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Energy expenditure in persons with prior stroke walking with ankle foot orthosis (AFO)

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Introduction: Patients are often prescribed an AFO to obtain a more physiological gait pattern. The effects on the energy expenditure for stroke patients walking with an AFO are scarcely investigated. No studies have been published on the impact on energy consumption of a carbon fibre AFO that was introduced some years ago.

Material and method: Ten hemiparetic patients with a prior stroke at least six months earlier, (mean age of 52) were included. All were habituated to walking with a carbon fibre AFO. The self-chosen speeds for treadmill walking with and without the AFO were determined. Oxygen consumption was measured by breath-by-breath analysis and heart rate was recorded by electrocardiography. A retest was made within one week and the mean values from the two trials were calculated. Comparisons were made between walking with and without the AFO, at the self-chosen speed chosen without the AFO.

Results: The mean oxygen consumption without AFO was 8.6 ml/kg/min and with AFO 8.2 ml/kg/min, which was significantly lower ($p < 0.05$). The heart rate showed no difference between the two conditions.

Conclusion: Walking with a carbon fibre AFO seems to decrease the oxygen consumption in stroke subjects. In addition to kinematic improvements, decrease in energy expenditure

supports the use of an AFO in this patient group where the oxygen cost during walking is increased due to movement disorders.

Gaining information: the experience of spouses caring for a partner admitted to hospital following a single stroke

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Background: This research explores spouses' perceived life changes, perceived role within the hospital environment and the effect this role has on information gained from staff.

Method: Life narrative interviews were carried out with 25 participants (7 male) aged 30–85 (median 70) years, whose partners were in hospital following a single stroke. Interviews took place in the participant's home. Participants were guided to speak about their past, present and future life. Interviews were audiotaped and fully transcribed. Fieldnotes were made. Transcripts were re-read to identify how the participant positioned themselves within their stories in relation to staff within the hospital environment. Similarities and differences were compared across participants. Transcripts were read independently by two researchers to confirm or challenge interpretations.

Results: Spouses described a sudden life change and a need to constantly plan for their future. They had to visit every day (a) to support their partner emotionally, (b) to gain information to aid planning. This was often achieved on an ad

hoc basis, e.g. through sitting with their partner, or attending physiotherapy sessions. Case conferences were perceived as helpful but spouses often felt unable to discuss their own issues. Spouses did not feel able to ask for information unless they had a good relationship with a member of staff. Recognition and acknowledgement of spouses' outside life, and future plans was important. Even good relationships with staff were fragile; trust could be damaged through conflicting information or delays.

Conclusion: Spouses were constantly planning the couple's future life, and they needed accurate timely information. Gaining information appeared to be only possible if spouses felt able to approach ward staff through structured formal, but especially informal relationships, where the challenges they were facing were recognized.

Magnetic resonance imaging in acute stroke and motor recovery

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Background: There is little evidence to show that recovery from stroke depends upon the site of the lesion. We tested the value of diffusion-weighted magnetic resonance imaging (MRI) to localize the lesion in acute middle cerebral artery infarction and predict motor outcome.

Methods: Consenting consecutive hospitalized patients with anterior circulation stroke syndromes, with no significant co-morbidity, who could be scanned within 48 hours of symptom onset were recruited. Motor recovery at three months was measured using the Rivermead Motor Assessment. MRI evidence of damage to the posterior limb of the internal capsule or the primary motor cortex was used to be predictive of poor motor outcome. MRI-based predictions were compared with those made using the Rivermead motor scores 48 hours post onset, and the National Institute of Health Stroke Scale (NIHSS) scores on initial assessment.

Results: Thirty-five patients were recruited. At three months, 9 were dead, 16 had good outcome, 8 had poor motor outcome, and 2 were not fol-

lowed up. MRI-based predictions (mean time of scan 31 hours post onset) were 82% accurate (27/33), those based on the Rivermead motor score at 48 hours were 97% accurate (32/33) and NIHSS-based predictions (mean 18 hours) were 67% accurate (22/33).

Discussion: A close association was found between MRI-based predictions and motor outcome. However predictions based on initial motor deficit appear to be the most accurate method in this population.

Conclusion: In middle cerebral artery infarction there is a relationship between the site of damage identified using magnetic resonance imaging and motor recovery.

