), 12-23.
NARIC Accession Number: J41421
ABSTRACT: Article reviewing the literature on physical therapy (PT) management of pain and associated disability among older adults. The first section provides a brief review of the extent of the problem of pain and disability among older adults. The second section examines the knowledge and attitudes, and education of PT practitioners. The third section examines topics related to pain and disability assessment and management, including conceptual issues, assessment of physical performance, self-reported function, and clinical practice guidelines.

2000

Allen, M., Carr, C., Mann, K., Pottle, K., Putnam, W., Richard, J., & Sargeant, J. (2000). **Prescribing exercise for cardiac patients: Knowledge, practices, and needs of family physicians and specialists.** *Journal of Cardiopulmonary Rehabilitation, 20*(6), 333-339.
NARIC Accession Number: J40909
ABSTRACT: Study of physicians' knowledge and practices regarding prescription of exercise for cardiac patients, including (1) present and needed knowledge, (2) present practices, (3) barriers that hinder them in prescribing exercise, and (4) their perceived need for a protocol for prescribing exercise. Data are from 192 responses to a questionnaire mailed to 371 family physicians, 31 internists, and 25 cardiologists, and results of 4 focus groups consisting of 25 family practitioners, 1

internist, and 3 cardiologists. Results indicate that family physicians perceive they know little about prescribing a specific exercise program for cardiac patients, while specialist perceive they know little about motivating patients. Physicians perceive a need for a protocol to help them prescribe exercise for cardiac patients.

Knight, B.P., & Lampman, R.M. (2000). **Prescribing exercise training for patients with defibrillators.** *American Journal of Physical Medicine and Rehabilitation, 7*9(3), 292-297.
NARIC Accession Number: J39341
ABSTRACT: Article outlining a clinical approach to designing an exercise program for an individual with an implantable cardioverter defibrillator (ICD). Topics include: cautionary advice for patients; review of ICD function; patient evaluation, including physiologic testing and effects of medications; elements and components of an exercise prescription, including mode of activity, warm-up and cool-down, frequency, intensity, and duration; ECG monitoring; and assessment of progress.

1999

Ashburn, A., Ballinger, C., Low, J., & Roderick, P. (1999). **Unpacking the black box of therapy: A pilot study to describe occupational therapy and physiotherapy interventions for people with stroke.** *Clinical Rehabilitation, 13*(4), 301-309.
NARIC Accession Number: J37126
ABSTRACT: Study explores the design of a tool for recording interventions of occupational therapists and physiotherapists with people with stroke and examines the variability of therapy input between centers. During the 17 month project, six occupational therapists and seven physiotherapists from three day hospitals and one domiciliary stroke rehabilitation service recorded 12 weeks of face-to-face interventions with 89 stroke patients recruited for a larger randomized controlled trial. Main outcome was measured by frequency of use of interventions, together with other details about delivery of therapy using a data collection booklet and coding system designed by the participating therapists. The median treatment time was 45 minutes. The most frequently recorded components of physiotherapy intervention were 'walking', 'standing balance', and 'upper limb movement pattern'. Most frequent occupational therapy interventions were 'physical function', 'social and leisure activities', and 'other'. Variability between services were noted in terms of median treatment time, use of intervention codes, frequency of treatment sessions, amount of time spent working with assistance and amount of group work. These results suggest that occupational therapy and physiotherapy with people with stroke are not homogenous activities, and vary between therapists and services. Recommendations include further development of the tool, and use of other methodologies to explore the process and nature of stroke rehabilitation.

Edmondson, J.M., Hertfelder, S.D., Kanny, E.M., Kauffman, S., Slater, D.Y., & Waddell, K. (1999). **Guidelines for the use of aides in occupational therapy practice.** *American Journal of Occupational Therapy, 53*(6), 595-597.
NARIC Accession Number: J37986
ABSTRACT: Article providing guidelines for use of aides in occupational therapy (OT) practice, adopted by the American Occupational Therapy Association (AOTA). Topics include: the role of aides in OT; responsibility and accountability; delegation of tasks; supervision; training requirements; and regulatory requirements. Includes case examples of the appropriate use of aides. This document replaces the AOTA 1996 position paper, "Use of occupational therapy aides in occupational therapy practice.".

Spilak, C.L. (1999). **Incorporating occupational therapy group treatment in long-term care.** *Topics in Geriatric Rehabilitation, 15*(2), 48-55.
NARIC Accession Number: J38016
ABSTRACT: Article on group occupational therapy (OT) for older adults in long-term care facilities. Topics include: benefits of group OT; documentation of efficacy; planning issues, such as how to combine patients with different diagnoses; and group protocols. Examples are provided of group protocols for card playing, lower body dressing, and salad making.

1998

Brooks, C. (1998). **Radiation therapy guidelines for physiotherapists.** *Physiotherapy, 84*(8), 387-395.
NARIC Accession Number: J35891
ABSTRACT: Article with information on radiation therapy (RT) for physical therapists (PT). The article discusses how RT for cancer works, how it is administered, and its effects on different body tissues. Implications of past RT for PT treatment are discussed, with emphasis on the metastatic nature of cancer and on the need for awareness of the possibility that pains for which patients seek PT may be signs of recurrent cancer.

Mookerjee, S. (1998). **The application of interval training for exercise prescription in cardiac rehabilitation.** *Journal of Cardiopulmonary Rehabilitation, 18*(3), 233-235.
NARIC Accession Number: J35213
ABSTRACT: Article about interval training as an exercise training method for cardiac rehabilitation patients. The author discusses metabolic and cardiovascular responses to interval training, and how to establish exercise prescriptions for cycle ergometer and treadmill exercises.

Documents from the Center for International Rehabilitation Research Information and Exchange (CIRRIE) search at cirrie.buffalo.edu are listed below:

2008

Chevalier, X., Coudeyre, E., Mazieres, B., & Thevenon, A., (et al.). (2008). **Adherence to, and results of, physical therapy programs in patients with hip or knee osteoarthritis: Development of French clinical practice guidelines.** *Joint, Bone, Spine (Revue du Rhumatisme), 75,* 589-596.
ABSTRACT: In process (CIRRIE Abstract)

2005

Bekkering, G.E., Hendriks, E.J., Koopmanschap, M.A., & van Tulder, M.W., (et al.). (2005). **Implementation of clinical guidelines on physical therapy for patients with low back pain: Randomized trial comparing patient outcomes after a standard and active implementation strategy.** *Physical Therapy, 85*(6), 544-55.
ABSTRACT: (Link to PubMed)
www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15921475

2004

Oostendorp, R.A.B., M. S-P.G.G., M. S.R.A.H, & E. B.G., (et al.). (2004). **Evidence-based practice in physical and manual therapy: Development and content of Dutch national practice guidelines for patients with non-specific low back pain.** *Journal of Manual & Manipulative Therapy, 12*(1), 21-31.
ABSTRACT: In process (CIRRIE Abstract)

Documents from the Education Resource Information Center (ERIC) search at www.eric.ed.gov are listed below:

2005

Crane, S. (2005). **An interview with an occupational therapist.** *Zero to Three, 26*(1), 9-10.
ERIC #: EJ808183
ABSTRACT: Sharon Crane is a pediatric occupational therapist with over 20 years of experience working with children and families. “Zero to Three” interviews her to discuss how occupational therapy may move beyond a strictly therapeutic orientation toward services that address wellness and prevention. Crane has created programs for parents and typically-developing children that combine traditional occupational therapy with enrichment approaches. Her classes teach parents how very young children’s social-emotional as well as physical development depends on learning through the sensory systems. High-tech activities and gadgets should not replace body-based experiences. The goal is to help the child become well-regulated and be able to tolerate the sensory input in his or her environment.

2001

Wise, M. (2001). **Expanding the limits of evidence-based medicine: A discourse analysis of cardiac rehabilitation clinical practice guidelines.** *Published conference proceedings: Michigan State University, 2001.*
ERIC #: ED480837
ERIC Full-Text: www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED480837
ABSTRACT: Heart attacks are the leading cause of death in the United States, and cardiac rehabilitation, a form of post-MI (myocardial infarction) education, accounts for at most 20 percent of improved lifestyle behavior that can effectively manage symptoms, delay or prevent subsequent attacks, and lower mortality and morbidity rates. In an attempt to improve post-MI education, the U.S. Agency for Health Care Policy and Research used evidence from a comprehensive analysis of published scientific research to created guidelines that suggested changes to existing practices. Dimensional analysis of evidence contained in the guidelines (such as gender, age, and insurance status of partici-

pants) and evidence that was not contained in the guidelines (gathered from qualitative and quantitative studies about the social, emotional, and economic aspects of heart disease) was used to identify the promises and pitfalls of the guidelines. Findings suggest that the cardiac rehabilitation guidelines are based upon a rational behavior change educational orientation that does not meet many participants' needs. It is recommended that adult educators include a focus on mind-body integration, as behavior change is often conditional upon prior meaning making. In addition, transformative learning and critical popular education are recommended to address issues of social justice and cardiotoxic social policy that are not addressed in the cardiac rehabilitation guidelines.

1999

(1999). **Illinois occupational skill standards: Physical therapist assistant cluster.** Curriculum Publications Clearinghouse: Western Illinois University, 1999.
ERIC #: ED443032
ERIC Full-Text: www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED443032
ABSTRACT: These skill standards, developed through a consortium of educational and industry partners in Illinois, serve as guides to workforce preparation program providers to define content for their programs and to employers to establish the skills and standards necessary for job acquisition and performance. The skill standards include the following components for each skill defined: performance area; performance skill; skill standard; and performance elements and assessment criteria. This publication contains skill standards for physical therapist assistants defined on these two levels of difficulty: physical therapist assistant and physical therapy aide. The skill standards are grouped in the following areas: (1) administrative and clerical functions; (2) communication; (3) support services; (4) patient care services; (5) assessment and data collection; (6) physical therapy interventions; and (7) physical agents and mechanical modalities. Each area contains 6-23 standards. The following items are appended: glossaries; lists of Illinois Occupational Skill Standards and Credentialing Council, Health and Social Services Subcouncil, and Physical Therapist Assistant Cluster Standards Development Committee members; Health and Social Services Subcouncil Physical Therapist Assistant Cluster Skill Standards Recognition Proposal; and a list of workplace skills.

1994

McColl, M.A., & Pranger, T. (1994). **Theory and practice in the occupational therapy guidelines for client-centered practice.** *Canadian Journal of Occupational Therapy, 61*(5), 250-59.
ERIC #: EJ494173
ABSTRACT: Presents a conceptual model for understanding occupational therapy performance and a model for practice. Evaluates both models on nine criteria, finding the conceptual model largely consistent but the practice model having technical, structural, and conceptual discrepancies.

1991

(1991). ***Occupational therapy and physical therapy guidelines for the public schools.***
ERIC #: ED347717
ABSTRACT: This document provides general guidelines to promote consistency of occupational therapy and physical therapy service delivery in the Texas educational system. These guidelines are intended to clarify the roles of occupational therapy and physical therapy as related special education services. The guidelines cover: (1) differences between the medical therapy model and school-based therapy model for providing occupational and physical therapy; (2) the educational relevance of therapy; (3) paraprofessional and professional personnel; (4) eligibility requirements; (5) referral process; (6) assessment; (7) service options; (8) admission, review, and dismissal committee; (9) individual educational programs; (10) progress reports and other documentation; (11) definitions; and (12) requirements/qualifications for occupational therapy and physical therapy personnel. An appendix lists 31 national and Texas organizational resources, 11 resource publications for recruiting personnel, and occupational therapy and physical therapy academic programs and assistant programs in Texas.

Waller, M. (2001). **Strength and conditioning for the person with cystic fibrosis.** *Strength & Conditioning Journal, 23*(2), 37-39.
ERIC #: EJ627340
ABSTRACT: Discusses how a strength and conditioning program can be safety incorporated into the daily life of people with cystic fibrosis as a complementary therapy to medications, regular checkups, bronchial drainage, and respiratory therapy, examining physical restrictions and guidelines, exercise prescriptions, and exercise applications, and explaining that appropriate programs can improve and prolong quality of life in people with cystic fibrosis.

Documents from the Cochrane Database of Systematic Reviews search at www.thecochranelibrary.org are listed below:

2009

Bernhardt, J., Collier, J.M., Legg, L.A., & Thuy, M.N.T. (2009). **Very early versus delayed mobilization after stroke.** *Cochrane Database of Systematic Reviews*: Reviews 2009 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD006187. pub2.
ID #: CD006187
ABSTRACT: BACKGROUND: Very early mobilization is performed in some stroke units and recommended in acute stroke clinical guidelines. It is unclear whether very early mobilization independently improves outcome after stroke. OBJECTIVES: To determine the benefits and harms of very early mobilization (commenced within 48 hours of stroke) compared with conventional care. SEARCH STRATEGY: We searched the Cochrane Stroke Group Trials Register (last searched April 2008). In addition, we searched 25 databases including the Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 3, 2007), MEDLINE (1950 to August 2007), EMBASE (1980 to September 2007), CINAHL (1982 to December 2006), and AMED (1985 to January 2007). We also searched relevant ongoing trials and research registers (searched January 2007) and the Chinese medical database Wanfangdata (searched March 2007), hand-searched journals, searched reference lists and contacted researchers in the field. SELECTION CRITERIA: Unconfounded RCTs of acute stroke patients, comparing an intervention group that started out of bed mobilization within 48 hours of stroke and aimed to reduce time to first mobilization and/or increase the amount or frequency (or both) of mobilization, with conventional care. DATA COLLECTION AND ANALYSIS: One review author eliminated obviously irrelevant records; two review authors independently applied selection criteria to remaining studies. The primary outcome was death or poor outcome (dependency or institutionalization) at the end of scheduled follow up. Secondary outcomes included mortality, dependency, institutionalization, activities of daily living (ADLs), quality of life, time to walking, adverse events (e.g. deep vein thrombosis) and patient mood. MAIN RESULTS: One study, involving 71 participants, was included. In this study the experimental group had earlier and more frequent mobilization than the control group (median 18.1 hours post stroke for experimental group versus 30.8 hours control; 167 minutes of mobilization (interquartile range (IQR) 62 to 305) during admission for experimental group versus 69 (IQR 31 to 115) minutes control). Fewer patients who received early and frequent mobilization were dead or disabled at three months, but this was not statistically significant and the confidence intervals were wide (odds ratio (OR) 0.67, 95 percent confidence interval (CI) 0.25 to 1.79, P = 0.42). No significant difference on any of the secondary outcomes of interest was found. AUTHORS' CONCLUSIONS: We found insufficient evidence to support or refute the efficacy of routine very early mobilization after stroke, compared with conventional care. More research is required to determine the benefits and harms of very early mobilization after stroke. VERY EARLY VERSUS DELAYED MOBILISATION AFTER STROKE: The impact of very early mobilization on recovery after stroke is not clear. Care in a stroke unit is recommended for patients early after stroke and results in reduced disability and an increased likelihood of returning home. Very early mobilization (helping patients to get up out of bed very early and often after stroke symptom onset) is performed in some stroke units and is recommended in many acute stroke clinical guidelines. However, this review identified only one small trial (71 participants) which found no difference in death and dependency at three months between those who undertook an early intensive mobilization protocol and those who did not. No significant harms were identified and a small reduction in non serious adverse events was found. At present there is insufficient evidence to support or refute the effects of routine very early mobilization after stroke and several trials are currently ongoing.

