Balance/Vestibular Conditions

Feasibility of gaming console exercise and its effect on endurance, gait and balance in people with an acquired brain injury

Tai Chi Chuan in Medicine and Health Promotion

Instrumenting the Balance Error Scoring System for use with patients reporting persistent balance problems after mild traumatic brain injury

A case of 'ping-pong' gaze of unknown cause

Dual-task effect on gait balance control in adolescents with concussion

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Return to work after traumatic brain injury: Systematic review

Evaluating the impact of treatment for sleep/wake disorders on recovery of cognition and communication in adults with chronic TBI

Development of a mild traumatic brain injury-specific vision screening protocol: A Delphi study

Neurofeedback and traumatic brain injury: A literature review

Modeling the prospective relationships of impairment, injury severity, and participation to quality of life following traumatic brain injury

Brain Injury/Traumatic Brain injury and Group Therapy

Selecting the appropriate psychotherapies for individuals with traumatic brain injury: what works and what does not?

Challenges and opportunities facing holistic approaches to neuropsychological rehabilitation

Miscellaneous Articles
Therapeutic Hypothermia Decreases Phenytoin Elimination in Children with Traumatic Brain Injury

Topological correlations of structural and functional networks in patients with traumatic brain injury


Balance/Vestibular Conditions

Feasibility of gaming console exercise and its effect on endurance, gait and balance in people with an acquired brain injury.
McClanachan NJ, Gesch J, Wuthapanich N, Fleming J, Kuys SS.
School of Health and Rehabilitation Sciences, University of Queensland, Australia.
Abstract
Objective: To determine feasibility of gaming console exercise and its effect on endurance, gait and balance in people following acquired brain injury (ABI). Method: Twenty-one people following ABI were recruited to an 8-week randomized cross-over trial where 4 weeks of gaming console exercise in addition to usual therapy and 4 weeks of usual therapy alone were received. Feasibility measures included compliance, session duration and adverse events. Measures included endurance measured using a 6-minute walk test, spatiotemporal gait parameters (GAITRite) and balance using Balance Outcome Measure for Elder Rehabilitation (BOOMER). Motivation was measured using the Change Assessment Questionnaire. Results: Compliance with gaming console exercise was high (99%), the majority of sessions reached duration target (82%) and there were no adverse events. There were small, though non-significant increases in 6-minute walk distance (18 metres, 95% CI = -33 to 69), gait speed (0.11 m s\(^{-1}\), 95% CI = -0.18 to 0.29) and balance compared to after usual therapy after gaming console exercise. Conclusions: Gaming console exercise appears feasible in people with ABI. Four weeks of gaming console exercise in addition to usual therapy appears to result in similar improvements in endurance, gait and balance compared to usual therapy alone and may enhance active engagement in therapy.
PMID: 24102295 [PubMed - in process]

Tai Chi Chuan in Medicine and Health Promotion.
Lan C, Chen SY, Lai JS, Wong AM.
Source
Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, 7 Chung-Shan South Road and National Taiwan University, College of Medicine, Taipei 100, Taiwan.
Abstract
Tai Chi Chuan (Tai Chi) is a Chinese traditional mind-body exercise and recently, it becomes popular worldwide. During the practice of Tai Chi, deep diaphragmatic breathing is integrated into body motions to achieve a harmonious balance between body and mind and to facilitate the flow of internal energy (Qi). Participants can choose to perform a complete set of Tai Chi or selected movements according to their needs. Previous research substantiates that Tai Chi has significant benefits to health promotion, and

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regularly practicing Tai Chi improves aerobic capacity, muscular strength, balance, health-related quality of life, and psychological well-being. Recent studies also prove that Tai Chi is safe and effective for patients with neurological diseases (e.g., stroke, Parkinson's disease, traumatic brain injury, multiple sclerosis, cognitive dysfunction), rheumatological disease (e.g., rheumatoid arthritis, ankylosing spondylitis, and fibromyalgia), orthopedic diseases (e.g., osteoarthritis, osteoporosis, low-back pain, and musculoskeletal disorder), cardiovascular diseases (e.g., acute myocardial infarction, coronary artery bypass grafting surgery, and heart failure), chronic obstructive pulmonary diseases, and breast cancers. Tai Chi is an aerobic exercise with mild-to-moderate intensity and is appropriate for implementation in the community. This paper reviews the existing literature on Tai Chi and introduces its health-promotion effect and the potential clinical applications.