Preliminary evaluation of a scale of pain intensity (SPIN) for post-stroke shoulder pain

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Background: Post-stroke shoulder pain is common, distressing and difficult to assess. Some patients with visual, cognitive and/or language deficits cannot use currently validated pain scales, such as visual analogue, numeric or verbal scales. This study presents a preliminary evaluation of a pictorial scale of pain intensity (SPIN) in a non-stroke population without cognitive or language deficits.

Method: The SPIN is a 6-point ordinal scale, coloured red for visual impact, with optional pictures conveying shoulder pain in different circumstances. To determine its concurrent validity and test-retest reliability, 32 males and 40 females, aged 23-87 years, were recruited from rheumatology and chronic pain out-patient clinics. They rated the intensity of present pain, and episodes of severe and mild pain on a 10 cm visual analogue scale (VAS), 0-10 numeric rating scale (NRS) and the SPIN in random order. Because present pain can vary in the short term, retesting followed an interview and functional and cognitive tests. Participants ranked scales by preference and gave comments.

Results: Spearman's correlation coefficients between VAS, NRS and SPIN for the three pain episodes all exceeded 0.78 ($p < 0.001$). Test-retest reliability of the SPIN gave percentage agreements (weighted kappa) of: present pain 69% (0.83); severe pain 94% (0.94); mild pain 83% (0.85). Proportions of scales ranked as first choice were: NRS 49%, SPIN 39%, VAS 11%.

Discussion: Participants found the SPIN easy to understand and associated it with the concept of increasing pain, which commends its potential for stroke patients. Though some wanted more than six points, most found it easier to target their score on an ordinal scale than to judge where to mark a continuous VAS line.

Conclusion: The SPIN performed well compared with the VAS and NRS. Further validation in a stroke population is warranted and is under way.

The influence of cognitive impairment on dressing skills: a survey of current beliefs and practice

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Objective: To determine occupational therapists' beliefs about the influence of cognitive impairment on dressing difficulties and to ascertain current practice when treating dressing problems.

Design: A survey questionnaire of occupational therapists who treat patients with dressing difficulties.

Results: Out of 137 questionnaires sent 76 of occupational therapists responded. The frequency of dressing practice provided by therapists ranged from two to four times a week. Only 26% of therapists used standardized assessments and the most common one utilized was the Rivermead Perceptual Assessment Battery. Apraxia was reported by 76% of occupational therapists as influencing a patient's ability to dress, neglect by 71% and memory by 63%. Seventy-six per cent of therapists reported that orientating and relating clothing to body parts was a major dressing difficulty. Other dressing difficulties reported were sequencing by 56% and failing to dress the affected side by 34%. Ninety-eight per cent of

therapists spent time practising specific functional skills on a repetitive basis, however 48 continued to use tabletop tasks aimed at targeting a particular cognitive impairment.

Conclusions: The majority of therapists felt the cognitive impairment was a major reason for dressing difficulties among stroke patients. With the exception of one, all therapists provided repetitive practice on dressing tasks and two-thirds continued to use tabletop tasks. Evidence to support the types of treatment used by therapists remains controversial. Further research into this area is required.

Rehabilitation of chronic medial epicondylitis with progressive stretching and strengthening exercise programme

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Background: There are few good rehabilitation methods for chronic disabling epicondylitis. A progressive four-step home exercise programme for lateral epicondylitis has previously shown beneficial effects evaluated with pain, muscle power, arm performance and working ability measurements. The aim of this study was to investigate if the same progressive exercise programme is effective in treatment for chronic medial epicondylitis.

Methods: Fifteen patients, 4 male, 11 female, mean age 43.7 years, median duration of symptoms 45 weeks, with unilateral medial epicondylitis were treated with a 4-step progressive home exercise programme for eight weeks, trained and controlled by a physiotherapist. A pain questionnaire (PQ) with seven items of pain and disability on VAS, pain drawing (PD), isometric grip strength and isokinetic performance of upper extremities were used in evaluation. The results were compared with those in patients with lateral epicondylitis ($n = 20$) treated and evaluated with exactly the same methods and using local ultrasound treatment ($n = 19$) as a control.

Results: The exercise programme resulted in sig-

nificant improvement of pain on VAS in total pain (27%, $p < 0.05$), pain under strain and working ability (28 and 30%, $p < 0.01$), in PD (33%, $p < 0.05$). The isometric grip strength improved significantly by 17% ($p < 0.05$) and isokinetic wrist flexion torque and produced work and also wrist extension and forearm pronation improved significantly. The results were not as good as those for lateral epicondylitis but similar and statistically significantly better than in the ultrasound treatment group.