English, C., & Hillier, S.L. (2009). **Circuit class therapy for improving mobility after stroke.** *Cochrane Database of Systematic Reviews*: Protocols 2009 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD007513.
ID #: CD007513
ABSTRACT: This is the protocol for a review and there is no abstract. The objectives are as follows: To examine the effectiveness and safety of CCT on mobility in adults with stroke.

2008

Dal Bello-Haas, V., Florence, J.M., Krivickas, L.S. (2008). **Therapeutic exercise for people with amyotrophic lateral sclerosis or motor neuron disease.** *Cochrane Database of Systematic Reviews*: Reviews 2008 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD005229.pub2.
ID #: CD005229
ABSTRACT: BACKGROUND: Despite the high incidence of muscle weakness in individuals with amyotrophic lateral sclerosis (ALS) or motor neuron disease (MND), the effects of exercise in this population are not well understood. OBJECTIVES: The objective was to systematically review randomized and quasi-randomized studies of exercise for people with ALS or MND. SEARCH STRATEGY: We searched the Cochrane Neuromuscular Disease Group Trials Register, EMBASE (January 1980 to August 2007), LILACS (January 1982 to August 2007), MEDLINE (January 1966 to August 2007), Cochrane Central Register of Controlled Trials (CENTRAL), PEDro (January 1980 to August 2007), AMED (January 1985 to August 2007), HealthSTAR (January 1975 to August 2007), CINAHL (January 1982 to August 2007). We also searched Dissertation Abstracts, inspected the reference lists of all papers selected for review and contacted the authors with expertise in the field. SELECTION CRITERIA: We included randomized or quasi-randomized controlled trials of people with a diagnosis of definite, probable, probable with laboratory support, or possible amyotrophic lateral sclerosis, as defined by the El Escorial criteria. We included progressive resistance or strengthening exercise and endurance or aerobic exercise. The control condition was no exercise or standard rehabilitation management. Our primary outcome measure was improvement in functional ability, decrease in disability or reduction in rate of decline as measured by a validated outcome tool at three months. Our secondary outcome measures were improvement in psychological status or quality of life, decrease in fatigue, increase in, or reduction in rate of decline of muscle strength (strengthening or resistance studies), increase in, or reduction in rate of decline of aerobic endurance (aerobic or endurance studies) at three months and frequency of adverse effects. DATA COLLECTION AND ANALYSIS: Two review authors independently assessed trial quality and extracted the data. The authors of the papers were contacted to obtain information not available in the published articles. MAIN RESULTS: We identified two randomized controlled trials that met our inclusion criteria. The first examined the effects of a twice-daily exercise program of moderate load, endurance exercise versus "usual activities" in 25 people with ALS. The second examined the effects of thrice weekly moderate load and moderate intensity resistance exercises compared to usual care (stretching exercises) in 27 people with ALS. After three months, when the results of the two trials were combined, there was a significant weighted mean improvement in the Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS) measure of function in the exercise compared with the control groups (3.21, 95 percent confidence interval 0.46 to 5.96) in favor of the exercise group. No statistically significant differences in quality of life, fatigue or muscle strength were found. AUTHORS' CONCLUSIONS: The only studies detected were too small to determine to what extent strengthening exercises for people with ALS are beneficial, or whether exercise is harmful. There is a complete lack of randomized or quasi-randomized clinical trials examining aerobic exercise in this population. More research is needed. THERAPEUTIC EXERCISE FOR PEOPLE WITH AMYOTROPHIC LATERAL SCLEROSIS OR MOTOR NEURON DISEASE: Muscle weakness is very common in people with amyotrophic lateral sclerosis (ALS). A weak muscle can be damaged if overworked, because it is already functioning close to its maximal limits. As a result of this, exercise programs for people with ALS may be discouraged. However, if a person with ALS is not active, deconditioning and disuse weakness occurs, superimposed on the weakness caused by the ALS itself. If the reduced level of activity persists, many organ systems can be affected and a person with ALS can develop further deconditioning, muscle and joint tightness which cause contractures and pain. All these make performing daily activities more difficult. This review found only two randomised studies of exercise in people with ALS. The studies were too small to determine to what extent exercise for people with ALS is beneficial or whether exercise is harmful. More research is needed.

Prado, G.F., Soares, B.G.O., Teixeira, L.J., & Vieira, V.P. (2008). **Physical therapy for bell acute palsy (idiopathic facial paralysis).** *Cochrane Database of Systematic Reviews*: Reviews 2008 Issue 3 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD006283.pub2.
ID #: CD006283
ABSTRACT: BACKGROUND: Bell's palsy (idiopathic facial paralysis) is commonly treated by physical therapy services with various therapeutic strategies and devices. There are many questions about their efficacy and ef-

fectiveness. OBJECTIVES: To evaluate the efficacy of physical therapies on the outcome of Bell's palsy. SEARCH STRATEGY: We searched the Cochrane Neuromuscular Disease Group Trials Register (February 2008), the Cochrane Central Register of Controlled Trials (The Cochrane Library, Issue 4, 2007), MEDLINE (January 1966 to February 2008), EMBASE (January 1980 to February 2008), LILACS (January 1982 to February 2008), PEDro (from 1929 to February 2008), and CINAHL (January 1982 to February 2008). SELECTION CRITERIA: We selected randomized or quasi-randomized controlled trials involving any physical therapy. We included participants of any age with a diagnosis of Bell's palsy and all degrees of severity. The outcome measures were: incomplete recovery six months after randomization, motor synkinesis, crocodile tears or facial spasm six months after onset, incomplete recovery after one year and adverse effects attributable to the intervention. DATA COLLECTION AND ANALYSIS: Titles and abstracts identified from the register were scrutinized. The assessment of methodological quality took into account secure method of randomization, allocation concealment, observer blinding, patient blinding, differences at baseline of the experimental groups, and completeness of follow-up. Data were extracted using a specially constructed data extraction form. Separate subgroup analyses of participants with more and less severe disability were undertaken. MAIN RESULTS: The search identified 45 potentially relevant articles. Six studies met the inclusion criteria. Three trials studied the efficacy of electrostimulation (294 participants) and three exercises (253 participants). Neither treatment produced significantly more improvement than the control treatment or no treatment. There was limited evidence that improvement began earlier in the exercise group. AUTHORS' CONCLUSIONS: There is no evidence of significant benefit or harm from any physical therapy for idiopathic facial paralysis. The possibility that facial exercise reduces time to recover and sequelae needs confirming with good quality randomized controlled trials. PHYSICAL TREATMENTS FOR IDIOPATHIC FACIAL PARALYSIS: Bell's palsy is an acute disorder of the facial nerve, which produces full or partial loss of movement on one side of the face. The facial palsy gets completely better without treatment in most, but not all, people. Physical therapies, such as exercise, biofeedback, laser, electrotherapy, massage and thermotherapy, are used to hasten recovery. This review of existing trials found insufficient evidence to decide whether any of these therapies work. More trials are needed to assess their effects.

2007

Baer, G., Langhorne, P., Pollock, A., & Pomeroy, V.M. (2007). **Physiotherapy treatment approaches for the recovery of postural control and lower limb function following stroke.** *Cochrane Database of Systematic Reviews*: Reviews 2007 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD001920.pub2.
ID #: CD001920
ABSTRACT: BACKGROUND: There are a number of different approaches to physiotherapy treatment following stroke that, broadly speaking, are based on neurophysiological, motor learning and orthopaedic principles. Some physiotherapists base their treatment on a single approach, while others use a mixture of components from a number of different approaches. OBJECTIVES: To determine if there is a difference in the recovery of postural control and lower limb function in patients with stroke if physiotherapy treatment is based on orthopaedic or neurophysiological or motor learning principles, or on a mixture of these treatment principles. SEARCH STRATEGY: We searched the Cochrane Stroke Group Trials Register (last searched May 2005), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library Issue 2, 2005), MEDLINE (1966 to May 2005), EMBASE (1980 to May 2005) and CINAHL (1982 to May 2005). We contacted experts and researchers with an interest in stroke rehabilitation. SELECTION CRITERIA: Randomized or quasi-randomized controlled trials of physiotherapy treatment approaches aimed at promoting the recovery of postural control and lower limb function in adult participants with a clinical diagnosis of stroke. Outcomes included measures of disability, motor impairment or participation. DATA COLLECTION AND ANALYSIS: Two review authors independently categorized the identified trials according to the inclusion and exclusion criteria, documented their methodological quality, and extracted the data. MAIN RESULTS: Twenty-one trials were included in the review, five of which were included in two comparisons. Eight trials compared a neurophysiological approach with another approach; eight compared a motor learning approach with another approach; and eight compared a mixed approach with another approach. A mixed approach was significantly more effective than no treatment or placebo control for improving functional independence (standardized mean difference (SMD) 0.94, 95 percent confidence intervals (CI) 0.08 to 1.80). There was no significant evi-

dence that any single approach had a better outcome than any other single approach or no treatment control. AUTHORS' CONCLUSIONS: There is evidence that physiotherapy intervention, using a mix of components from different approaches, is significantly more effective than no treatment or placebo control in the recovery of functional independence following stroke. There is insufficient evidence to conclude that any one physiotherapy approach is more effective in promoting recovery of lower limb function or postural control following stroke than any other approach. We recommend that future research should concentrate on investigating the effectiveness of clearly described individual techniques and task-specific treatments, regardless of their historical or philosophical origin. PHYSIOTHERAPY TREATMENT APPROACHES FOR THE RECOVERY OF POSTURAL CONTROL AND LOWER LIMB FUNCTION FOLLOWING STROKE: Physiotherapy, using a mix of components from different treatment approaches, appears best for promoting functional independence following stroke; no single physiotherapy approach is clearly best for promoting recovery after stroke. A stroke interrupts the blood flow to the brain, often leading to damage to some brain functions. This can cause paralysis of some parts of the body or other difficulties with various physical functions. Physiotherapy is an important part of rehabilitation for people who have had a stroke. A number of physiotherapy approaches have been developed based on different ideas about how people recover after a stroke. This review of 21 trials found there is no evidence that any one approach was clearly better than another for improving leg strength, balance, walking speed or the ability to perform everyday tasks. However, physiotherapy using a mixture of components from the different approaches was better than no treatment or placebo treatment for improving aspects of function following a stroke.

Deane, K., Dixon, L., Duncan, D.C., Johnson, P., Kirkby, L., O'Connell, H., & Taylor, H.J. (2007). **Occupational therapy for patients with Parkinson's disease.** *Cochrane Database of Systematic Reviews*: Reviews 2007 Issue 3 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD002813. pub2.

ID #: CD002813

ABSTRACT: BACKGROUND: Despite drug and surgical therapies for Parkinson's disease, patients develop progressive disability. It has both motor and non-motor symptomatology, and their interaction with their environment can be very complex. The role of the occupational therapist is to support the patient and help them maintain their usual level of self-care, work and leisure activities for as long as possible. When it is no longer possible to maintain their usual activities, occupational therapists support individuals in changing and adapting their relationship with their physical and social environment to develop new valued activities and roles. OBJECTIVES: To compare the efficacy and effectiveness of occupational therapy with placebo or no interventions (control group) in patients with Parkinson's disease. SEARCH STRATEGY: Relevant trials were identified by electronic searches of MEDLINE (1966-April 2007), EMBASE (1974-2000), CINAHL (1982-April 2007), Psycinfo (1806-April 2007), Ovid OLDMEDLINE (1950-1965), ISI Web of Knowledge (1981-April 2007), National Library for Health (NLH) (April 2007), Nursing, Midwifery and Allied Health (NMAP) (April 2007), Institute: Medicine (December 2005), Proquest Nursing Journals (PNJ, 1986 - April 2007); rehabilitation databases: AMED (1985-April 2007), MANTIS (1880-2000), REHABDATA (1956-2000), REHADAT (2000), GEROLIT (1979-2000); English language databases of foreign language research and third world publications: Pascal (1984-2000), LILACS (1982- April 2007), MedCarib (17th Century-April 2007), JICST-EPlus (1985-2000), AIM (1993-April 2007), IMEMR (1984-April 2007), grey literature databases: SIGLE (1980-2000), ISI-ISTP (1982-April 2007), DISSABS (1999-2000), Conference Papers Index (CPI, 1982-2000) and Aslib Index to Theses (AIT, 1716- April 2006), The Cochrane Controlled Trials Register (Issue 2, 2007), the CenterWatch Clinical Trials listing service (April 2007), the metaRegister of Controlled Trials (mRCT, April 2007), Current controlled trials (CCT) (April 2007), ClinicalTrials.gov (April 2007), CRISP (1972-April 2007), PEDro (April 2007), NIDRR (April 2007) and NRR (April 2007) and the reference lists of identified studies and other reviews were examined. SELECTION CRITERIA: Only randomized controlled trials (RCT) were included, however those trials that allowed quasi-random methods of allocation were allowed. DATA COLLECTION AND ANALYSIS: Data was abstracted independently by two authors and differences were settled by discussion. MAIN RESULTS: Two trials were identified with 84 patients in total. Although both trials reported a positive effect from occupational therapy, all of the improvements were small. The trials did not have adequate placebo treatments,

used small numbers of patients and the method of randomization and concealment of allocation was not specified in one trial. These methodological problems could potentially lead to bias from a number of sources reducing the strength of the studies further. AUTHORS' CONCLUSIONS: Considering the significant methodological flaws in the studies, the small number of patients examined, and the possibility of publication bias, there is insufficient evidence to support or refute the efficacy of occupational therapy in Parkinson's disease. There is now a consensus as to UK current and best practice in occupational therapy when treating people with Parkinson's disease. We now require large well designed placebo-controlled RCTs to demonstrate occupational therapy's effectiveness in Parkinson's disease. Outcome measures with particular relevance to patients, carers, occupational therapists and physicians should be chosen and the patients monitored for at least six months to determine the duration of benefit. The trials should be reported using CONSORT guidelines. THERE IS INADEQUATE EVIDENCE TO EVALUATE THE EFFECT OF OCCUPATIONAL THERAPY FOR PEOPLE WITH PARKINSON'S DISEASE. Parkinson's disease is a progressive disabling neurodegenerative disease. Symptoms can include problems with movement such as being stiff, slow, and shaky, and sometimes non-motor symptoms such as problems with communication, mood, vision, and problem solving abilities. The role of the occupational therapist is to support individuals with Parkinson's disease and to enable them to maintain their usual level of self-care, work and leisure activities for as long as possible. The review found inadequate evidence from randomised controlled trials to evaluate the effect of occupational therapy for people with Parkinson's disease.