Instrumenting the Balance Error Scoring System for use with patients reporting persistent balance problems after mild traumatic brain injury.

King LA, Horak FB, Mancini M, Pierce D, Priest KC, Chesnutt J, Sullivan P, Chapman JC. Source Department of Neurology, Oregon Health & Science University, Portland, OR, USA. Electronic address: kingla@ohsu.edu.

Abstract

OBJECTIVE: To determine whether alterations to the Balance Error Scoring System (BESS), such as modified conditions and/or instrumentation, would improve the ability to correctly classify TBI status in patients with mild TBI with persistent self-reported balance complaints.

Design: A cross-sectional study.

SETTING: An outpatient clinic in the Department of Rehabilitation Services at Oregon Health & Sciences University (OHSU).

SUBJECTS: Thirteen subjects (age 16.3 ±2) with a recent history of concussion (mTBI group) and 13 demographically matched control subjects (age 16.7 ±2) (control group).

INTERVENTION: Not applicable.

MAIN OUTCOME MEASURES: Outcome measures included the BESS, Modified BESS (Mod. BESS), Instrumented BESS (Instr. BESS), and Instrumented Modified BESS (Instr. Mod. BESS). All subjects were tested on the non-instrumented BESS and Mod. BESS, scored by visual observation of instability in six and three stance conditions, respectively. Instrumentation of these 2 tests utilized one inertial sensor (APDM-3D), with an accelerometer and gyroscope to quantify bi-directional body sway.

RESULTS: Scores from the BESS and the Mod. BESS tests were similar between groups. However, results from the instrumented measures using the inertial sensor were significantly different between groups. The Instr. Mod. BESS had superior diagnostic classification and the largest Area Under the Curve (AUC) when compared to the other balance measures.

CONCLUSIONS: A concussion may disrupt the sensory processing required for optimal postural control, measured by sway during quiet stance. These results suggest that the use of portable inertial sensors may be useful in the move towards more objective and sensitive measures of balance control post-concussion but more work is needed to increase sensitivity.
A case of ‘ping-pong’ gaze of unknown cause.

Bedford J.
Salford Royal NHS Trust.

Abstract

A 66 year-old Indian gentleman with a background of type II diabetes, Crohn's disease and previously treated tuberculosis presented with double vision and unsteadiness. He was found to have a right-sided internuclear ophthalmoplegia (INO) along with weakness and fasciculations in the lower limbs associated with brisk reflexes and an ataxic gait. An MRI scan of the brain and spinal cord revealed multiple supratentorial and infratentorial lesions. There was a hyperintensity in the right medial longitudinal fasciculus, which was felt to explain the INO. Cord and nerve root changes were also present. A CT angiogram of the brain was unrevealing. A lumbar puncture showed a mildly cellular CSF. CSF protein was 1.24 g/L and CSF glucose was 3.0 mmol/L compared to the paired plasma sample of 10.4 mmol/L. CSF ACE was raised at 1.59 µmol/L. Lactate dehydrogenase was raised at 773IU/L. CSF microbiology, immunology, cytology and flow cytometry were unrevealing. The clinical diagnosis at the time was neurosarcoidosis. The patient was managed with prednisolone and azathioprine. His condition worsened and his Glasgow Coma Scale score dropped requiring admission to the Intensive Care Unit. Whilst on ICU, the patient's eyes began deviating conjugately from one lateral side to the other without any rest period, the cycle lasting around 3 seconds. This was an example of "ping-pong gaze". 'Ping pong' gaze (PPG) is a term used to define slow conjugate eye deviation from one lateral side to the other with a fixed frequency. The term was coined by Selenick in 1976 after observing the phenomenon in a patient with a cerebellar haemorrhage.(1) PPG has been chiefly observed in unconscious patients with bilateral cerebral impairment. It has, however been described in further cases of cerebellar haemorrhage,(2) tricyclic toxicity(3) and monoamine oxidase inhibitor toxicity.(4) Different pathophysiological mechanisms have been described, most involving the lack of cortical inhibition on the horizontal gaze centres in the brain stem. This lack of input may permit vestibular or other nuclei to act as pacemakers.(5) The majority of cases have been described in patients with persistent vegetative state however it has been demonstrated in awake patients.(2) Unfortunately the patient's condition did not improve and he died. Post-mortem findings from the central nervous system confirmed a diagnosis of intravascular large B-cell lymphoma. In this case the cause of PPG was severe bihemispheric brain injury secondary to intravascular large B-cell lymphoma, a disease which can present with a wide variety of symptoms and often evades diagnosis.