Conclusions: The progressive exercise reconditioning regime for medial epicondylitis used in this study resulted almost similar although a lesser improvement in pain and hand function than in case of lateral epicondylitis treated with the same method. The results indicate that progressive exercises are effective and can be recommended as a treatment for chronic medial epicondylitis.

Can the marker of brain damage S-100B be used for prediction of time for return to sport after mild head injury/concussion?

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Background: Mild head injuries/concussions are frequent in contact sports, e.g. ice hockey or martial arts. The aim of this study was to assess whether concentrations of S-100B (a protein present in high concentrations in glial cells known to serve as 'marker of brain damage') in blood is affected by match play of ice hockey and basketball.

Method: Venous blood samples were taken before and after a match from elite players of ice hockey ($n = 26$) and basketball ($n = 18$). Concentrations of S-100B were assessed using monoclonal two-site immunoradiometric assays (LIA-mat, Sangtec 100, AB Sangtec Medical

Bromma, Sweden). The players who sustained head injury were followed up with Rivermead Post-Concussion Questionnaires. The matches were recorded on videotape for analysis of head trauma later on.

Results: In comparison to the pre-match concentrations of S-100B (ice hockey: $0.23 \pm 0.05 \mu\text{g/l}$; basketball: $0.22 \pm 0.04 \mu\text{g/l}$), the values of S-100B were significantly increased (ice hockey: $0.30 \pm 0.12 \mu\text{g/l}$, $p < 0.002$, paired *T*-test; basketball: $0.30 \pm 0.10 \mu\text{g/l}$, $p < 0.002$). One ice hockey player who suffered concussion, showed a much more pronounced increase in S-100B concentrations in comparison to other players. He reported persisting symptoms both one day and four months after the match. Two basketball players sustained concussion too, but they showed only insignificant changes in S-100B concentration and reported no/very few symptoms one day after the match.

Discussion: Match play caused increases in S-100B concentrations in blood of elite players of ice hockey and basketball. Three players with concussion during the match exhibited different S-100B concentrations changes which were related to different post-concussion symptom pictures.

Conclusion: Analysis of the 'marker of brain damage' S-100B after mild/head injury seems to provide additional information which may contribute to improved management of mild traumatic head/brain injuries in sports.

Evaluation of an early supported discharge scheme for older people: outcomes at 12 months

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Background: We present the health outcomes at one year from a randomized control trial (RCT) of an early discharge and home rehabilitation service for hospitalized older people which has already demonstrated shorter lengths of stay, less disability and better mood at three months.

Method: A randomized control trial was used to evaluate the early discharge scheme in Notting-

ham. Patients allocated to the scheme were managed by a community service providing up to four weeks of rehabilitation from a multidisciplinary team. The control group had usual hospital and aftercare. Health outcomes were collected postally at 12 months using the Barthel ADL Index, the Nottingham Extended ADL Index, the Euroqol and the General Health Questionnaire-12 (patient and carer).

Results: Three hundred and seventy patients were randomized; 185 to each group. The mean age was 79 years. Groups were well matched on baseline measures. At 12 months, 66 were dead (RR 1.06, 95% CI 0.69–1.65) 242 were living at home (RR 1.02, 95% CI 0.88–1.18) and 192 had been re-admitted (RR 1.13, 95% CI 0.93–1.38). One hundred and thirty-five questionnaires were analysed in the intervention group compared with 142 in the control group. Analysis was by linear regression:

- Barthel (range 0–20), mean difference 0.20, 95% CI –0.73 to 1.13
- Nottingham EADL total (range 0–66), mean difference 3.03, 95% CI –0.42 to 6.48
- Nottingham EADL subscales:
- Mobility (range 0–18), mean difference 0.26, 95% CI –0.85 to 1.37
- Kitchen (range 0–15), mean difference 0.67, 95% CI –0.44 to 1.78
- Domestic (range 0–15), mean difference 1.38, 95% CI 0.36 to 2.40
- Leisure (range 0–18), mean difference 0.61, 95% CI –0.31 to 1.53
- Euroqol (range –0.59–1), mean difference 0.02, 95% CI –0.06 to 0.09
- Patient GHQ (range 36–0), mean difference –1.93, 95% CI –3.49 to –0.36
- Carer GHQ (range 36–0), mean difference –1.06, 95% CI –3.65 to 1.52

Conclusion: The significant benefits of early supported discharge and rehabilitation in terms of domestic ADL and patient mood reported at three months persisted at one year follow-up.