Price, C.I.M., & Woodford, H.J. (2007). **EMG biofeedback for the recovery of motor function after stroke.** *Cochrane Database of Systematic Reviews*: Reviews 2007 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD004585. pub2.
ID #: CD004585
ABSTRACT: BACKGROUND: Electromyographic biofeedback (EMG-BFB) is a technique that is believed to have additional benefit when used with standard physiotherapy for the recovery of motor function in stroke patients. However, evidence from individual trials and previous systematic reviews has been inconclusive. OBJECTIVES: To assess the effects of EMG-BFB for motor function recovery following stroke. SEARCH STRATEGY: We searched the Cochrane Stroke Group Trials Register (last searched 30 March 2006), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library Issue 4, 2005), MEDLINE (1966 to November 2005), EMBASE (1980 to November 2005), CINAHL (1983 to November 2005), PsycINFO (1974 to November 2005) and First Search (1966 to November 2005). We scanned reference lists for relevant articles and contacted equipment manufacturers and distributors. SELECTION CRITERIA: Randomized and quasi-randomized studies comparing EMG-BFB with control for motor function recovery in stroke patients. DATA COLLECTION AND ANALYSIS: Two review authors independently assessed trial quality and extracted data. Where possible we contacted study authors for further information. Any reported adverse effects were noted. MAIN RESULTS: Thirteen trials involving 269 people were included. All trials compared EMG-BFB plus standard physiotherapy to standard physiotherapy either alone or with sham EMG-BFB. Only one study used a motor strength assessment scale for evaluation of patients, which indicated benefit from EMG-BFB (WMD 1.09, 95 percent CI 0.48 to 1.70). EMG-BFB did not have a significant benefit in improving range of motion (ROM) through the ankle (SMD 0.05, 95 percent CI -0.36 to 0.46), knee or wrist joints. However, one trial suggested a benefit in ROM at the shoulder (SMD 0.88, 95 percent CI 0.07 to 1.70). Change in stride length or gait speed was not improved by EMG-BFB. Two studies used different assessment scores to quantify gait quality. One of these suggested a beneficial effect of EMG-BFB (SMD 0.90, 95 percent CI 0.01 to 1.78). Most of the studies examining functional outcomes used different assessment scales, which made meta-analysis impossible. Two studies that used the same scale did show a beneficial effect (SMD 0.69, 95 percent CI 0.15 to 1.23). AUTHORS' CONCLUSIONS: Despite evidence from a small number of individual studies to suggest that EMG-BFB plus standard physiotherapy produces improvements in motor power, functional recovery and gait quality when compared to standard physiotherapy alone, combination of all the identified studies did not find a treatment benefit. Overall the results are limited because the trials were small, generally poorly designed and utilized varying outcome measures. EMG BIOFEEDBACK FOR THE RECOVERY OF MOTOR FUNCTION AFTER STROKE: Electromyographic biofeedback (techniques using visual or sound signals to moni-

tor muscle activity) has an uncertain impact on recovery after stroke. Electromyographic biofeedback (EMG-BFB) uses electrodes placed on a patient's muscles to generate a feedback signal (in vision or sound) in response to muscle activation. It is believed that this may allow patients to learn a more effective way of using their disabled limb. Amongst the 13 studies identified, there was a small amount of evidence to suggest that EMG-BFB had a beneficial effect when used with standard physiotherapy techniques. However EMG-BFB cannot currently be recommended as an effective routine treatment because other studies found no effect, and the positive trials were small.

2006

Baily-Hallam, A., King, L.M., Langhorne, P., Pollock, A., & Pomeroy, V.M. (2006). **Electrostimulation for promoting recovery of movement or functional ability after stroke.** *Cochrane Database of Systematic Reviews*: Reviews 2006 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003241.pub2.
ID #: CD003241
ABSTRACT: BACKGROUND: Electrostimulation might improve motor recovery after stroke by providing neuromuscular re-training. OBJECTIVES: To find if electrostimulation improved functional motor ability, and the ability to undertake activities of daily living. SEARCH STRATEGY: We searched the Cochrane Stroke Group Trials Register (last searched August 2005), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library Issue 1, 2004), MEDLINE (1966 to January 2004), EMBASE (1980 to January 2004), CINAHL (1982 to January 2004), AMED - Allied and Complementary Medicine Database (1985 to January 2004), Physiotherapy Evidence Database (PEDro), REHABDATA and the ISI Science Citation Index (1981 to 2003). We placed a request on the PHYSIO e-mail discussion list and contacted authors of relevant studies to elicit any unpublished or ongoing studies, searched the reference lists of included trials and contacted trialists. SELECTION CRITERIA: Randomized controlled trials of electrostimulation delivered to the peripheral neuromuscular system which was designed to improve voluntary movement control, functional motor ability and activities of daily living. DATA COLLECTION AND ANALYSIS: Two review authors independently selected trials for inclusion, assessed trial quality and extracted the data. MAIN RESULTS: Of the 2077 references identified, 24 trials were included in this review. For electrostimulation compared with no treatment this review found that electrostimulation improved some aspects of functional motor ability and some aspects of motor impairment and normality of movement. In addition, there was a significant difference in favor of no treatment compared with electrostimulation for an aspect of functional motor ability. For electrostimulation compared with placebo this review found that electrostimulation improved an aspect of functional motor ability. For electrostimulation compared with conventional physical therapy this review found that electrostimulation improved an aspect of motor impairment. There were no statistically significant differences between electrostimulation and control treatment for all other outcomes. However, these results need to be interpreted with reference to the following: (1) the majority of analyses only contained one trial; (2) variation was found between included trials in time after stroke, level of functional deficit, and dose of electrostimulation; and (3) the possibility of selection and detection bias in the majority of included trials. AUTHORS' CONCLUSIONS: At present, there are insufficient robust data to inform clinical use of electrostimulation for neuromuscular retraining. Research is needed to address specific questions about the type of electrostimulation that might be most effective, in what dose and at what time after stroke. ELECTROSTIMULATION FOR PROMOTING RECOVERY OF MOVEMENT OR FUNCTIONAL ABILITY AFTER STROKE: Electrostimulation is a potential treatment to improve recovery of movement control and functional ability after stroke but the results of this review are inconclusive. After stroke many people are unable to use their affected limbs in everyday activities such as walking, ascending/descending stairs, washing hair or opening a coffee jar. One way to improve recovery might be to train affected muscles by using electrostimulation. This review examined the findings of 24 randomised controlled trials of electrostimulation provided to improve the ability to voluntarily move the affected limb and/or use the affected limb in everyday activities. The available evidence suggests that when electrostimulation is compared to no treatment then there might be a small effect on some aspects of function in favour of electrostimulation. However, the majority of findings in favor of electrostimulation were found when it was compared to a group of stroke patients who were not receiving any treatment and for all but two of the out-

comes examined there were no differences between either, electrostimulation and placebo or between electrostimulation and another type of physical therapy. This review also found that there were many differences between randomised controlled trials in the types of stroke patients who were included, the doses of electrostimulation and the outcome measures used. This meant that many of the comparisons made in the review related to one randomised trial rather than two or more. In addition, the numbers of participants in trials were relatively small. The results of this review therefore need to be interpreted with caution.

2004

Assendelft, W.J.J., Bouter, L.M., Brønfort, G., Evans, R.L., Goldsmith, C.H., Haas, M., & Nilsson, N. (2004). **Non-invasive physical treatments for chronic/recurrent headache.** *Cochrane Database of Systematic Reviews*: Reviews 2004 Issue 3 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD001878.pub2.
ID #: CD001878
ABSTRACT: BACKGROUND: Non-invasive physical treatments are often used to treat common types of chronic/recurrent headache. OBJECTIVES: To quantify and compare the magnitude of short- and long-term effects of non-invasive physical treatments for chronic/recurrent headaches. SEARCH STRATEGY: We searched the following databases from their inception to November 2002: MEDLINE, EMBASE, BIOSIS, CINAHL, Science Citation Index, Dissertation Abstracts, CENTRAL, and the Specialized Register of the Cochrane Pain, Palliative Care and Supportive Care review group. Selected complementary medicine reference systems were searched as well. We also performed citation tracking and hand searching of potentially relevant journals. SELECTION CRITERIA: We included randomized and quasi-randomized controlled trials comparing non-invasive physical treatments for chronic/recurrent headaches to any type of control. DATA COLLECTION AND ANALYSIS: Two independent reviewers abstracted trial information and scored trials for methodological quality. Outcomes data were standardized into percentage point and effect size scores wherever possible. The strength of the evidence of effectiveness was assessed using pre-specified rules. MAIN RESULTS: Twenty-two studies with a total of 2628 patients (age 12 to 78 years) met the inclusion criteria. Five types of headache were studied: migraine, tension-type, cervicogenic, a mix of migraine and tension-type, and post-traumatic headache. Ten studies had methodological quality scores of 50 or more (out of a possible 100 points), but many limitations were identified. We were unable to pool data because of study heterogeneity. For the prophylactic treatment of migraine headache, there is evidence that spinal manipulation may be an effective treatment option with a short-term effect similar to that of a commonly used, effective drug (amitriptyline). Other possible treatment options with weaker evidence of effectiveness are pulsating electromagnetic fields and a combination of transcutaneous electrical nerve stimulation [TENS] and electrical neurotransmitter modulation. For the prophylactic treatment of chronic tension-type headache, amitriptyline is more effective than spinal manipulation during treatment. However, spinal manipulation is superior in the short term after cessation of both treatments. Other possible treatment options with weaker evidence of effectiveness are therapeutic touch; cranial electrotherapy; a combination of TENS and electrical neurotransmitter modulation; and a regimen of auto-massage, TENS, and stretching. For episodic tension-type headache, there is evidence that adding spinal manipulation to massage is not effective. For the prophylactic treatment of cervicogenic headache, there is evidence that both neck exercise (low-intensity endurance training) and spinal manipulation are effective in the short and long term when compared to no treatment. There is also evidence that spinal manipulation is effective in the short term when compared to massage or placebo spinal manipulation, and weaker evidence when compared to spinal mobilization. There is weaker evidence that spinal mobilization is more effective in the short term than cold packs in the treatment of post-traumatic headache. AUTHORS' CONCLUSIONS: A few non-invasive physical treatments may be effective as prophylactic treatments for chronic/recurrent headaches. Based on trial results, these treatments appear to be associated with little risk of serious adverse effects. The clinical effectiveness and cost-effectiveness of non-invasive physical treatments require further research using scientifically rigorous methods. The heterogeneity of the studies included in this review means that the results of a few additional high-quality trials in the future could easily change the conclusions of our review. NON-INVASIVE PHYSICAL TREATMENTS FOR CHRONIC/RECURRENT HEADACHES: Various physical treatments are often used instead of, or in addition to, medications to treat headaches. Evidence from

controlled trials suggests that several non-invasive physical treatments may help prevent chronic/recurrent headaches. Spinal manipulation may be effective for migraine and chronic tension-type headache. Both spinal manipulation and neck exercises may be effective for cervicogenic headache. Weaker evidence suggests that other treatments may also be effective: pulsating electromagnetic fields and transcutaneous electrical nerve stimulation (TENS) for migraine, and therapeutic touch, cranial electrotherapy, TENS, and a combination of self-massage/TENS/stretching for tension-type headache. Although none of these treatments has conclusive evidence for effectiveness, all appear to be associated with little risk of serious adverse effects.

Bouter, L.M., Dekker, J.J., Kuyk, M.A.H., Schaardenburg, D.J., Steultjens, E.M.J., & Van den Ende, E.C.H.M. (2004). **Occupational therapy for rheumatoid arthritis.** *Cochrane Database of Systematic Reviews*: Reviews 2004 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003114.pub2.

ID #: CD003114

ABSTRACT: BACKGROUND: For persons with rheumatoid arthritis (RA) the physical, personal, familial, social and vocational consequences are extensive. Occupational therapy (OT), with the aim to facilitate task performance and to decrease the consequences of rheumatoid arthritis for daily life activities, is considered to be a cornerstone in the management of rheumatoid arthritis. Till now the efficacy of occupational therapy for patients with rheumatoid arthritis on functional performance and social participation has not been systematically reviewed. OBJECTIVES: To determine whether OT interventions (classified as comprehensive therapy, training of motor function, training of skills, instruction on joint protection and energy conservation, counseling, instruction about assistive devices and provision of splints) for rheumatoid arthritis patients improve outcome on functional ability, social participation and/or health related quality of life. SEARCH STRATEGY: Relevant full length articles were identified by electronic searches in Medline, Cinahl, Embase, Amed, Scisearch and the Cochrane Musculoskeletal group Specialized Register. The reference list of identified studies and reviews were examined for additional references. Date of last search: December 2002. SELECTION CRITERIA: Controlled (randomized and non-randomized) and other than controlled studies (OD) addressing OT for RA patients were eligible for inclusion. DATA COLLECTION AND ANALYSIS: The methodological quality of the included trials was independently assessed by two reviewers. Disagreements were resolved by discussion. A list proposed by Van Tulder et al. was used to assess the methodological quality. For outcome measures, standardized mean differences were calculated. The results were analyzed using a best evidence synthesis based on type of design, methodological quality and the significant findings of outcome and/or process measures. MAIN RESULTS: Thirty-eight out of 58 identified occupational therapy studies fulfilled all inclusion criteria. Six controlled studies had a high methodological quality. Given the methodological constraints of uncontrolled studies, nine of these studies were judged to be of sufficient methodological quality. The results of the best evidence synthesis shows that there is strong evidence for the efficacy of "instruction on joint protection" (an absolute benefit of 17.5 to 22.5, relative benefit of 100 percent) and that limited evidence exists for comprehensive occupational therapy in improving functional ability (an absolute benefit of 8.7, relative benefit of 20 percent). Indicative findings for evidence that "provision of splints" decreases pain are found (absolute benefit of 1.0, relative benefit of 19 percent). AUTHORS' CONCLUSIONS: There is evidence that occupational therapy has a positive effect on functional ability in patients with rheumatoid arthritis. OCCUPATIONAL THERAPY FOR RHEUMATOID ARTHRITIS: Does occupational therapy help people with rheumatoid arthritis? To answer this question, scientists analyzed 38 studies. The studies tested over 1700 people who had rheumatoid arthritis. People were either counseled, trained in skills or trained to move or do daily chores with less pain, taught to protect their joints, given splints, taught to use assistive devices, or had no therapy. Not all studies were high quality but this Cochrane Review provides the best evidence about occupational therapy that we have today. What is occupational therapy and how could it help rheumatoid arthritis? Rheumatoid arthritis is a disease in which the body's immune system attacks its own healthy tissues. The attack happens mostly in the joints of the feet and hands and causes redness, pain, swelling and heat around the joint. People with rheumatoid arthritis can find it difficult to do daily chores such as dressing, cooking, cleaning and working. Occupational therapists can give advice on how to do every day activities with less pain or advice on how to use splints and assistive devices. How well does it work? A high quality study showed that people could do daily chores better after having occu-

pational therapy with training, advice and counseling. Two high quality studies showed that people given advice about how to protect their joints could do daily chores better than people with no advice or another type of occupational therapy. But both therapies did not help overall well-being or pain. Another high quality study showed that people trained to move or do daily activities could move just as well as and with the same amount of pain as people who did not have occupational therapy. The strength of their grip was also improved immediately after wearing a splint. But hand movement was less after wearing a splint. There was not enough information to say whether advice about using assistive devices is helpful. What is the bottom line? There is "gold" level evidence that occupational therapy can help people with rheumatoid arthritis to do daily chores such as dressing, cooking and cleaning and with less pain. Benefits are seen with occupational therapy that includes training, advice and counseling and also with advice on joint protection. Splints can decrease pain and improve the strength of one's grip, but it may decrease hand movement.