KEYWORDS:
PARKINSON’S DISEASE, STROKE
http://jnnp.bmj.com/cgi/pmidlookup?view=long&pmid=24108884

Archives of Physical Medicine & Rehabilitation, August 2013, vol./is. 94/8(1513-20),
Dual-task effect on gait balance control in adolescents with concussion.

Author(s): Howell DR; Osternig LR; Chou LS

Abstract: OBJECTIVE: To prospectively and longitudinally examine how concussion affects gait balance control in adolescents during single- and dual-task walking.

DESIGN: Cohort, prospective, repeated-measures design.

SETTING: Motion analysis laboratory.

PARTICIPANTS: Adolescents (N=20) identified as suffering a concussion were matched with healthy control subjects (N=20) and tested 5 times across a 2-month period after injury.

INTERVENTIONS: Not applicable.

MAIN OUTCOME MEASURES: Gait temporal-distance parameters included average walking speed, step length, and step width; whole body center of mass (COM) parameters included medial/lateral displacement and peak COM medial/lateral and anterior velocities; dual-task cost, which was defined as percent change from single- to dual-task conditions; and Stroop test accuracy.

RESULTS: No between-group differences were observed for step length and step width. The dual-task cost for average walking speed for subjects with concussion was greater than control subjects across the 2-month testing period (main effect of group P=.019), as was the dual-task costs for peak anterior COM velocity (main effect of group P=.017) and total COM medial/lateral displacement (main effect of group P=.013). The total COM medial/lateral displacement (group x task interaction P=.006) and peak COM medial/lateral velocity (main effect of group P=.027; main effect of task P=.01) were significantly greater in subjects with concussion compared with control subjects during dual-task walking. Subjects with concussion were significantly less accurate than controls on the Stroop test (main effect of group P=.004).

CONCLUSIONS: The findings suggest that concussion affects the ability of adolescents to control body posture during gait up to 2 months after injury. Furthermore, dual-task paradigms may provide additional useful information in the clinical assessment and recovery of concussion. Copyright 2013 American Congress of Rehabilitation Medicine. Published by Elsevier Inc. All rights reserved.

Development of the International Classification of Functioning, Disability and Health core sets for traumatic brain injury: an International consensus process.

Author(s): Laxe S; Zasler N; Selb M; Tate R; Tormos JM; Bernabeu M

Abstract: BACKGROUND: In a patient-oriented healthcare system, the integration of the functional status of the patient from the perspective of different professionals is understandable by the use of the International Classification of Functioning, Disability and Health.OBJECTIVE: A formal decision-making and consensus process is presented to develop the first version of the International Classification on Functioning, Disability and Health (ICF) Core Sets for Traumatic Brain Injury.METHOD: A panel with the results from preparatory studies that included a literature review, a qualitative study, empirical data collection and an expert survey, was presented. A consensus conference was held in Barcelona, March 2010 and 23 professionals attended representing nine countries.RESULTS: The preparatory studies identified 183 eligible categories. After the voting process, 139 constituted the Comprehensive Core Sets for TBI and 23 the Brief Core Sets for TBI.CONCLUSIONS: The consensus conference led to the integration of evidence and expert opinion based on the ICF. The adoption of the ICF Core Sets for TBI provides a basic international standard for the multidisciplinary assessment of a TBI patient's functioning.
**Outcome Measures in Brain Injury**

