



PRACTICE-CHANGING UPDATES

ARTICLES

1 [Continuous Passive Motion After Total Knee Arthroplasty: A Systematic Review and Meta-analysis of Associated Effects on Clinical Outcomes.](#)

Yang X, Li GH, Wang HJ, Wang CY.

Arch Phys Med Rehabil. 2019 Sep;100(9):1763-1778.

PMID: 31435960

A systematic review and meta-analysis evaluating post-total knee arthroplasty (TKA) continuous passive motion (CPM) efficacy in improving clinical and functional outcomes. 16 trials involving 1224 patients were reviewed. Pooled results show use of CPM did not bring significant improvement in postoperative knee range of motion (ROM) except for middle-term passive knee extension and long-term active knee flexion ROM. Findings reveal CPM therapy post-TKA does not improve ROM or functional outcomes, reduce LOS or risk of AEs, and that there is insufficient evidence to support routine use of CPM in this context.

TECHNOLOGY AND MEDICINE

ARTICLES

1 [Intraneural sensory feedback restores grip force control and motor coordination while using a prosthetic hand.](#)

Clemente F, Valle G, Controzzi M, Strauss I, Iberite F, Stieglitz T, Granata G, Rossini PM, Petrini F, Micera S, Cipriani C.

J Neural Eng. 2019 Apr;16(2):026034.

PMID: 30736030

Tactile afferents in the human hand provide information about hand-environment interactions used by the brain to adapt motor output. A hand amputation bidirectionally disrupts these pathways and whilst partial recovery of motor output is possible with a myoelectric prosthesis, providing functionally effective sensory feedback to the user remains a challenge. Here it is shown for the 1st time that intraneural sensory feedback of grip force (GF) improves sensorimotor control of a myoelectric prosthesis in a transradial amputee. The subject performed a stacking cups test (CUP) over 2 weeks, followed by a pick and lift test (PLT) at the end of the study. Results show intraneural sensory feedback increased GF regulation and improved performance over time. The PLT also revealed the subject's ability to generalize and transfer her manipulation skills to an unknown task with improved motor coordination. Functionally effective intraneural sensory feedback may improve the quality of life for amputees using a neural prosthesis.



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REHABILITATION MEDICINE

ARTICLES

1 [Eccentric and Concentric Resistance Exercise Comparison for Knee Osteoarthritis.](#)

Vincent KR, Vasilopoulos T, Montero C, Vincent HK.

Med Sci Sports Exerc. 2019 Oct;51(10):1977-1986.

PMID: 31033900

A study comparing the efficacy of eccentrically- (ECC RT) to concentrically-focused resistance exercise (CNC RT) on knee strength and osteoarthritis (OA) symptoms. Participants aged 60-85 years were randomized to 4 months of CNC RT, ECC RT or no-exercise (control). Outcomes included 1-repetition maximal strength (knee extension, leg flexion, leg press), weekly rate of strength gain and Western Ontario and McMaster University Arthritis Index (WOMAC) total and sub-scores. CNC RT and ECC RT were well tolerated and both groups showed 16%-28% improvement in all leg strength measures vs. control. Findings indicate both resistance training types increase leg strength, with knee flexion and extension strength the most significant predictors of improved function and pain symptoms irrespective of muscle contraction type. Exercise choice may be based on preference, tolerance to contraction type and equipment availability.

2 [Upper Limb Performance in Daily Life Improves Over the First 12 Weeks Poststroke.](#)

Waddell KJ, Strube MJ, Tabak RG, Haire-Joshu D, Lang CE.

Neurorehabil Neural Repair. 2019 Aug 20:1545968319868716.

PMID: 31431125

A longitudinal, prospective cohort study examining upper limb (UL) performance recovery in the first 12 weeks poststroke and characterize the potential role of belief, confidence and motivation on the former. UL performance was quantified via bilateral, wrist-worn accelerometers over 5 sessions for 24 hours. Belief, confidence and motivation to use the paretic UL and self-perceived barriers to its recovery were quantified by survey. Results indicate sensor-measured UL performance can improve early after stroke-during which time, rehabilitation interventions may not need to directly target belief, confidence, and motivation but focus on reducing self-perceived barriers to UL recovery.

3 [The Impact of Different Types of Exercise Training on Peripheral Blood Brain-Derived Neurotrophic Factor Concentrations in Older Adults: A Meta-Analysis.](#)

Marinus N, Hansen D, Feys P, Meesen R, Timmermans A, Spildooren J.

Sports Med. 2019 Oct;49(10):1529-1546.

PMID: 31270754

The rising prevalence of neurodegenerative diseases (e.g. dementia) with an ageing population makes understanding the role of exercise for maintenance/ improvement of brain health, crucial. This meta-analysis reviewed the impact of aerobic, strength and combined aerobic/strength exercise training on peripheral brain-derived neurotrophic factor (BDNF) concentrations in adults ≥ 60 years. Results showed generally, peripheral blood BDNF concentrations increased significantly after a single aerobic/ strength exercise bout or exercise programme- especially with strength and combined aerobic/ strength training, but not after (low-to-moderate intensity) aerobic exercise.