Coats, A.J.S., Ebrahim, S., Rees, K., Singh, S., & Taylor, R.R.S. (2004). **Exercise based rehabilitation for heart failure.** *Cochrane Database of Systematic Reviews*: Reviews 2004 Issue 3 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003331.pub2.
ID #: CD003331
ABSTRACT: BACKGROUND: The prevalence of chronic heart failure is increasing, and increases with increasing age. Major symptoms include breathlessness and restricted activities of daily living due to reduced functional capacity, which in turn affects quality of life. Exercise training has been shown to be effective in patients with coronary heart disease and has been proposed as an intervention to improve exercise tolerance in patients with heart failure. OBJECTIVES: To determine the effectiveness of exercise based interventions compared with usual medical care on the mortality, morbidity, exercise capacity and health related quality of life, of patients with heart failure. SEARCH STRATEGY: We searched the Cochrane Controlled Trials Register (The Cochrane Library Issue 2, 2001), MEDLINE (2000 to March 2001), EMBASE (1998 to March 2001), CINAHL (1984 to March 2001) and reference lists of articles. We also sought advice from experts. SELECTION CRITERIA: RCTs of exercise based interventions. The comparison group was usual medical care as defined by the study, or placebo. Adults of all ages with chronic heart failure. Only those studies with criteria for diagnosis of heart failure (based on clinical findings or objective indices) have been included. DATA COLLECTION AND ANALYSIS: Studies were selected, and data were abstracted, independently by two reviewers. Authors were contacted where possible to obtain missing information. MAIN RESULTS: Twenty-nine studies met the inclusion criteria, with 1126 patients randomised. The majority of studies included both patients with primary and secondary heart failure, NYHA class II or III. Only one study specifically examined the effect of exercise training on mortality and morbidity. Exercise training significantly increased VO2 max by (WMD random effects model) 2.16 ml/kg/min (95 percent CI 2.82 to 1.49), exercise duration increased by 2.38 minutes (95 percent CI 2.85 to 1.9), work capacity by 15.1 Watts (95 percent CI 17.7 to 12.6) and distance on the six minute walk by 40.9 meters (95 percent CI 64.7 to 17.1). Improvements in VO2 max were greater for training programs of greater intensity and duration. HRQoL improved in the seven of nine trials that measured this outcome. AUTHORS' CONCLUSIONS: Exercise training improves exercise capacity and quality of life in patients mild to moderate heart failure in the short term. One study found beneficial effects of exercise on cardiac mortality and hospital readmissions over 3 years of follow-up, the remaining included studies did not aim to measure clinical outcomes and were of short duration. The findings of the review are based on small-scale trials in patients who are unrepresentative of the total population of patients with heart failure. Other groups (more severe patients, the elderly, women) may also benefit. Large-scale pragmatic trials of exercise training of longer duration, recruiting a wider spectrum of patients are needed to address these issues. EXERCISE TRAINING IMPROVES EXERCISE TOLERANCE AND QUALITY OF LIFE IN PEOPLE WITH MILD TO MODERATE HEART FAILURE: People with heart failure experience breathlessness and restricted activities of daily living because of their restricted heart capacity. This can reduce their amount of exercise, which can further reduce fitness, making their symptoms worse. The review found short-term trials of exercise training in people with mild to moderate heart failure only, which do not represent most of the people who have heart failure. The kinds of exercise programs varied greatly, but most included aerobic exercise rather than resistance training (such as working with weights). Exercise improved people's fitness and quality of life, without causing harm.

Judd, M., Li, L., Pencharz, J.N. (2004). **Comprehensive physiotherapy for rheumatoid arthritis.** *Cochrane Database of Systematic Reviews*: Protocols 2004 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD004802.
ID #: CD004802
ABSTRACT: This is the protocol for a review and there is no abstract. The objectives are as follows: The objective of this review is to examine the effectiveness of comprehensive PT interventions in improving impairment, disability and participation outcomes. We will also examine the impact of comprehensive PT on patient's quality of life and other mediating variables, including self-efficacy and disease specific knowledge.

Mortimer, P.S., Preston, N.J., & Seers, K. (2004). **Physical therapies for reducing and controlling lymphoedema of the limbs.** *Cochrane Database of Systematic Reviews*: Reviews 2004 Issue 4 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003141.pub2.
ID #: CD003141
ABSTRACT: BACKGROUND: Lymphoedema is the accumulation of excess fluid in the body caused by obstruction of the lymphatic drainage mechanisms. Management involves decongesting the reduced lymphatic pathways in order to reduce the size of the limb. There is a great deal of debate as to which components of a physical treatment program are the most crucial. OBJECTIVES: To assess the effect of physical treatment programs on: volume, shape, condition and long-term control of oedema in lymphoedematous limbs; psychosocial benefits. SEARCH STRATEGY: We searched the Cochrane Breast Cancer Group trials register (October 2007), the Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 1, 2008), MEDLINE, EMBASE, CINAHL and the National Research Register (February 2008) and UnCover, PASCAL, SIGLE, reference lists produced by The British Lymphology Society and The International Society of Lymphology congress proceedings (September 2003). SELECTION CRITERIA: Randomized controlled clinical trials that tested physical therapies with a follow-up period of at least six months. DATA COLLECTION AND ANALYSIS: Two blinded reviewers independently assessed trial quality and extracted data. Meta-analysis was not performed due to the poor quality of the trials. MAIN RESULTS: Only three studies involving 150 randomized patients were included. Since none studied the same intervention it was not possible to combine the data. One crossover study of manual lymph drainage (MLD) followed by self-administered massage versus no treatment, concluded that improvements seen in both groups were attributable to the use of compression sleeves and that MLD provided no extra benefit at any point during the trial. Another trial looked at hosiery versus no treatment and had a very high dropout rate, with only 3 out of 14 participants in the intervention group finishing the trial and only 1 out of 11 in the control group. The authors concluded that wearing a compression sleeve is beneficial. The bandage plus hosiery versus hosiery alone trial concluded that in this mixed group of participants bandage plus hosiery resulted in a greater reduction in excess limb volume than hosiery alone and this difference in reduction was maintained long-term. AUTHORS' CONCLUSIONS: All three trials have their limitations and have yet to be replicated, so their results must be viewed with caution. There is a clear need for well-designed, randomized trials of the whole range of physical therapies if the best approach to managing lymphoedema is to be determined. PHYSICAL THERAPIES FOR REDUCING AND CONTROLLING LYMPHOEDEMA OF THE LIMBS: Lymphoedema is the build up of excess fluid in the body tissues because of obstruction of lymphatic drainage back into the bloodstream. The affected limb becomes swollen, distorted in shape with pain, discomfort all of which impair movement and daily activities. It can be caused by a congenital abnormality, chronic venous insufficiency, damage to the lymphatic system following treatment of cancer or filariasis, a parasitic infection endemic in parts of India and Africa. Skin care is important as the affected tissues gradually thicken and are susceptible to inflammation and infections. People are also encouraged to exercise regularly and control their weight. Different physical treatments aimed at improved lymph drainage include multi-layer bandaging, manual lymph drainage (MLD), self-administered massage and compression sleeves or hosiery. The authors of this review, which aimed to assess the effect of physical treatment programs on the long-term control of lymphoedema, identified only three controlled trials for inclusion. These randomized a total of 150 adults to different levels of physical treatment. One trial involved 42 women with unilateral lymphoedema of the upper limb following treatment for breast cancer. One group received eight sessions of MLD in two weeks and training in self-massage and both this group and the control group wore

flat-knit compression sleeves. The reductions in excess arm volume and symptoms were similar in the two groups.A second trial involved 25 women from a local follow-up breast clinic. They were trained in self-administered massage and randomized to wear an elastic compression sleeve or no additional treatment. The drop-out rate was high, particularly in the control group, although the authors concluded that wearing a compression sleeve was beneficial. The third trial involved 83 mostly female participants from a lymphoedema clinic. Around two thirds had upper limb oedema. They were all taught self-administered massage. One group received a 19-day bandaging course before being fitted with hosiery. The other group wore hosiery from the start of the trial. The reduction in excess limb volume was consistently greater in those who started with multilayer bandaging. All three trials had methodological limitations, and as their data could not be combined, and they recruited only small numbers of participants, questions relating to the effect of this type of treatment could not be answered by this review.

2003

Bouter, L.M., Cardol, M.M., Dekker, J.J., Steultjens, E.E.M.J., van de, N.J., & Van den, E.E.C. (2003). **Occupational therapy for multiple sclerosis.** *Cochrane Database of Systematic Reviews*: Reviews 2003 Issue 3 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003608.
ID #: CD003608
ABSTRACT: BACKGROUND: Multiple sclerosis (MS) patients are referred to occupational therapy with complaints about fatigue, limb weakness, alteration of upper extremity fine motor coordination, loss of sensation and spasticity that causes limitations in performance of activities of daily living and social participation. The primary purpose of occupational therapy is to enable individuals to participate in self-care, work and leisure activities that they want or need to perform. OBJECTIVES: To determine whether occupational therapy interventions in MS patients improve outcome on functional ability, social participation and/or health related quality of life. SEARCH STRATEGY: We searched the Cochrane MS Group trials register (January 2003), the Cochrane Central Register of Controlled Trials (CENTRAL)The Cochrane Library Issue 4, 2002, MEDLINE (January 2003), EMBASE (December 2002), CINAHL (December 2002), AMED (December 2002), SciSearch (December 2002) and reference lists of articles. SELECTION CRITERIA: Controlled (randomized and non-randomized) and other than controlled studies addressing occupational therapy for MS patients were eligible for inclusion. DATA COLLECTION AND ANALYSIS: Two reviewers independently assessed the methodological quality of the included trials. Disagreements were resolved by discussion. A list proposed by Van Tulder 1997 was used to assess the methodological quality. For outcome measures, we calculated standardized mean differences. We analyzed the results using a best-evidence synthesis based on type of design, methodological quality and the significant findings of outcome and/or process measures. MAIN RESULTS: One randomized clinical trial was identified and two other included studies were a controlled clinical trial and a study with a pre-post test design. The three studies involved 271 people in total. Two studies evaluated an energy-conservation course for groups of patients and one study evaluated a counseling intervention. The results of the energy conservation studies could be biased because of the designs used, the poor methodological quality and the small number of included patients. The high quality RCT on counseling reported non-significant results. AUTHORS' CONCLUSIONS: On basis of this review no conclusions can be stated whether or not occupational therapy improves outcomes in MS patients. The lack of (randomized controlled) efficacy studies in most intervention categories of occupational therapy demonstrates an urgent need for future research in occupational therapy for multiple sclerosis. Initially, a survey of occupational therapy practice for MS patients, including the characteristics and needs of these patients, is necessary to develop a research agenda for efficacy studies. OCCUPATIONAL THERAPY AS SUPPORTIVE TREATMENT FOR PEOPLE WITH MULTIPLE SCLEROSIS: Multiple sclerosis (MS) is a chronic disease of the nervous system which affects young and middle-aged adults. MS causes disruption of the ability of nerves to conduct electrical impulses, leading to symptoms such as muscle weakness, fatigue and loss of control over the limbs. Occupational therapy (OT) is used to try to help people with MS participate in the physical and social activities of their daily lives. The review found that there is currently no reliable evidence that OT improves outcomes for people with MS, although there was some suggestion that fatigue might be improved.

Outpatient Service Trialists. (2003). **Therapy-based rehabilitation services for stroke patients at home.** *Cochrane Database of Systematic Reviews*: Reviews 2003 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD002925.
ID #: CD002925
ABSTRACT: BACKGROUND: Stroke Unit care is now accepted as an effective service model for hospital care, but the effectiveness of outpatient care is less certain. This review focuses on therapy-based rehabilitation services targeted at stroke patients living at home. OBJECTIVES: To assess the effects of therapy-based rehabilitation services targeted towards stroke patients resident in the community within one year of stroke onset/discharge from hospital following stroke. SEARCH STRATEGY: We searched the Cochrane Stroke Group Trials Register (last searched May 2001), the Cochrane Controlled Trials Register (The Cochrane Library Issue 4, 2001), MEDLINE (1996 to November 2001), EMBASE (1980 to November 2001), CINAHL (1983 to November 2001), PsycINFO (1967 to November 2001), AMED (1985 to November 2001), Wilson Social Sciences Abstracts (1984 to November 2001), Science Citation Index and Social Sciences Citation Index (1981 to November 2001). Other strategies to ensure identification of all potentially relevant trials included scanning reference lists of relevant articles and original papers, personal communication and hand searching journals. SELECTION CRITERIA: All unconfounded, truly randomized controlled trials of stroke patients resident in the community receiving a therapy service intervention compared with conventional or no care. Therapy services were those provided by physiotherapy, occupational therapy, or multidisciplinary staff working with patients primarily to improve task-orientated behavior and hence increase activity and participation. DATA COLLECTION AND ANALYSIS: Two review authors independently selected trials and extracted data on a number of pre-specified outcomes. The primary outcomes were the proportion of patients who had deteriorated or were dependent in personal activities of daily living and performance in personal activities of daily living at the end of follow up. MAIN RESULTS: We identified 14 trials including 1617 patients. Therapy-based rehabilitation services reduced the odds of a poor outcome (Peto odds ratio 0.72, 95 percent confidence interval (CI) 0.57 to 0.92; P = 0.009) and increased personal activity of daily living scores (standardized mean difference 0.14, 95 percent CI 0.02 to 0.25; P = 0.02). For every 100 stroke patients resident in the community receiving therapy-based rehabilitation services, 7 (95 percent CI 2 to 11) patients would be spared a poor outcome, assuming 37.5 percent would have had a poor outcome with no treatment. AUTHORS' CONCLUSIONS: Therapy-based rehabilitation services targeted towards stroke patients living at home appear to improve independence in personal activities of daily living. However, the evidence is derived from a review of heterogeneous interventions and therefore further exploration of the interventions is justifiable. THERAPY-BASED REHABILITATION SERVICES FOR STROKE PATIENTS AT HOME: People who have had a recent stroke are more likely to maintain their ability to carry out daily activities if they receive therapy services at home. Therapy-based rehabilitation services for stroke survivors can include input from physiotherapists, occupational therapists or multidisciplinary teams. This review of 14 studies, involving 1617 participants, found that people who had a recent stroke were more independent in personal activities of daily living and more likely to maintain these abilities if they received therapy services at home. The amount of benefit that can be achieved is uncertain.