Brain Inj. 2013 Oct 16. [Epub ahead of print]

**Return to work after traumatic brain injury: Systematic review.**
Saltychev M, Eskola M, Tenovuo O, Laimi K.

Source
Department of Physical and Rehabilitation Medicine and.

Abstract
Objective: To evaluate the evidence on pre- and post-injury predictors of vocational outcome after traumatic brain injury (TBI). Literature selection and critical analysis: The search was conducted on PubMed and Central databases since 1990. A clinical question was formulated according to the PICO framework. Clinical relevance of the selected studies was evaluated following the GRADE framework. Main outcomes and results: The main outcome measures were employment status and return to work after TBI. Methodological quality of most of the relevant 12 controlled and 68 uncontrolled studies included in the review was estimated as very low. There was weak evidence that age, educational level, pre- and post-injury occupational status, severity of TBI, functional status, level of depression and anxiety, gender and race may be predictive for the vocational outcome after TBI. Conclusions and implications for further research: No strong evidence was found that vocational outcomes after TBI could be predicted or improved. There is a need for both experimental and observational well-conducted studies on this important subject. Researchers are strongly encouraged to use unified and standardized terms and scales in further studies. The authors suggest the International Classification of Functioning, Disability and Health (ICF) as the best tool available for this purpose.

PMID: 24131314 [PubMed - as supplied by publisher]


**Evaluating the impact of treatment for sleep/wake disorders on recovery of cognition and communication in adults with chronic TBI.**
Wiseman-Hakes C, Murray B, Moineddin R, Rochon E, Cullen N, Gargar0 J, Colantonio A.

Source
Department of Rehabilitation Science, University of Toronto, Toronto, ON, Canada.

Abstract
Objective: To longitudinally examine objective and self-reported outcomes for recovery of cognition, communication, mood and participation in adults with traumatic brain injury (TBI) and co-morbid post-traumatic sleep/wake disorders. Design: Prospective, longitudinal, single blind outcome study. Setting: Community-based. Participants: Ten adults with moderate-severe TBI and two adults with mild TBI and persistent symptoms aged 18-58 years. Six males and six females, who were 1-22 years post-injury and presented with self-reported sleep/wake disturbances with onset post-injury. Interventions: Individualized treatments for sleep/wake disorders that included sleep hygiene recommendations, pharmacological interventions and/or treatments for sleep apnea with follow-up. Main outcome measures: Insomnia Severity Index, Beck Depression and Anxiety Inventories, Latrobe Communication Questionnaire, Speed and Capacity of Language Processing, Test of Everyday Attention, Repeatable Battery for the Assessment of Neuropsychological Status, Daily Cognitive-Communication and Sleep Profile. Results: Group analysis revealed positive trends in change for each measure and across sub-tests of all measures. Statistically significant changes were noted in insomnia severity, p = 0.0003; depression severity, p = 0.03; language, p = 0.01; speed of language...
processing, p = 0.007. Conclusions: These results add to a small but growing body of evidence that sleep/wake disorders associated with TBI exacerbate trauma-related cognitive, communication and mood impairments. Treatment for sleep/wake disorders may optimize recovery and outcomes.