Patellar tendon bearing orthosis (PTBO) – is it effective?

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Introduction: The aim of the study was to assess the efficacy of the patellar tendon bearing orthosis (PTBO) as a mode of treatment in patients with lower limb ischaemia and neuropathy with associated tissue loss.

Methods: The Pedar Insole System is a commercially available pressure measurement system. It allows a quantitative in-shoe or barefoot pressure static or dynamic measurements to be carried out.

Subjects: Eight consecutive patients (10 legs) with diabetic foot disease and significant tissue loss were assessed by a multidisciplinary team of vascular surgeon, a rehabilitation physician and an orthotist. The study was carried out in a vascular-orthotic clinic. The group included 8 men (age range 54–80 years). Debridement and vascular reconstruction was carried out where appropriate. A custom-made PTBO was provided.¹ The PEDAR System was placed between the sole of the foot and the PTBO, and subsequently between the PTBO and the footwear. The pressure was recorded in N/cm². Measurements were taken with a minimum of four steps employing each foot. The pressure between the foot and the PTBO was as low as 432.2 N/cm² (mean 495.2) and as high as 1084.2 N/cm² (mean 653.2) between the PTBO and the footwear. Early studies show considerable pressure reduction on the foot when the PTBO was used.

Conclusion: The PTBO provided significant unloading to the affected foot whilst static but also during walking. We believe this technique of unloading the neuro-ischaemic foot is an important adjunct to healing.

Reference

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Is global outcome predictable in the rehabilitation of patients with musculoskeletal disorders?

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Background: Definition of prognostic factors for outcome quality is of increasing interest in rehabilitation medicine. The main question of this pilot study in 552 patients was whether global outcome could be predicted by a team-based PMR (doctor for physical medicine and rehabilitation).

Methods: All of the 552 patients met each member of the rehabilitation team, and key data of each patient had been discussed at the rehabilitation conference within the first two days. Assessment by the PMR at entrance: First, key data had been structured according to ICDH-2 (ICF) and quantitatively assessed. Second, the PMR rated the expected global outcome ('very good', 'good', 'moderate', 'poor/worsening') in respect to the corresponding goal attainment ('better than expected', 'fully attained', 'partially attained', 'none'). Assessment by the AD (assistant doctor)/patient before discharge: Global outcome was rated by both, separately, according to the above-mentioned criteria.

Statistics: Different regression models were calculated searching for significant differences between the numerous variables.

Results: In the regression models, best of all predictors for outcome was the PMR. Complete and good correspondence between prediction and outcome could be obtained in 71.4% (42.1%, 29.3% respectively) in the descriptive model. Quantitatively assessed ICDH-2 levels, pain at entrance and working incapacity at entrance were not significant predictive factors for global outcome.

Discussion: Prediction of global outcome is an integral process based on the high information grade of a multiprofessional rehabilitation team and the definition of rehabilitation goals. This method including the critical point of validation

is being extensively discussed. Conclusion: Prediction of global outcome by a team-based PMR is of high predictive value, practicable and useful for rehabilitation processes and quality assurance. To our knowledge, it is the first published study on this topic.

Audit of the effectiveness of a new multi-agency falls prevention programme targeting the older population in the community

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Standard six of the National Service Framework for Older People details that the NHS working in partnership with councils will take action to prevent falls in their older population. It states that older people who have fallen will receive advice on prevention through a specialized falls service. This paper is an audit of the effectiveness of such a service. Intervention includes individual assessment and group classes in the community. The classes have education on prevention of falls and exercises to improve balance. A random sample of 30 subjects in the programme was used. Inclusion criteria to the programme includes: one or more falls, risk or fear of falling, living at home, no serious memory problems, able to mobilize independently or with supervision. The measurements taken before and after completion of the eight classes run over an eight-week period are; visual analogue scale of fear of falling, confidence in balance questionnaire, the timed up and go, the functional reach, the timed unsupported stride stand and the 180-degree turn. An SPSS data package was used to perform a paired sample *t*-test on the scores. The measures used showed statistically significant changes in the pre- and post-intervention scores, with the exception of the timed unsupported stride standing. The mean value of the timed up and go was measured in seconds before ($M = 28.13$, $SD = 15.64$) and after ($M = 22.60$, $SD = 14.33$) $t = 3.29$, two-tailed $p > 0.05$. The mean value of the functional reach score was measured in centimetres before ($M = 11.48$, $SD = 6.49$) and after ($M = 14.37$, $SD = 6.49$) $t = 3.29$, two-tailed $p > 0.05$. The mean value