2000

Abbruzzese, G., Diverio, M., Lentino, C., Marchese, R., & Zucchi, F. (2000). **The role of sensory cues in the rehabilitation of parkinsonian patients: A comparison of two physical therapy protocols.** *Movement Disorders : Official Journal of the Movement Disorder Society, 15*(5), 879-83.
ID #: CN-00330480
ABSTRACT: We devised a single-blind study to assess the role of providing external sensory cues in the rehabilitation of patients with idiopathic Parkinson's disease (PD). Twenty stable, non-demented patients with PD entered a six-week rehabilitation program and were randomly assigned to two balanced protocols which were differentiated by the use of external sensory cues ("non-cued" vs "cued"). Patients were evaluated by a neurologist, who was blind to group membership, with the Unified Parkinson's Disease Rating Scale (UPDRS) at baseline, end of treatment, and after six weeks. Patient groups were comparable for age, disease duration, and severity. A significant reduction of UPDRS scores (activities of daily living and motor sections) was present after the rehabilitation phase in both groups. However, at follow up, while this clinical improvement had largely faded in the "non-cued" group, mean UPDRS scores

of the "cued" group were still significantly lower than baseline values. The incorporation of external sensory cues in the rehabilitation protocol can extend the short-term benefit of physical therapy in moderately disabled patients with PD, possibly as a result of the learning of new motor strategies. "Cued" physical therapy for PD should be targeted to compensate for the defective physiological mechanisms.

2001

Ben-Shlomo, Y., Clarke, C.E., Deane, K., Ellis-Hill, C., Jones, D.E., & Playford, E.D. (2001). **Physiotherapy for Parkinson's disease: A comparison of techniques.** *Cochrane Database of Systematic Reviews*: Reviews 2001 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD002815.
ID #: CD002815
ABSTRACT: BACKGROUND: Despite optimal medical and surgical therapies for Parkinson's disease, patients develop progressive disability. The role of the physiotherapist is to maximize functional ability and minimize secondary complications through movement rehabilitation within a context of education and support for the whole person. What form of physiotherapy is most effective in the treatment of Parkinson's disease remains unclear. OBJECTIVES: 1. To compare the efficacy and effectiveness of novel physiotherapy techniques versus 'standard' physiotherapy in patients with Parkinson's disease. Standard physiotherapy is defined as the type of therapy that the physiotherapist would usually use to treat Parkinson's disease. 2. To compare the efficacy and effectiveness of one physiotherapy technique versus a second form of physiotherapy. SEARCH STRATEGY: Relevant trials were identified by electronic searches of MEDLINE, EMBASE, CINAHL, ISI-SCI, AMED, MANTIS, REHABDATA, REHADAT, GEROLIT, Pascal, LILACS, MedCarib, JICST-EPlus, AIM, IMEMR, SIGLE, ISI-ISTP, DISSABS, Conference Papers Index, Aslib Index to Theses, the Cochrane Controlled Trials Register, the CentreWatch Clinical Trials listing service, the metaRegister of Controlled Trials, ClinicalTrials.gov, CRISP, PEDro, NIDRR and NRR; and examination of the reference lists of identified studies and other reviews. SELECTION CRITERIA: Only randomized controlled trials (RCT) were included. DATA COLLECTION AND ANALYSIS: Data was abstracted independently by KD and CEH and differences settled by discussion. MAIN RESULTS: Seven trials were identified with 142 patients. All used small numbers of patients and the method of randomization and concealment of allocation was poor or not stated in all of the trials. These methodological problems could potentially lead to bias from a number of sources. The methods of physiotherapy varied so widely that the data could not be combined. AUTHORS' CONCLUSIONS: Considering the small number of patients examined the methodological flaws in many of the studies and the possibility of publication bias, there is insufficient evidence to support or refute the efficacy of any given form of physiotherapy over another in Parkinson's disease. Another Cochrane review, Physiotherapy for patients with Parkinson's Disease found that there was insufficient evidence to support or refute the efficacy of physiotherapy compared to no physiotherapy in Parkinson's disease. A wide range of physiotherapy approaches were used in these studies and a survey of UK physiotherapists confirmed that they also use an eclectic combination of techniques in the treatment of Parkinson's disease (Plant 1999). Therefore a consensus must be found as to 'best practice' physiotherapy for Parkinson's disease. The efficacy of 'standard' physiotherapy should be proved first before examining variations in physiotherapy methods. Therefore large well designed randomised controlled trials are needed to judge the effect of physiotherapy in Parkinson's disease. After this large RCTs are needed to demonstrate the most effective form of physiotherapy in Parkinson's disease. Outcome measures with particular relevance to patients, carers, physiotherapists and physicians should be chosen and the patients monitored for at least 6 months to determine the duration of any effect. The trials should be reported according to CONSORT guidelines (CONSORT 1996). In spite of the best medical and surgical treatments for Parkinson's disease, patients develop significant physical problems. Physiotherapists aim to enable people with Parkinson's disease to maintain their maximum level of mobility, activity and independence through the monitoring of their condition and the targeting of the appropriate physical treatment. A range of approaches to movement rehabilitation, which with education and support are employed to maximize functional ability, minimize secondary complications and enhance quality of life over the whole course of the disease. This review will compare the benefits of one form of physiotherapy versus another for people with Parkinson's disease. Relevant trials were identified by electronic searches of 21 medical literature databases, various registers of clinical trials and an examination of the refer-

ence lists of the identified studies and other reviews. Only randomized controlled trials were included in this review. These were studies where two groups of patients were compared, each group of patients receiving a different form of physiotherapy. The patients were assigned to each of the two groups in a random fashion to reduce the potential for bias. Data from the selected trials were extracted independently by two reviewers and differences settled by discussion. Seven trials were found comparing two forms of physiotherapy in a total of 142 patients. The quality of the trials' methods was variable with all the studies failing in at least one critical area. The methods and outcome measures varied so much that the results of the individual trials could not be combined. Considering the small number of patients and the methodological flaws in many of the studies, there is insufficient evidence to support the use of one form of physiotherapy over another for the treatment of Parkinson's disease. Another Cochrane review that examined the efficacy of physiotherapy versus placebo (sham) therapy (Physiotherapy for patients with Parkinson's Disease) concluded that there was insufficient evidence to support or refute the efficacy of physiotherapy in Parkinson's disease. The benefits of 'standard' physiotherapy should be proved first before examining variations in physiotherapy methods. Therefore large well designed randomized controlled trials (RCTs) are needed to judge the effect of physiotherapy in Parkinson's disease. After this, large RCTs are needed to demonstrate the most effective form of physiotherapy in Parkinson's disease. The design of the trials should minimize bias and be reported fully using CONSORT guidelines. Outcome measures with particular relevance to patients, their carers, physiotherapists and physicians should be chosen and the patients followed for at least 6 months to determine the duration of any improvement.

Ebrahim, S., Jolliffe, J., Oldridge, N., Rees, K., Taylor, R.R.S., & Thompson, D.R. (2001). **Exercise-based rehabilitation for coronary heart disease.** *Cochrane Database of Systematic Reviews*: Reviews 2001 Issue 1 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD001800.

ID #: CD001800

ABSTRACT: BACKGROUND: The burden of cardiovascular disease world-wide is one of great concern to patients and health care agencies alike. Cardiac rehabilitation aims to restore patients with heart disease to health through exercise only based rehabilitation or comprehensive cardiac rehabilitation. OBJECTIVES: To determine the effectiveness of exercise only or exercise as part of a comprehensive cardiac rehabilitation program on the mortality, morbidity, health-related quality of life (HRQoL) and modifiable cardiac risk factors of patients with coronary heart disease. SEARCH STRATEGY: Electronic databases were searched for randomized controlled trials, using standardized trial filters, from the earliest date available to December 31st 1998. SELECTION CRITERIA: Men and women of all ages, in hospital or community settings, who have had myocardial infarction, coronary artery bypass graft or percutaneous transluminal coronary angioplasty, or who have angina pectoris or coronary artery disease defined by angiography. DATA COLLECTION AND ANALYSIS: Studies were selected independently by two reviewers, and data extracted independently. Authors were contacted where possible to obtain missing information. MAIN RESULTS: This systematic review has allowed analysis of an increased number of patients from approximately 4500 in earlier meta-analyses to 8440 (7683 contributing to the total mortality outcome). The pooled effect estimate for total mortality for the exercise only intervention shows a 27 percent reduction in all cause mortality (random effects model OR 0.73 95 percent confidence interval 0.54 to 0.98). Comprehensive cardiac rehabilitation reduced all cause mortality, but to a lesser degree (OR 0.87 95 percent confidence interval 0.71 to 1.05). Total cardiac mortality was reduced by 31 percent (random effects model OR 0.69 95 percent confidence interval 0.51 to 0.94) and 26 percent (random effects model OR 0.74 95 percent confidence interval 0.57 to 0.96) in the exercise only and comprehensive cardiac rehabilitation groups respectively. We found no evidence of an effect of the interventions on the occurrence of non-fatal myocardial infarction. There was a significant net reduction in total cholesterol (pooled WMD random effects model -0.57 mmol/l 95 percent confidence interval -0.83 to -0.31) and LDL (pooled WMD random effects model -0.51 mmol/l 95 percent confidence interval-0.82 -0.19) in the comprehensive cardiac rehabilitation group. AUTHORS' CONCLUSIONS: Exercise-based cardiac rehabilitation is effective in reducing cardiac deaths. It is not clear from this review whether exercise only or a comprehensive cardiac rehabilitation intervention is more beneficial. The population studied in this review is still predominantly male, middle aged and low risk. Identification of the ethnic origin of the participants was seldom reported. It

is possible that patients who would have benefited most from the intervention were excluded from the trials on the grounds of age, sex or co-morbidity. REGULAR EXERCISE OR EXERCISE WITH EDUCATION AND PSYCHOLOGICAL SUPPORT CAN REDUCE THE LIKELIHOOD OF DYING FROM HEART DISEASE: Coronary heart disease (CHD) is one of the most common forms of heart disease. It affects the heart by restricting or blocking the flow of blood around it. This can lead to a feeling of tightness in the chest (angina) or a heart attack. Cardiac rehabilitation aims to restore people with CHD to health through regular exercise or a combination of exercise with education and psychological support. The findings of this review indicate that either form of cardiac rehabilitation can reduce the likelihood of dying from heart disease. More research is needed.

Documents from the National Library of Medicine PubMed search at www.pubmed.com are listed below:

2009

Bloem, B.R., Keus, S.H., Kwakkel, G., Munneke, M., & Nijkrake, M.J. (2009). **Physical therapy in Parkinson's disease: Evolution and future challenges.** *Movement Disorders: Official Journal of the Movement Disorder, 24*(1), 1-14.
PMID #: 18946880
ABSTRACT: Even with optimal medical management using drugs or neurosurgery, patients with Parkinson's disease (PD) are faced with progressively increasing mobility problems. For this reason, many patients require additional physical therapy. Here, we review the professional evolution and scientific validation of physical therapy in PD, and highlight several future challenges. To gain insight in ongoing, recently completed or published trials and systematic reviews, we performed a structured literature review and contacted experts in the field of physical therapy in PD. Following publication of the first controlled clinical trial in 1981, the quantity and quality of clinical trials evaluating the efficacy of physical therapy in PD has evolved rapidly. In 2004 the first guideline on physical therapy in PD was published, providing recommendations for evidence-based interventions. Current research is aiming to gather additional evidence to support specific intervention strategies such as the prevention of falls, and to evaluate the implementation of evidence into clinical practice. Although research focused on physical therapy for PD is a relatively young field, high-quality supportive evidence is emerging for specific therapeutic strategies. We provide some recommendations for future research, and discuss innovative strategies to improve the organization of allied health care in PD, making evidence-based care available to all PD patients.

Hurley, M.V., & Walsh, N.E. (2009). **Evidence based guidelines and current practice for physiotherapy management of knee osteoarthritis.** *Musculoskeletal Care, 7*(1), 45-56.
PMID #: 18972322
ABSTRACT: OBJECTIVES: To document physiotherapy provision for patients with knee osteoarthritis (OA) in relation to the United Kingdom (UK) recently published National Institute of health and Clinical Excellence (NICE) guidelines for osteoarthritis. DESIGN: Questionnaire survey of chartered physiotherapists. METHOD: 300 postal questionnaires were distributed to Physiotherapy Departments requesting information regarding source of referrals, treatment aims, preferred methods of treatment and service delivery. RESULTS: Responses were received from 83 physiotherapists (28 percent), predominantly working in the UK National Health Service. Approximately equal numbers of referrals came from primary and secondary care. Aims of physiotherapy management were to; encourage self-management; increase strength and range of movement; reduce pain; and improve function. To achieve these, exercise was utilized by 100 percent of practitioners, often supplemented with electrotherapeutic modalities (66 percent), manual therapy (64 percent) and acupuncture (60 percent). The majority of patients received individual treatment for a total contact time of 1-2 hours, whilst most group interventions lasted 5-6 hours. Approximately half (54 percent) of respondents reported using outcome measures to determine treatment efficacy. CONCLUSIONS: Although knee OA is usually managed in primary care, the similar number of referrals from primary and secondary care may suggest a deviation from evidence-based management guidelines. The guidelines' recommendations of exercise, patient education and self-management are observed by physiotherapists, but other modalities are often used despite poor or no research evidence supporting their efficacy. Whether any of these interventions are clinically beneficial is speculative as treatment outcomes were frequently under-evaluated.