PMID: 24070180 [PubMed - in process] PMCID: PMC3809926


Abstract

Although traumatic brain injury (TBI) can happen to anyone at any time, the wars in Iraq and Afghanistan have brought it renewed attention. Fortunately, most cases of TBI from the recent conflicts are mild TBI (mTBI). Still, many physical, psychological, and social problems are associated with mTBI. Among the difficulties encountered are oculomotor and vision problems, many of which can impede daily activities such as reading. Therefore, correct diagnosis and treatment of these mTBI-related vision problems is an important part of patient recovery. Numerous eye care providers in the Department of Veterans Affairs, in military settings, and in civilian practices specialize and are proficient in examining patients who have a history of TBI. However, many do not have this level of experience working with and treating patients with mTBI. Recognizing this, we used a modified Delphi method to derive expert opinions from a panel of 16 optometrists concerning visual examination of the patient with mTBI. This process resulted in a clinical tool containing 17 history questions and 7 examination procedures. This tool provides a set of clinical guidelines that can be used as desired by any eye care provider either as a screening tool or adjunct to a full eye examination when seeing a patient with a history of mTBI. The goal of this process was to provide optimal and uniform vision care for the patient with mTBI.

PMID:24203539[PubMed - in process]


May G, Benson R, Balon R, Boutros N. SourceDepartment of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, USA. E-mail: gmay@med.wayne.edu.

Abstract

BACKGROUND: Neurofeedback is a form of biofeedback whereby a patient can learn to control measurements of brain activity such as those recorded by an electroencephalogram. It has been explored as a treatment for sequelae of traumatic brain injury, although the use of neurofeedback remains outside the realm of routine clinical practice.

METHODS: Google Scholar™ was used to find 22 examples of primary research. Measures of symptom improvement, neuropsychological testing, and changes in subjects' quantitative electroencephalogram were included in the analysis. A single reviewer classified each study according to a rubric devised by 2 societies dedicated to neurofeedback research.

RESULTS: All studies demonstrated positive findings, in that neurofeedback led to improvement in measures of impairment, whether subjective, objective, or both. However, placebo-controlled studies were lacking, some reports omitted important details, and study designs differed to the point where effect size could not be calculated quantitatively.
CONCLUSIONS: Neurofeedback is a promising treatment that warrants double-blind, placebo-controlled studies to determine its potential role in the treatment of traumatic brain injury. Clinicians can advise that some patients report improvement in a wide range of neuropsychiatric symptoms after undergoing neurofeedback, although the treatment remains experimental, with no standard methodology.

PMID:24199220[PubMed - in process] Related citations

Modeling the prospective relationships of impairment, injury severity, and participation to quality of life following traumatic brain injury.
Kalpinski RJ, Williamson ML, Elliott TR, Berry JW, Underhill AT, Fine PR.
Department of Educational Psychology, 4225 TAMU, Texas A&M University, College Station, TX 77845-4225, USA.
Abstract
Identifying reliable predictors of positive adjustment following traumatic brain injury (TBI) remains an important area of inquiry. Unfortunately, much of available research examines direct relationships between predictor variables and outcomes without attending to the contextual relationships that can exist between predictor variables. Relying on theoretical models of well-being, we examined a theoretical model of adjustment in which the capacity to engage in intentional activities would be prospectively associated with greater participation, which in turn would predict subsequent life satisfaction and perceived health assessed at a later time. Structural equation modeling of data collected from 312 individuals (226 men, 86 women) with TBI revealed that two elements of participation-mobility and occupational activities-mediated the prospective influence of functional independence and injury severity to optimal adjustment 60 months following medical discharge for TBI. The model accounted for 21% of the variance in life satisfaction and 23% of the variance in self-rated health. Results indicate that the effects of functional independence and injury severity to optimal adjustment over time may be best understood in the context of participation in meaningful, productive activities. Implications for theoretical models of well-being and for clinical interventions that promote adjustment after TBI are discussed.
PMID: 24199186 [PubMed - in process]
http://www.hindawi.com/journals/bmri/2013/102570/