4 [The Effects of Continuous Compared to Accumulated Exercise on Health: A Meta-Analytic Review.](#) FULL ARTICLE ACCESS

Murphy MH, Lahart I, Carlin A, Murtagh E.

Sports Med. 2019 Oct;49(10):1585-1607.

PMID: 31267483

A systematic review and meta-analysis comparing effects of single bout exercise with that of the same total duration, mode and intensity but accumulated throughout the day, on health outcomes in adults. 6 databases were searched and 19 studies evaluating the above in community-dwelling adults were analysed. Results showed no difference between continuous and accumulated patterns of exercise in terms of fitness, blood pressure, lipids, insulin and glucose. There is some evidence from a small number of studies that changes in body mass and LDL cholesterol favour accumulated over single bout activity. Findings suggest adults are likely to accrue similar health benefits from single bout exercise or accumulating activity in shorter bouts throughout the day.

5 [Effectiveness of Botulinum Toxin Treatment for Upper Limb Spasticity Poststroke Over Different ICF Domains: A Systematic Review and Meta-Analysis.](#)

Andringa A, van de Port I, van Wegen E, Ket J, Meskers C, Kwakkel G.

Arch Phys Med Rehabil. 2019 Sep;100(9):1703-1725.

PMID: 30796921

A systematic review and meta-analysis of 40 randomised controlled trials involving 2718 patients, to assess reported effects and scientific robustness of botulinum toxin (BoNT) treatment on clinical goals related to poststroke upper limb spasticity. Outcome measures included spasticity-related pain, involuntary movements, passive joint motion, care ability, arm and hand use, standing and walking performance. The evidence suggests no further trials are needed to, investigate the efficacy of BoNT in improving spastic wrist and finger resistance to passive movement and self-care or confirm lack of effect of BoNT on arm-hand capacity, but more studies are needed to confirm its favourable effects on other body functions.

6 [Acupuncture and related interventions for carpal tunnel syndrome: systematic review.](#)

Wu IX, Lam VC, Ho RS, Cheung WK, Sit RW, Chou LW, Zhang Y, Leung TH, Chung VC.

Clin Rehabil. 2019 Sep 26:269215519877511.

PMID: 31556315

A systematic review of randomised controlled trials (RCTs) on the efficacy of acupuncture and related therapies for 1° carpal tunnel syndrome (CTS). RCTs were included if they reported ≥ 1 of 3 outcomes-symptom severity, functional status and pain. 10 RCTs from 9 databases were identified and appraised using the Cochrane Risk of Bias Tool. Majority were at high risk of bias for blinding of participants, personnel and outcome assessors. With regard to symptom relief and functional improvement, manual acupuncture was significantly superior than ibuprofen, while electroacupuncture and splinting was more effective than splinting alone.



7 [Should Hospitalized Patients Wear Graduated Compression Stockings for Prevention of Deep Vein Thrombosis?: A Cochrane Review Summary With Commentary.](#) FULL ARTICLE ACCESS

Kiekens C.

Am J Phys Med Rehabil. 2019 Nov;98(11):1041-1042.

PMID: 31490183

A commentary discussing the recently published Cochrane Review “Graduated compression stockings for prevention of deep vein thrombosis” from a rehabilitation perspective. 20 randomised controlled trials were reviewed, with patients regardless of age, sex and hospitalised for conditions other than stroke being included. From a rehabilitation perspective and based on high-quality evidence from the review, it appears graduated compression stockings (GCS) are effective in reducing Deep Vein Thrombosis (DVT) in hospitalised patients who have undergone surgery with or without other methods of background thromboprophylaxis, if there are no contraindications. Apart from 1 included study on patients with myocardial infarction, there is lack of evidence on GCS efficacy in reducing DVT risk in medical or neurological (e.g. stroke) patients. Of note, rehabilitation patients may have other indications for wearing GCS (e.g. oedema prevention in lower limb paralysis, enhancing sympathetic activity and/ or reducing orthostatic/ postexercise hypotension in spinal cord injury).

8 [Suicide and Traumatic Brain Injury Among Individuals Seeking Veterans Health Administration Services Between Fiscal Years 2006 and 2015.](#) FULL ARTICLE ACCESS

Hostetter TA, Hoffmire CA, Forster JE, Adams RS, Stearns-Yoder KA, Brenner LA.

J Head Trauma Rehabil. 2019 Sep/Oct;34(5):E1-E9.

PMID: 31369450

A retrospective, cohort study examining associations between traumatic brain injury (TBI) and 1) suicide and 2) suicide method, among individuals receiving Veterans Health Administration (VHA) care. Veterans with a diagnosis of TBI during/ prior to the study window (2006-2015) were compared to a 20% random sample of those without TBI. Findings show TBI is associated with 2.19X higher suicide risk across TBI severities (mild, moderate, severe)- particularly in those with moderate/ severe TBI, who were also more likely to commit suicide by firearm. Lethal means safety should be explored as an intervention.

SELF-LEARNING MODULES

Check out the Rehabilitation Medicine [Self-Learning Modules](#) on the AMS website!

Unlimited attempts, with 5 CME points awarded on successful completion of each module.