2008

Bott, J., Dean, E., Gosselink, R., Johnson, M., Nava, S., Norrenberg, M., Schönhofer, B., Stiller, K., van de Leur, H., & Vincent, J.L. (2008). **Physiotherapy for adult patients with critical illness: Recommendations of the European Respiratory Society and European Society of Intensive Care Medicine Task Force on Physiotherapy for Critically Ill Patients.** *Intensive Care Medicine, 34*(7), 1188-99. Epub 2008 Feb 19.
PMID #: 18283429
ABSTRACT: The Task Force reviewed and discussed the available literature on the effectiveness of physiotherapy for acute and chronic critically ill adult patients. Evidence from randomized controlled trials or meta-analyses was limited and most of the recommendations were level C (evidence from uncontrolled or nonrandomized trials or from observational studies) and D (expert opinion). However, the following evidence-based targets for physiotherapy were identified: deconditioning, impaired airway clearance, atelectasis, intubation avoidance, and weaning failure. Discrepancies and lack of data on the efficacy of physiotherapy in clinical trials support the need to identify guidelines for physiotherapy assessments, in particular to identify patient characteristics that enable treatments to be prescribed and modified on an individual basis. There is a need to standardize pathways for clinical decision-making and education, to define the professional profile of physiotherapists, and increase the awareness of the benefits of prevention and treatment of immobility and deconditioning for critically ill adult patients.

David, B.G., Gracey, J.H., & Liddle, S.D. (2008). **Physiotherapists' use of advice and exercise for the management of chronic low back pain: A national survey.** *Manual Therapy, 14*(2), 189-96. Epub 2008 Mar 28.
PMID #: 18375174
ABSTRACT: The objective of the study was to establish the specific use of advice and exercise by physiotherapists, for the management of chronic low back pain (LBP). A questionnaire was mailed to a random sample of 600 members of the Irish Society of Chartered Physiotherapists. Open and closed questions were used to obtain information on treatments provided to chronic LBP patients. Respondents' treatment goals were also investigated, along with the typical methods used to assess treatment outcome. Four hundred and nineteen of the sample returned the questionnaire; 280/419 (67 percent) indicated that they currently treated LBP of which 76 percent (n=214) were senior grade therapists. Advice and exercise, respectively, were the treatments most frequently used for chronic LBP: advice was most commonly delivered as part of an exercise program, with strengthening (including core stability) the most frequently used exercise type. Supervision of exercise and follow-up advice were underutilized with respect to the recommendations of relevant clinical guidelines. Pain relief was an important treatment goal. Emphasis on exercise program supervision, incorporating reassurance that it's safe to stay active; and 'hurt does not mean harm', must be more effectively disseminated and promoted in practice. The influence of follow-up advice on exercise adherence warrants further investigation.

de Bie, R.A., Dekker, J., Hendriks, E.J., Jamtvedt, G., Rebbeck, T., & van der Wees, P.J. (2008). **Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: A systematic review.** *Australian Journal of Physiotherapy, 54*(4), 233-41.
PMID #: 19025503
ABSTRACT: QUESTION: What is the effectiveness of strategies to increase the implementation of physiotherapy clinical guidelines? DESIGN: Systematic review. PARTICIPANTS: Physiotherapists treating any type of patients. INTERVENTION: Single or multiple strategies to increase the implementation of physiotherapy clinical guidelines. OUTCOME MEASURES: Professional practice, patient health, and cost of care. RESULTS: Five papers reporting three cluster-randomized trials evaluated whether multifaceted strategies based on educational meetings increased the implementation of low back pain guidelines (two trials) or whiplash guidelines (one trial). Educational meetings were effective in increasing adherence to the following recommendations of low back pain guidelines: limiting the number of sessions (RD 0.13, 95 percent CI 0.03 to 0.23), using active intervention (RD 0.13, 95 percent CI 0.05 to 0.21), giving adequate information (RD 0.05, 95 percent CI 0.00 to 0.11), increasing activity level (RD 0.16, 95 percent CI 0.02 to 0.30), changing attitudes/beliefs about pain (RD 0.13, 95 percent CI 0.01 to 0.24). Educational meetings were effective in increasing adherence to the following recommendations of whiplash guidelines: reassuring the patient (RD 0.40, 95 percent CI 0.07 to 0.74), advising the patient to act

as usual (RD 0.48, 95 percent CI 0.15 to 0.80), using functional outcome measures (RD 0.62, 95 percent CI 0.32 to 0.92). There was no evidence that patient health was improved or that the cost of care was reduced. CONCLUSION: This review shows that multifaceted interventions based on educational meetings to increase implementation of clinical guidelines may improve some outcomes of professional practice but do not improve patient health or reduce cost of care. These findings are comparable with results among other health professions.

Foster, N.E., Hay, E.M., Holden, M.A., & Nicholls, E.E. (2008). **Physical therapists' use of therapeutic exercise for patients with clinical knee osteoarthritis in the United Kingdom: In line with current recommendations?** *Physical Therapy, 88*(10), 1109-21. Epub 2008 Aug 14.
PMID #: 18703675
ABSTRACT: BACKGROUND AND PURPOSE: Physical therapists have an important role in the management of clinical knee osteoarthritis (OA) through designing and supervising exercise programs. This study explored whether their current use of therapeutic exercise for patients with this condition is in line with recent recommendations. SUBJECTS AND METHODS: A cross-sectional survey was conducted with a random sample of chartered (licensed) physical therapists (N=2,000) practicing in the United Kingdom. This survey included a vignette describing a patient with clinical knee OA as well as clinical management questions relating to the respondents' use of therapeutic exercise. RESULTS: The questionnaire response rate was 58 percent (n=1,152), with 538 respondents stating they had treated a patient with clinical knee OA in the preceding 6 months. In line with recent recommendations, 99 percent of the physical therapists stated they would use therapeutic exercise for this patient population, although strengthening exercises were favored over aerobic exercises. Although nearly all physical therapists would monitor exercise adherence, only 12 percent would use an exercise diary. Seventy-six percent of physical therapists would provide up to 5 treatment sessions, and only 34 percent would offer physical therapy follow-up after discharge. DISCUSSION AND CONCLUSION: The measure of physical therapists' current clinical practice was self-reported clinical behavior on the basis of a vignette. Although this is a valid measure of clinical behavior, in practice, physical therapists may use therapeutic exercise differently. There are disparities between physical therapists' current use of therapeutic exercise for clinical knee OA and recent recommendations. Identifying potential ways to overcome these disparities is an important step toward optimizing the outcome from therapeutic exercise for patients with clinical knee OA.

Goerlich ,C., Jablecki, N., Marchand, K., & Rand, S.E. (2008). **The physical therapy prescription.** *American Family Physician, 76*(11), 1661-6.
PMID #: 18092708
ABSTRACT: Numerous guidelines recommend physical therapy for the management of musculoskeletal conditions. However, specific recommendations are lacking concerning which exercises and adjunct modalities to use. Physical therapists use various techniques to reduce pain and improve mobility and flexibility. There is some evidence that specific exercises performed with the instruction of physical therapists improve outcomes in patients with low back pain. For most modalities, evidence of effectiveness is variable and controlled trials are lacking. Multiple modalities may be used to treat one clinical condition; decisions for the treatment of an individual patient depend on the expertise of the therapist, the equipment available, and the desire of the attending physician. A physical therapy prescription should include the diagnosis; type, frequency, and duration of the prescribed therapy; goals of therapy; and safety precautions.

Settle, S.M., Sullivan, K.J., & Tilson, J.K. (2008). **Application of evidence-based practice strategies: Current trends in walking recovery interventions post-stroke.** Topics *in Stroke Rehabilitation, 15*(3), 227-46.
PMID: 18647727
ABSTRACT: Persons with impaired walking ability post-stroke rely on rehabilitation specialists to provide the best available interventions that will maximize walking recovery and, ultimately, improve their community mobility and quality of life. Evidence-based practice (EBP) is a process in which the rehabilitation clinician integrates the "best" research evidence, clinical expertise, and patient circumstances, values, and preferences to provide the most appropriate interventions to address patient expectations and goals. Studies show that clinicians value EBP but are challenged by limited time, skills, and resources to successfully implement it in real-world practice. This article describes a five-step EBP framework and directs clinicians to free online resources designed to improve their ability to become evidence-based

practitioners. The framework and tools are illustrated by answering three searchable clinical questions about interventions for walking recovery post-stroke. Recommendations for walking recovery interventions post-stroke are provided for aerobic conditioning, treadmill training with body weight support, and use of ankle-foot orthoses with and without functional electrical stimulation. To provide added insight related to individual patient application and intervention effectiveness, studies included are appraised to investigate the influence of patient chronicity (i.e., time post-stroke), walking impairment severity, and intervention dose on walking outcomes and community mobility.

2007

Bloem, B.R., Bredero-Cohen, A.B., Hendriks, E.J., Keus, S.H., & Munneke, M. (2007). **Evidence-based analysis of physical therapy in Parkinson's disease with recommendations for practice and research.** *Movement Disorders: Official Journal of the Movement Disorder Society, 22*(4), 451-60; quiz 600.
PMID #: 17133526
Physical therapy is often prescribed in Parkinson's disease. To facilitate the uniformity and efficacy of this intervention, we analyzed current evidence and developed practice recommendations. We carried out an evidence-based literature review. The results were supplemented with clinical expertise and patient values and translated into practice recommendations, developed according to international standards for guideline development. A systematic literature search yielded 6 systematic reviews and 23 randomized controlled trials of moderate methodological quality with sufficient data. Six specific core areas for physical therapy were identified: transfers, posture, reaching and grasping, balance, gait, and physical capacity. We extracted four specific treatment recommendations that were based on evidence from more than two controlled trials: cueing strategies to improve gait; cognitive movement strategies to improve transfers; exercises to improve balance; and training of joint mobility and muscle power to improve physical capacity. These practice recommendations provide a basis for current physical therapy in Parkinson's disease in everyday clinical practice, as well as for future research in this field. (c) 2006 Movement Disorder Society.

Burgers, J.S., Custers, J.W., de Bie, R.A., Dekker, J., Hendriks, E.J., & Van der Wees, P.J. (2007). **Comparison of international guideline programs to evaluate and update the Dutch program for clinical guideline development in physical therapy.** *BMC Health Services Research, 7*, 191.
PMID #: 18036215
ABSTRACT: BACKGROUND: Clinical guidelines are considered important instruments to improve quality in health care. Since 1998 the Royal Dutch Society for Physical Therapy
(KNGF) produced evidence-based clinical guidelines, based on a standardized program. New developments in the field of guideline research raised the need to evaluate and update the KNGF guideline program. Purpose of this study is to compare different guideline development programs and review the KNGF guideline program for physical therapy in the Netherlands, in order to update the program. METHOD: Six international guideline development programs were selected, and the 23 criteria of the AGREE Instrument were used to evaluate the guideline programs. Information about the programs was retrieved from published handbooks of the organizations. Also, the Dutch program for guideline development in physical therapy was evaluated using the AGREE criteria. Further comparison the six guideline programs was carried out using the following elements of the guideline development processes: Structure and organization; Preparation and initiation; Development; Validation; Dissemination and implementation; Evaluation and update. RESULTS: Compliance with the AGREE criteria of the guideline programs was high. Four programs addressed 22 AGREE criteria, and two programs addressed 20 AGREE criteria. The previous Dutch program for guideline development in physical therapy lacked in compliance with the AGREE criteria, meeting only 13 criteria. Further comparison showed that all guideline programs perform systematic literature searches to identify the available evidence. Recommendations are formulated and graded, based on evidence and other relevant factors. It is not clear how decisions in the development process are made. In particular, the process of translating evidence into practice recommendations can be improved.
CONCLUSION: As a result of international developments and consensus, the described processes for developing clinical practice guidelines have much in common. The AGREE criteria are common basis for the development of guidelines, although it is not clear how final decisions are made. Detailed comparison of the different guideline programs was used for updating the Dutch program. As a result the updated KNGF program complied with 22 AGREE criteria. International discussion is continuing and will be used for further improvement of the program.

Garrod, R., & Lasserson, T. (2007). **Role of physiotherapy in the management of chronic lung diseases: An overview of systematic reviews.** *Respiratory Medicine, 101*(12), 2429-36. Epub 2007 Sep 17.
PMID #: 17870457
ABSTRACT: Four Cochrane respiratory reviews of relevance to physiotherapeutic practice are discussed in this overview. Physiotherapists aim to improve ventilation for people with respiratory disease, and approach this using a variety of techniques. As such, the reviews chosen for discussion consider a wide range of interventions commonly used by physiotherapists: breathing exercises, bronchopulmonary hygiene techniques and physical training for peripheral and respiratory muscles. The reviews show that breathing exercises may have beneficial effects on health-related quality of life in asthma, and that inspiratory muscle training (IMT) may improve inspiratory muscle strength. However, the clinical relevance of increased respiratory muscle strength per se is unknown, and the longer-term effects of breathing exercises on morbidity have not been considered. One review clearly shows that bronchopulmonary hygiene techniques in chronic obstructive pulmonary disease (COPD) and bronchiectasis increase sputum production. Frequent exacerbation is associated with increased sputum and high bacterial load, suggesting that there may be important therapeutic benefit of improved sputum clearance. Future studies evaluating the long-term effects of bronchopulmonary hygiene techniques on morbidity are recommended. In the third review, the importance of pulmonary rehabilitation in the management of COPD is once again reinforced. Physiotherapists are crucial to the delivery of exercise training programs, and it is likely that the effects of pulmonary rehabilitation extend to other important outcomes, such as hospital admission and re-admission. On the basis of the evidence provided by these Cochrane reviews, this overview highlights important practice points of relevance to physiotherapy, and recommendations for future studies.