Brain Injury/Traumatic Brain injury and Group Therapy

Selecting the appropriate psychotherapies for individuals with traumatic brain injury: what works and what does not?
Ruff R.
SourceSan Francisco Clinical Neurosciences, University of California San Francisco, 909 Hyde Street, San Francisco, CA 94109, USA. ronruff@mindspring.com
Abstract
BACKGROUND: When traditional psychotherapy is provided to patients with traumatic brain injuries (TBIs), the primary focus is on treating mood changes such as depression, anxiety or anger. However, traditional psychotherapeutic methods developed specifically for mood changes fall short when treating most TBI patients. In large part, this is because the psychological adjustment difficulties that most TBI patients face are linked to life-altering changes that are interwoven with permanent physical, cognitive, and social sequelae. In addition, mood changes in TBI patients are also caused by vocational and financial losses.
OBJECTIVE: The sudden onset of these unfamiliar and interdependent problems necessitates a psychotherapeutic approach that acknowledges the inherent challenges of coping with multiple life-altering changes. For patients who experience a shattered sense of self, interventions need to be explored to make life meaningful following a TBI.

METHODS: An existentially-oriented approach is introduced in the following steps: (1) identifying pre-injury future expectations, (2) examining how the TBI has altered these expectations, (3) grieving the loss of the expected future, and (4) developing a realistic future that is existentially meaningful.

RESULTS: Pivotal gains are achieved when patients rebuild their lives according to their own core values.

CONCLUSION: TBI patients can benefit from existential psychotherapy.

PMID:23867403[PubMed - in process]


Challenges and opportunities facing holistic approaches to neuropsychological rehabilitation.
Prigatano GP.
Department of Clinical Neuropsychology, Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, 222 West Thomas Rd., Suite 315, Phoenix, AZ, USA. george.prigatano@dignityhealth.org

Abstract
BACKGROUND: Holistic approaches to neuropsychological rehabilitation have progressively been recognized as an important form of rehabilitative care for persons who have a history of moderate to severe traumatic brain injury.

OBJECTIVE: After providing historical and contemporary perspectives, identify challenges and opportunities facing the field of neuropsychological rehabilitation.

METHODS: Selective literature review from neuropsychological rehabilitation, neurosciences, learning theory, cognitive neuropsychology, and psychotherapy that highlight challenges to the development of holistic neuropsychological rehabilitation.

RESULTS: Ten challenges and associated opportunities that face the field of holistic neuropsychological rehabilitation are identified. Illustrations of these challenges and opportunities are provided.

CONCLUSIONS: Effectively addressing the challenges that face holistic neuropsychological rehabilitation will result in greater advances for this field of care for both children and adults.

PMID:23867401[PubMed - in process]

Block CK, West SE.
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Abstract
Primary objective: To provide an overview of useful clinical information for healthcare providers involved in traumatic brain injury (TBI) rehabilitation, including current methods used with survivors of TBI, therapeutic considerations in light of this population's cognitive, emotional and social difficulties and issues regarding the therapeutic working alliance from both survivor and provider perspectives. Research design: Non-systematic clinical review. Method: The literature was intended to be comprehensive to reflect both past and present contributions to the field. To that end, citations were included from seminal and current texts as well as relevant original and review articles from 1985-2012 in PubMed and PubMedCentral online research databases. Main outcomes and results: This article highlights the usefulness of psychotherapy for treatment of psychiatric symptoms in the TBI population, reviews available modalities and offers considerations
Brain Injury Bulletin No 14 November 2013

and suggestions to facilitate and improve treatment. Conclusions: Although challenging
and perhaps frustrating at times, psychotherapy with this population can be validly
attempted and ultimately very rewarding for both the survivor and therapist. Future
research should seek to perform controlled studies to examine therapeutic efficacy and
compare gains by injury severity in the hopes of creating best practice guidelines for
practitioners.
PMID:23631508[PubMed - in process]

Miscellaneous Articles

- Critical Care Medicine:
  October 2013 - Volume 41 - Issue 10 - p 2379-2387
doi: 10.1097/CCM.0b013e318292316c
Pediatric Critical Care
Therapeutic Hypothermia Decreases Phenytoin Elimination in Children with
Traumatic Brain Injury
Empey, Philip E. de Mendizabal, Nieves Velez ; Bell, Michael J. Bies, Robert R
Anderson, Kacey B. Kochanek, Patrick M. Adelson, P. David; Poloyac, Samuel M.
Supplemental Author Material
Abstract
Objective: Preclinical and clinical studies have suggested that therapeutic hypothermia,
while decreasing neurologic injury, may also lead to drug toxicity that may limit its
benefit. Cooling decreases cytochrome P450 (CYP)-mediated drug metabolism, and
limited clinical data suggest that drug levels are elevated. Fosphenytoin is metabolized
by cytochrome P450 2C, has a narrow therapeutic range, and is a commonly used
antiepileptic medication. The objective of this study was to evaluate the impact of
therapeutic hypothermia on phenytoin levels and pharmacokinetics in children with
severe traumatic brain injury.
Design: Pharmacokinetic analysis of subjects participating in a multicenter randomized
phase III study of therapeutic hypothermia for severe traumatic brain injury.
Setting: ICU at the Children’s Hospital of Pittsburgh.
Patients: Nineteen children with severe traumatic brain injury.
Interventions: None.
Measurements and Main Results: A sum of 121 total and 114 free phenytoin levels
were evaluated retrospectively in 10 hypothermia-treated and nine normothermia-
treated children who were randomized to 48 hours of cooling to 32–33°C followed by
slow rewarming or controlled normothermia. Drug dosing, body temperatures, and
demographics were collected during cooling, rewarming, and posttreatment periods (8
d). A trend toward elevated free phenytoin levels in the hypothermia group (p = 0.051)
to a median of 2.2 mg/L during rewarming was observed and was not explained by
dosing differences. Nonlinear mixed-effects modeling incorporating both free and total
levels demonstrated that therapeutic hypothermia specifically decreased the time-
variant component of the maximum velocity of phenytoin metabolism (Vmax) 4.6-fold
(11.6–2.53 mg/hr) and reduced the overall Vmax by ~ 50%. Simulations showed that
the increased risk for drug toxicity extends many days beyond the end of the cooling
period.
Conclusions: Therapeutic hypothermia significantly reduces phenytoin elimination in
children with severe traumatic brain injury leading to increased drug levels for an
extended period of time after cooling. Pharmacokinetic interactions between
hypothermia and medications should be considered when caring for children receiving
this therapy.
Caeyenberghs K, Leemans A, Leunissen I, Michiels K, Swinnen SP.
SourceDepartment of Physical Therapy and Motor Rehabilitation, Faculty of Medicine and Health sciences, University of Ghent Ghent, Belgium; Department of Movement and Sport Sciences, Faculty of Medicine and Health sciences, University of Ghent Ghent, Belgium.

Abstract
Despite an increasing amount of specific correlation studies between structural and functional connectivity, there is still a need for combined studies, especially in pathological conditions. Impairments of brain white matter (WM) and diffuse axonal injuries are commonly suspected to be responsible for the disconnection hypothesis in traumatic brain injury (TBI) patients. Moreover, our previous research on TBI patients shows a strong relationship between abnormalities in topological organization of brain networks and behavioral deficits. In this study, we combined task-related functional connectivity (using event-related fMRI) with structural connectivity (derived from fiber tractography using diffusion MRI data) estimates in the same participants (17 adults with TBI and 16 controls), allowing for direct comparison between graph metrics of the different imaging modalities. Connectivity matrices were computed covering the switching motor network, which includes the basal ganglia, anterior cingulate cortex/supplementary motor area, and anterior insula/inferior frontal gyrus. The edges constituting this network consisted of the partial correlations between the fMRI time series from each node of the switching motor network. The interregional anatomical connections between the switching-related areas were determined using the fiber tractography results. We found that graph metrics and hubs obtained showed no agreement in both groups. The topological properties of brain functional networks could not be solely accounted for by the properties of the underlying structural networks. However, combining complementary information from both imaging modalities could improve accuracy in prediction of switching performance. Direct comparison between functional task-related and anatomical structural connectivity, presented here for the first time in TBI patients, links two powerful approaches to map the patterns of brain connectivity that may underlie behavioral deficits in brain-injured patients.