Helders, P.J., Hendriks, H.J., Kwakkel, G., van Meeteren, N.L., & van Peppen, R.P. (2007). **The development of a clinical practice stroke guideline for physiotherapists in the Netherlands: A systematic review of available evidence.** *Disability & Rehabilitation, 29*(10), 767-83.
PMID #: 17457735
ABSTRACT: PURPOSE: To develop a clinical practice guideline for the physiotherapy management of patients with stroke as support for the clinical decision-making process, especially with respect to the selection of appropriate interventions, prognostic factors and outcome measures. INTRODUCTION: Physiotherapists have a high caseload of patients with stroke, so there is a need to identify effective evidence-based physiotherapy procedures. The availability of a guideline that includes information about prognostic factors interventions, and outcome measures would facilitate clinical decision-making. METHOD: A systematic computerized literature search was performed to identify evidence concerning the use of: (1) prognostic factors related to functional recovery; (2) physiotherapy interventions in patients with stroke; and (3) outcome measures to assess patients' progress in functional health. Experts, physiotherapists working in the field of stroke rehabilitation, and a multidisciplinary group of health professionals reviewed the clinical applicability and feasibility of the recommendations for clinical practice and their comments were used to compose the definitive guideline. RESULTS: Of 9482 relevant articles, 322 were selected. These were screened for methodological quality. Seventy-two recommendations for clinical practice were retrieved from these articles and included in the guideline: Six recommendations concerned the prediction of functional recovery of activities of daily living (ADL), including walking ability and hand/arm use; 65 recommendations concerned the choice of physiotherapy interventions; and one recommendation concerned the choice of outcome instrument to use. A core set of seven reliable, responsive, and valid outcome measures was established, to determine impairments and activity limitations in patients with stroke. CONCLUSIONS: The guideline provides physiotherapists with an evidence-based instrument to assist them in their clinical decision making regarding patients with stroke. As most of the recommendations included in the guideline came from studies of patients in the post acute and chronic phase of stroke, and in general involved patients with less severe and uncomplicated stroke, more needs to be learned about the more complex cases.

Lewis, M., & Rushanan, S. (2007). **The role of physical therapy and occupational therapy in the treatment of amyotrophic lateral sclerosis.** *NeuroRehabilitation, 22*(6), 451-61.
PMID #: 18198431
ABSTRACT: Amyotrophic Lateral Sclerosis (ALS) is a progressive neuromuscular disease for which there is no cure. There is a general misunderstanding among healthcare professionals of the proper use and potential

benefits of physical and occupational therapy to treat the symptoms and resulting loss of independence. These services can help maximize mobility and comfort through equipment prescription, activity adaptation, patient and family education, and the use of appropriate exercise and range of motion techniques. The literature is controversial on the prescription of exercise in this population. Individual muscle strength, fatigue and spasticity must all be taken into account when discussing exercise with persons with ALS. It can be concluded that physical and occupational therapy intervention is beneficial to persons with ALS. However, more research is needed to decisively determine the effects of exercise on the person with ALS.

2006

Adair, N., Berry, M.J., Foy, C.G., Lang, W., Miller, M.E., Rejeski, W.J., Wickley, K.L., & Woodard, C.M. (2006). **The Reconditioning Exercise and Chronic Obstructive Pulmonary Disease Trial II (REACT II): Rationale and study design for a clinical trial of physical activity among individuals with chronic obstructive pulmonary disease.** *Contemporary Clinical Trials, 27*(2), 135-46.
PMID #: 16458075
ABSTRACT: Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of mortality in the United States. In addition, persons with COPD are at risk for lower levels of physical activity, leading to further morbidity and mortality. Several studies have demonstrated that long-term exercise therapy confers benefits upon physical functioning among patients with COPD, and some studies indicate that embedding cognitive-behavioral interventions into group-mediated exercise programs is useful in promoting compliance to activity recommendations. However, compliance to long-term activity is low among COPD patients, and the effectiveness of behavioral interventions to enhance long-term activity among these patients has not been extensively explored. Thus, the primary objective of the Reconditioning Exercise and COPD Trial II (REACT II) trial is to determine whether a group-mediated cognitive-behavioral intervention will result in increased physical activity after 12 months, compared to a standard exercise therapy experience among older adults with COPD. The cognitive-behavioral intervention is designed to promote independent physical activity by encouraging participants to self-regulate physical activity with minimal dependence upon staff. The primary study outcome is kcal expended per week in moderate physical activity, and the study is designed to provide 90 percent power to detect a 400 kcal/week difference in moderate energy expenditure between the two intervention groups. Other outcomes to be compared between the two interventions include physical function, self-reported physical disability, health-related quality of life, exercise capacity, body composition and inflammatory mediators.

Chiarello, L.A., Fragala-Pinkham, M.A., Martin, K., O'Neil, M.E., Rose, R.U., Valvano, J., & Westcott, S.L. (2006). **Physical therapy clinical management recommendations for children with cerebral palsy—spastic diplegia: Achieving functional mobility outcomes.** *Pediatric Physical Therapy, 18*(1), 49-72.
PMID #: 16508534
ABSTRACT: The purpose of this special report is to present recommendations for the clinical management of children with cerebral palsy, spastic diplegia when increased functional mobility is the identified outcome. These recommendations provide a framework that allows physical therapists to increase their accountability and promote effective interventions for improved patient outcomes. The key components of this special report on clinical management are: a) the Major Recommendations that provide the background and evidence for clinical management; b) a flow chart to assist in clinical decision-making; and c) a Table of Tests and Measures for information on useful tools in the management of children with spastic diplegia. These recommendations are suggestions for clinical management, not an all-inclusive document on physical therapy for children with cerebral palsy. These recommendations may help therapists develop systematic approaches to service delivery and documentation.

Landsman, G.H. (2006). **What evidence, whose evidence: Physical therapy in New York State's clinical practice guideline and in the lives of mothers of disabled children.** *Social Science & Medicine, 62*(11), 2670-80.
PMID #: 16386344
ABSTRACT: To provide recommendations based on the best scientific evidence available about "best practices," the New York State Department of Health Early Intervention Program sponsored the development of an evidence-based clinical practice guideline for assessment and intervention for young children with motor disabilities. The author served on the multidisciplinary

consensus panel convened to develop the guideline, holding a position as a parent of a child with motor disabilities, and in addition utilizing data from her qualitative anthropological research on mothers of young children newly diagnosed with disabilities. This article describes the state panel's process for developing the guideline, focusing on recommendations about physical therapy interventions for cerebral palsy. Although evidence-based practice privileges randomized clinical trials, few studies of physical therapy techniques for young children with motor disabilities meet such criteria for evidence. The panel's recommendations, in the absence of such scientific evidence, are analyzed in comparison with competing theories of motor development in physical therapy research and practice, and with interpretations of physical therapy held by mothers of young children with disabilities who were interviewed in the study. The article explores questions of what constitutes evidence in three arenas: (1) clinical practice guidelines, (2) physical therapy research, and (3) the lives of families of young children with motor disabilities. It has broader implications for understanding how information, variously derived, is transformed into evidence. While to some extent authority and power affect the range of knowledge that can be transformed into evidence, the more significant constraints may be the rules of evidence we value and the particular paradigm of our science.

2005

Biondi, D.M. (2005). **Physical treatments for headache: A structured review.** *Headache, 45*(6), 738-46.
PMID #: 15953306
ABSTRACT: BACKGROUND: Primary headache disorders, especially migraine, are commonly accompanied by neck pain or other symptoms. Because of this, physical therapy(PT) and other physical treatments are often prescribed. This review updates and synthesizes published clinical trial evidence, systematic reviews, and case series regarding the efficacy of selected physical modalities in the treatment of primary headache disorders. METHODS: The National Library of Medicine (MEDLINE), The Cochrane Library, and other sources of information were searched through June 2004 to identify clinical studies, systematic reviews, case series, or other information published in English that assessed the treatment of headache or migraine with chiropractic, osteopathic, PT, or massage interventions. RESULTS: PT is more effective than massage therapy or acupuncture for the treatment of tension-type headache (TTH) and appears to be most beneficial for patients with a high frequency of headache episodes. PT is most effective for the treatment of migraine when combined with other treatments such as thermal biofeedback, relaxation training, and exercise. Chiropractic manipulation demonstrated a trend toward benefit in the treatment of TTH, but evidence is weak. Chiropractic manipulation is probably more effective in the treatment of TTH than it is in the treatment of migraine. Evidence is lacking regarding the efficacy of these treatments in reducing headache frequency, intensity, duration, and disability in many commonly encountered clinical situations. Many of the published case series and controlled studies are of low quality. CONCLUSIONS AND RECOMMENDATIONS: Further studies of improved quality are necessary to more firmly establish the place of physical modalities in the treatment of primary headache disorders. With the exception of high velocity chiropractic manipulation of the neck, the treatments are unlikely to be physically dangerous, although the financial costs and lost treatment opportunity by prescribing potentially ineffective treatment may not be insignificant. In the absence of clear evidence regarding their role in treatment, physicians and patients are advised to make cautious and individualized judgments about the utility of physical treatments for headache management; in most cases, the use of these modalities should complement rather than supplant better-validated forms of therapy.

Cogswell, D., Fragala-Pinkham, M., Haley, S.M., Latham, N.K., & Skrinar, A.M. (2005). **The emerging role of the pediatric physical therapist in evaluation and intervention for individuals with lysosomal storage diseases.** *Pediatric Physical Therapy, 17*(2), 128-39.
PMID #: 16357663
ABSTRACT: PURPOSE: The purposes of this article are to describe the pathology, medical implications, and typical impairments of individuals with various lysosomal storage diseases (LSDs), summarize results of recent clinical trials on medical interventions relevant to physical therapy practice, report new advances in functional measurement, and suggest a framework for physical therapy management and intervention. SUMMARY OF KEY POINTS: Medical and surgical interventions are enabling individuals with LSDs to not only survive but to improve their daily functioning and quality of life.

This is likely to become an increasing area of emphasis in pediatric physical therapy, as the intervention emphasis for some individuals will shift from maintenance to restorative programs. RECOMMENDATIONS: We recommend that pediatric physical therapists become familiar with new LSD therapeutics, play a major role in evaluating impairment and functional limitation changes in individuals with LSDs, and become knowledgeable about the indications and precautions for restorative physical therapy programs.

Hammond, R., Hoffman, A., Irwin, P., Lennon, S., Lowe, D., & Walker, M.F. (2005). **Changing occupational therapy and physiotherapy practice through guidelines and audit in the United Kingdom.** *Clinical Rehabilitation, 19*(4), 365-71.

PMID #: 15929504
ABSTRACT: BACKGROUND: The National Clinical Guidelines for Stroke (NCGS) were produced and three rounds of the National Sentinel Audit of Stroke conducted to improve the quality of stroke care in the UK. OBJECTIVE: To compare the results of the occupational therapy and physiotherapy elements of the most recent national sentinel audit with the occupational therapy- and physiotherapy-specific recommendations of the NCGS. METHODS: Retrospective case-note audit. RESULTS: Over 95 percent of hospitals/sites who manage stroke in England, Wales and Northern Ireland took part in the most recent round of the sentinel audit. The clinical audit took place from 1 April to 30 June 2001 and incorporated 235 hospitals/sites. The organizational audit took place in January 2002 and incorporated 240 hospitals/sites. Data are presented from the 235 with both clinical and organizational data, under the headings of: approaches to rehabilitation; carers/families; rehabilitation interventions; and transfer to the community. Low rates of compliance with national standards were observed for all domains. CONCLUSION: Our findings suggest that occupational therapists and physiotherapists are not fully complying with the national standards for stroke care.

Kladny, B. (2005). **Physical therapy of osteoarthritis.** *Zeitschrift für Rheumatologie, 64*(7), 448-55. *Article in German.*
PMID #: 16244828
ABSTRACT: Physical therapy is part of guidelines and recommendations in the treatment of osteoarthritis. Different methods of physical therapy are used in osteoarthritis. There is evidence that manual physical therapy and exercise improve function and reduce pain in osteoarthritic joints. Thermal modalities are employed for short-term pain relief and change the intraarticular temperature. Electrotherapy, therapeutic ultrasound and balneotherapy show positive therapeutic effects. Based on studies and clinical experience, physical therapy must be recommended in the therapy of osteoarthritis.

Kohia, M., & Toussant, E.M. (2005). **A critical review of literature regarding the effectiveness of physical therapy management of hip fracture in elderly persons.** *The Journals of Gerontology: Series A, Biological Sciences & Medical Sciences, 60*(10), 1285-91.
PMID #: 16282561
ABSTRACT: The purpose of this review is to analyze the research literature that has examined the effectiveness of physical therapy in the management of hip fractures in elderly persons. Using literature databases and keywords, we located relevant studies. Fifteen studies met the criteria and were then categorized according to Sackett's levels of evidence. Six studies were graded at level I, six at level II, and three at level V, with level I having the highest level of evidence. From the levels of evidence, one grade A, three grade B, and two grade C recommendations were developed, with grade A being the most significant recommendation. Clinical recommendations are offered about patients with dementia, therapeutic exercise, and when and for how long rehabilitation should continue. In addition, future research directions are provided.

2003

Bilney, B., Morris, M.E., & Perry, A. (2003). **Effectiveness of physiotherapy, occupational therapy, and speech pathology for people with Huntington's disease: A systematic review.** *Neurorehabilitation & Neural Repair, 17*(1), 12-24.
PMID #: 12645441
ABSTRACT: This review provides a summary of the current literature examining the outcomes of physiotherapy, occupational therapy, and speech pathology interventions for people with Huntington's disease. The literature was retrieved via a systematic search using a combination of key words that included Huntington's disease, physiotherapy, occupational therapy, and speech pathology. The electronic databases for Medline, Embase, CINAHL, Cochrane Controlled Trials Regis-

ter, and PEDro were searched up to May 2002. Articles meeting the review criteria were graded for study type and rated for quality using checklists to assess study validity and methodology. The majority of articles that examined therapy outcomes for people with Huntington's disease were derived from observational studies of low methodological quality. A low level of evidence exists to support the use of physiotherapy for addressing impairments of balance, muscle strength, and flexibility. There was a small amount of evidence to support the use of speech pathology for the management of eating and swallowing disorders. The current evidence is insufficient to make strong recommendations regarding the usefulness of physiotherapy, occupational therapy, or speech pathology for people with Huntington's disease. There is further need for therapy outcomes research in Huntington's disease so that clinicians may use evidence-based practice to assist clinical decision making.

2001

Seeger, D. (2001). **Physiotherapy in low back pain—indications and limits.** *Schmerz, 15*(6), 461-7. *Article in German.*
PMID #: 11793152
ABSTRACT: These times of changing paradigms raise the question of the indications for and limits of physical therapy in back pain management. At present, several national and international guidelines for the care of chronic back pain are available. Unfortunately, the guidelines are often inconsistent concerning physiotherapy. An encompassing framework for an effective, efficient, and appropriate physiotherapy treatment needs to be developed. Within the German national health system, the "Arzneimittelkommission" [2] issued guidelines for low back pain. These guidelines endeavor to distinguish between disease related specific back pain and non specific back pain of a more functional or mechanical origin. Furthermore, the "Bundesausschuss der Arzte und Krankenkassen" in Germany dispatched guidelines (Heilmittelrichtlinien) for the prescription of "Heilmittel" (remedies other than drugs) on October 16th, 2000. These guidelines seek to appropriately refer, assign and limit the physiotherapy treatment of back pain according to a set indications catalogue. On an international basis, the
World Health Organization (WHO) [21] offers well established guidelines for the "International Classification of Functioning and Disability", 2nd version (ICIDH-2). These guidelines describe the progressive health dysfunction over three major levels: 1) body functions and structures, 2) activities of an individual, and 3) participation of an individual in social and other essential aspects of life. National and international scientific studies support the use of
ICIDH-2-categories and suggest that different back pain management is required at different levels of dysfunction. For example, there is a trend to prescribe increasingly active types of treatment instead of passive ones for increasing levels of dysfunction [54]. Multimodal treatment programs [17, 29], which include physical activity, training and psychological programs as well as training of activities of daily living (ADL) ("work-hardening program") demonstrate particular benefit in the treatment of chronic low back pain at the disability and handicap level. Current physical therapy on back pain management operates at all three categories of ICIDH-2. Therapists aim to treat local spinal symptoms and their secondary functional changes, reorganize altered physiological patterns and improve the psycho-social state of the patient. This level overlaps with the fields of occupational therapy (training of work related tasks), psychosocial therapy (training of social competence etc.) and physical training (improvement of physical performance). Physical training as a means of physical therapy, combined with certain aspects of occupational therapy, offers an important possibility of transfer into workday life. Borders between neighboring fields are not sharp. Physical therapy is contraindicated only in rare cases (e.g. clear indications for surgery; predominant psychological disorder). Unfortunately, the national German guidelines for physical therapy (Heilmittelrichtlinien) which have been put in effect by July 1st, 2001 appear to direct the prescription of physical therapy primarily to treating structural and functional dysfunction. At an activity level, occupational therapy is recommended only for the treatment of specific diseases. Moreover, recommendations for physical therapy for patients with an acute impairment and those with a chronic handicap are almost identical. This is not in accordance with the scientific evidence for effective treatment. So far there are no studies investigating the various implications of ICIDH-2-guidelines for physical therapy management of back pain. Considering the ICIDH-2 directives it is not helpful to judge efficacy solely by somatic parameters such as mobility and muscle force. A patient without good mobility could still return to work. A subjective feeling of well being or low disability on the side of the patient is an equally important parameter of successful treatment as the good physical capacity for daily life.

1999

Michlovitz, S. (1999). **Physical therapy after hand injuries.** *Hand Clinics, 15*(2), 261-73, viii.
PMID #: 10361637
ABSTRACT: The nuances of physical therapy necessary in the trauma patient are discussed.
This article also discusses either the treatment of fractures via therapy or the treatment of nerve, tendon, or arterial injuries. It also describes physical therapy guidelines relevant to the patient with hand trauma and reviews communication between the physician and therapist in managing these patients. Intervention concepts are illustrated through case studies of patients with complex hand injuries.

Documents from the Physiotherapy Evidence Database search at www.pedro.org.au are listed below:

2008

Hellweg, S., & Johannes, S. (2008). **Physiotherapy after traumatic brain injury: A systematic review of the literature.** *Brain Injury, 22*(5), 365-373
Method: Systematic review
ABSTRACT: PRIMARY OBJECTIVES: At present there are no standardized recommendations concerning physiotherapy of individuals with traumatic brain injury (TBI) resulting in a high variability of methods and intensity. The aim of this literature review is to develop recommendations concerning physiotherapy in the post-acute phase after TBI on the basis of scientific evidence. METHOD: literature review: data bases: PubMed, PEDro, OT-Seeker, Cochrane and Cinahl. Keywords: brain injury (in PEDro, OT-Seeker, Cochrane), brain injury AND physical therapy (in PubMed and Cinahl). RESULTS: Fourteen studies met the inclusion criteria and were grouped into sub-groups: sensory stimulation, therapy intensity, casting/splinting, exercise or aerobic training and functional skill training. While for sensory stimulation evidence could not be proven, strong evidence exists that more intensive rehabilitation programs lead to earlier functional abilities. The recommendation due to casting for the improvement of passive range of motion is a grade B, while only a C recommendation is appropriate concerning tonus reduction. Strong evidence exists that intensive task-orientated rehabilitation programs lead to earlier and better functional abilities. CONCLUSION: Although some recommendations for the effectiveness of physical therapy interventions could be expressed, there are many questions concerning the treatment of humans with TBI which have not been investigated so far. Especially on the level of activity and participation only a few studies exist.

2007

Bruder, A., Dodd, K.J., Shields, N., & Taylor, N.F. (2007). **Therapeutic exercise in physiotherapy practice is beneficial: A summary of systematic reviews 2002 to 2005.** *Australian Journal of Physiotherapy, 53*(1), 7–16.
Method: Systematic review
ABSTRACT: QUESTION: Is therapeutic exercise of benefit? Design: A summary of systematic reviews on therapeutic exercise published from 2002 to September 2005. PARTICIPANTS: People with neurological, musculoskeletal, cardiopulmonary, and other conditions who would be expected to consult a physiotherapist. INTERVENTION: Therapeutic exercise was defined as the prescription of a physical activity program that involves the client undertaking voluntary muscle contraction and/or body movement with the aim of relieving symptoms, improving function or improving, retaining or slowing deterioration of health. OUTCOME MEASURES: Effect of therapeutic exercise in terms of impairment, activity limitations, or participation restriction. RESULTS: The search yielded 38 systematic reviews of reasonable or good quality. The results provided high level evidence that therapeutic exercise was beneficial for patients across broad areas of physiotherapy practice, including people with conditions such as multiple sclerosis, osteoarthritis of the knee, chronic low back pain, coronary heart disease, chronic heart failure, and chronic obstructive pulmonary disease. Therapeutic exercise was more likely to be effective if it was relatively intense and there were indications that more targeted and individualized exercise programs might be more beneficial than standardized programs. There were few adverse events reported. However, in many areas of practice there was no evidence that one type of exercise was more beneficial than another. CONCLUSION: Therapeutic exercise was beneficial for patients across broad areas of physiotherapy practice. Further high quality research is required to determine the effectiveness of therapeutic exercise in emerging areas of practice.

2005

Guo, S.M., Liu, X., & Yu, Q. (2005). **Physical therapy for the movement disorders in patients with brain injury.** *Zhongguo Linchuang Kangfu, 9*(13), 162-163. *Article in Chinese.*
Method: Clinical trial; Method Score: 4/10
ABSTRACT: BACKGROUND: Physical therapy is an effective treatment for movement disorder caused by central nerve system injury, while incorrect rehabilitative method will exacerbate the movement disorders in patients. OBJECTIVE: To investigate the effect of physical therapy on movement and daily activity of the patients suffering from brain injury. DESIGN: Randomized controlled study based on patients with a confirmative diagnosis. SETTING: Rehabilitation department in a university hospital. PARTICIPANTS: From September 2001 to August 2002, 78 patients hospitalized in the Rehabilitation Department of the Hospital Affiliated to Luzhou Medical College, with hemiplegia caused by brain injury, were selected into this study. The patients with severe brain injury, severe understanding disability, and severe heart diseases, lung diseases and kidney diseases were excluded. METHODS: The eligible patients were divided into two groups: the physical therapy group (48 patients) and the control group (30 patients). All the patients in these two groups received medication and the hyperbaric oxygen therapy (HBOT), while the patients in the physical therapy group received an extra physical therapy. MAIN OUTCOME MEASURES: A Fugl-Meyer assessment (FMA) and a modified barthel index (MBI) were adopted to evaluate the pre-and post-treatment statuses of the patients in these two groups. RESULTS: No significant difference in age, sex and disease course between the physical therapy group and the control group was found. In the physical therapy group, the FMA scale before and after the therapy were 40.43 +/- 21.78 and 68.35 +/- 23.39, and the corresponding MBI scale were 32.82 +/- 17.40 and 78.84 +/- 25.31 respectively. In the control group, meanwhile, the FMA scales were 41.71 +/- 19.13 and 51.48 +/- 22.58, and the MBI scales were 33.02 +/- 12.48 and 56.65 +/- 26.53. Before the therapy, comparison of FMA and MBI between the two groups showed no significant difference. While after the therapy, significant difference of FMA and MBI between the two groups could be confirmed ($t = 2.14, 2.21$, $p < 0.05$). CONCLUSION: Physical therapy could apparently enhance the rehabilitation of movement ability in patients with brain injury.

2003

Bertram, R.J.J., Graus, J.J.J., Hendriks, H.J.M., Hulzebos, H.J., Jongert, T., Koers, H., Nusman, F., Peters, R.H.J., Smit, B., van der Voort, S., van Hulst, R., & Vogels, E.M.H.M. (2003). KNGF guidelines: Clinical practice guidelines for physical therapy cardiac rehabilitation. [Methodology of a clinical practice guideline for clinicians].
Available in PDF at: www.fysionet.nl/dossier_files/uploadFiles/EngCardiacRehabGln.pdf .
Method: Practice guideline
ABSTRACT: *No abstract is available*

2001

Watson, M.J. (2001). **Do patients with severe traumatic brain injury benefit from physiotherapy: A review of the evidence.** *Physical Therapy Reviews, 6*(4), 233-249.
Method: Systematic review
ABSTRACT: Severe traumatic brain injury is a serious and frequently disabling condition with major and long-standing consequences, both for the patient and his/her therapy services. A significant proportion of adult sufferers will sustain physical problems, which will require physiotherapy input. A literature review was undertaken to identify the extent to which the effectiveness of this area of physiotherapy has been investigated. English language studies were located that described relevant controlled studies, including n-of-1 designs. Identified studies were categorized as: exercise/fitness training; sensory stimulation and coma arousal; therapeutic schools and approaches; functional skills training; behavioral modification; casting, splinting and associated therapies; respiratory physiotherapy; rehabilitation; miscellaneous 'mixed bag'. Overall, a reasonable body of evidence was identified, although stronger in some areas than others. There was a noticeable shortage of studies investigating the effectiveness of functional skills training, i.e., physiotherapy to reinstate functional motor activity. The implications of the results of this review are briefly discussed.

2000

Edwards, S., Guck, N., Jayawardena, S., Mackenzie, M., Partridge, C., Potter, J., & Reid, A. (2000). **Is dosage of physiotherapy a critical factor in deciding patterns of recovery from stroke: A pragmatic ran-**

domized controlled trial. *Physiotherapy Research International, 5*(4), 230-240.
Method: Clinical trial; Method Score: 7/10
ABSTRACT: BACKGROUND AND PURPOSE: The best treatment and management of stroke patients has been shown to be in stroke units by multidisciplinary rehabilitation teams. Since the composition of stroke units differs it is important to know the extent to which the different components contribute to this result. Physiotherapy is one component of most rehabilitation teams and recent systematic reviews have shown that patients with stroke receiving more physiotherapy achieve more recovery from disability. However, information about the actual amounts of physiotherapy needed to achieve this result is not known. Method: A pragmatic, randomized, single-blind, controlled trial comparing recovery from disability in subjects receiving the current standard amount of 30 minutes physiotherapy with those receiving double that amount (60 minutes). The study included measures of physical performance and function, psychological aspects of anxiety and depression, and perceived control over recovery. RESULTS: Some 114 subjects were recruited to the study; full six-week data are available for 104 subjects and six-month data for 93 subjects. Comparison of initial to six-week difference scores in the control and intervention groups of the whole sample did not show a significant difference. Scrutiny of the recovery curves of the whole samples showed that, in half the sample, three distinct patterns of recovery were demonstrated. CONCLUSION: These results suggest that doubling the physiotherapy time available for patients in a stroke unit will not provide a measurable benefit for all patients. The subgroup analysis of patterns of recovery must be regarded as speculative, but provides the basis for hypotheses about those likely to respond well to more intensive therapy.

Quick Looks

Physiospot

Research in the Spotlight

While researching use of prescriptive physical therapy in rehabilitation we came across an excellent online resource for keeping up to date with published literature on physio topics. The following description was taken from the Physiospot "about page" www.physiospot.com/about.html.

Physiospot was founded by Rachael Lowe in 2006. As a busy practitioner Rachael found it difficult to make the time to trawl through journals looking for appropriate articles to keep her practice up to date and evidenced based. The task of collating these articles into one place is a resource that she would have liked to be available to her at the time, as it wasn't she went about setting up this service herself. Her aim was to make clinically relevant research easily available to clinicians therefore providing a professional development activity and enabling them to more easily incorporate the evidence into practice.

With the valuable help from additional authors Physiospot Musculoskeletal the inaugural blog which was soon followed by others in different clinical areas. At the beginning of 2009 advanced technology enabled all the different blogs to be amalgamated into one whilst still retaining distinction between the clinical areas.

Over the past two years Physiospot has gathered a number of devoted followers and has helped many to easily keep up to date with the published literature. The main aim now is to develop Physiospot to involve readers in a more critical appraisal of articles and interpretation of their contribution to evidence based clinical practice.

For further information and details on how to subscribe please visit:
www.physiospot.com/home.html

Search Terms for use of prescriptive physical therapy in rehabilitation

- Alternative Medicine
- Arthritic Disorders
- Autoimmune Disorders
- Behavior Change/Development/Modification/ Therapy
- Biofeedback
- Body Movement
- Brain Injuries
- Burns
- Cancer
- Cardiac Disorders
- Chronic Disease/Illness
- Clinical Recommendations
- Combined Modality Therapy
- Competence
- Disabilities/Management
- Electric Stimulation Therapy
- Electrophysiology
- Evaluation Criteria/Techniques
- Evidence-Based Assessment/Medicine
- Exercise/Movement Techniques/Therapy/ Tolerance
- Functional Evaluation/Limitations/Status
- Geriatric Rehabilitation
- Guidelines
- Handbooks
- Health Care/Personnel/Promotion
- HIV
- Intervention
- Legislation
- Literature Reviews
- Long Term Care
- Measurements
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- Mobility Aids
- Models
- Motor Activity/Skills
- Muscular Impairments/Strength
- Musculoskeletal Disorders
- Needs Assessment
- Neurological Disorders
- Neuromuscular Disorders
- Occupational Therapy/Standards
- Pain/Management
- Physical Disabilities
- Physical Therapy/Evaluation/Fitness/Medicine/ Modalities/Prescriptions/Protocols/Standards
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- Program Design/Development/Effectiveness/ Evaluation/Guides
- Quality of Life
- Recovery of Function
- Regulations
- Rehabilitation/Medicine/Programs/Research/ Services/Technology
- Research/Methodology/Reviews/Utilization
- Severe Disabilities
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