KEYWORDS: brain injury, brain networks, functional connectivity, graph theoretical analysis, structural connectivity
PMID:24204337[PubMed]

Karr JE, Areshenkoff CN, Garcia-Barrera MA.

Abstract
Mild Traumatic Brain Injury (mTBI), also known as concussion, has become a growing public health concern, prevalent in both athletic and military settings. Many researchers have examined post-mTBI neuropsychological outcomes, leading to multiple meta-analyses amalgamating individual study results. Objective: Considering the plethora of meta-analytic findings, the next logical step stands as a systematic review of meta-analyses, effectively reporting key moderators that predict post-mTBI neuropsychological outcomes. Method: A systematic review of reviews yielded 11 meta-analyses meeting inclusion criteria (i.e., English-language systematic reviews/meta-analyses covering post-mTBI observational cognitive research on late adolescents/adults), with their findings qualitatively synthesized based on moderator variables (i.e., cognitive domain, time since injury, past head injury, participant characteristics, comparison group, assessment technique, and persistent symptoms).

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Results: The overall effect sizes ranged for both general (range: .07-.61) and sports-related mTBI (range: .40-.81) and differed both between and within cognitive domains, with executive functions appearing most sensitive to multiple mTBI. Cognitive domains varied in recovery rates, but overall recovery occurred by 90 days postinjury for most individuals and by 7 days postinjury for athletes. Greater age/education and male gender produced smaller effects sizes, and high school athletes suffered the largest deficits post-mTBI. Control-group comparisons yielded larger effects than within-person designs, and assessment techniques had limited moderating effects. Conclusions: Overall, meta-analytic review quality remained low with few studies assessing publication or study quality bias. Meta-analyses consistently identified adverse acute mTBI-related effects and fairly rapid symptom resolution. Future meta-analyses should better operationally define cognitive constructs to produce more consistent effect estimates across domains. (PsycINFO Database Record (c) 2013 APA, all rights reserved).

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- Brain Inj. 2013 Nov 11. [Epub ahead of print]

Survivors of brain injury through the eyes of the public: A systematic review.
Ralph A, Derbyshire C.
SourceDepartment of Clinical Psychology and Psychological Therapies, The University of Hull, Hull, UK.

Abstract
Abstract Background: It is known that knowledge and attitudes are important in determining whether society stigmatize and discriminate against specific groups. However, there has been no systematic review of the literature measuring these factors towards acquired brain injury (ABI). Objective: This study aimed to systematically evaluate the literature measuring the public's (1) knowledge of ABI and (2) attitudes towards survivors. Methods: Four databases were searched between December 2011 and March 2012. Studies meeting the selection criteria were included and a manual search of studies' reference lists undertaken to identify any remaining. The quality of studies was assessed using an adapted tool. Results: Twenty studies were reviewed, with quality assessment ratings ranging from 47.83-91.3%. The public lacked awareness of some post-injury symptoms. Misconceptions concerning recovery, memory difficulties and vulnerability to second injuries were also commonly endorsed. The public demonstrated more negative attitudes towards survivors of ABI than those with other injuries, particularly if they deemed the individual responsible for their ABI. Conclusions: Survivors of ABI are vulnerable to stigma and discrimination. It is therefore essential that Government and media campaigns prioritize educating the public about ABI and promote the inclusion of survivors.

PMID:24215644[PubMed - as supplied by publisher] Related citations

Databases searched: NHS EVIDENCE:
MEDLINE/
CINAHL/
AMED/
PUBMED/

The Library and Knowledge Service are currently reviewing current awareness services in order to ensure they best meet the needs of Trust staff.
The future of the bulletins will be influenced by the responses we receive to this short survey. We would be grateful if you could participate, and are interested in your views even if you do not read the bulletins you receive. The questions should take no more than five minutes to complete, please follow the link below.
http://www.smart-survey.co.uk/v.asp?i=16900nlxmj

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