of 180-degree turn was measured in steps before ($M = 8.10$, $SD + 4.33$) and after ($M = 5.63$, $SD = 2.08$) $t = 3.29$, Two-tailed $p > 0.05$. The Pearson correlation between the confidence score and the VAS also showed significance at 0.01. Both the subjective and objective measures indicate effectiveness. Further development of the service is now being considered.

Providing electronic assistive technology in north-west England

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Electronic Assistive Technology (North-West)

Background: Rates of environmental control system (ECS) prescription vary widely across the UK, largely due to differences in funding and service configuration. This audit was designed to investigate whether Electronic Assistive Technology [North-West] (EAT(NW)) has improved efficiency, cost-effectiveness and equity of ECS provision in North-West England.

Service description: In 1995, a centralized service based in Liverpool was established to oversee ECS provision to the 6.6 million people in north-west England. Clerical staff accept new referrals, arrange assessments, liaise with suppliers and field fault calls. Electronic engineering technicians (appointed in 1998) advise on equipment prescription, carry out installations, assess equipment faults and maintain equipment.

Results: *Efficiency:* ECS provision increased from 536 systems in 1996 to 723 in 2000, without an increase in service budget. The mean interval between referral and equipment installation reduced from 20 weeks to 13 weeks in the same time period. *Cost effectiveness:* From 1996 to 2000, total costs reduced by 36% whilst the number of service users increased by 26%. Cost per system installed fell from £5279 in 1996 to £1629 in 2000, with the annual cost per operational system falling from £1457 to £929. *Equity of provision:* The average number of systems per million population increased from 81 in 1996 (range between Health Authorities of 45 to 104) to 109 in 2000 (range 61–148).

Conclusion: EAT(NW) has improved the efficiency, cost-effectiveness and equity of ECS provision in north-west England. It aims to further integrate ECS provision with that of powered wheelchairs, communication aids and other electronic technology.

Postal survey of sleep disorder post head injury

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Background: Poor sleep following traumatic brain injury (TBI) may go unnoticed. The aim of the study is to determine the prevalence of longer term sleep disorder in patients with TBI living in the community.

Method: Patients were recruited from the Leeds Head Injury Team. Fifty patients were randomly selected who were not in regular contact with the team and as such the team was unaware of any sleep disorder in these patients. A postal survey of sleep problem in these patients was performed using a questionnaire designed for this purpose.

Results: Thirty questionnaires (60%) were returned.

Male: Female 21:9

Mean age: 38 years (range 17–67 years)

Mean time since injury: 3 years (range 6 months to 11 years)

Of these 30 patients, 25 (83%) reported some sort of sleep disorder. Of the 25 patients who reported sleep disorder, in 22 (88%) it followed TBI.

12 patients (48%) reported excessive sleepiness

16 patients (64%) reported daytime sleepiness

13 patients (52%) said it took them a long time to go to sleep

14 patients (56%) had interrupted sleep

15 patients (60%) reported early morning waking

13 patients (52%) had poor quality of sleep

21 patients (84%) reported they did not feel refreshed during the day.

Discussion: As only 60% of questionnaires were returned, prevalence of sleep disturbance might have been underestimated. Various types of sleep

disturbance were reported with 84% patients reporting not feeling refreshed during the day. The latter may impact on their rehabilitation.

Conclusion: The study shows sleep problems can persist several years after TBI. The cause, prevalence and lifestyle impact of this problem warrants further evaluation.

Measuring client and carer rehabilitation outcomes following traumatic brain injury: a prospective study of a two-year cohort in NSW, Australia

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There is little research information about rehabilitation outcomes following severe traumatic brain injury and results from previous research studies cannot be readily generalized to Australia because of the differences in health care provision.

The Brain Injury Outcomes Study (BIOS) is a longitudinal study of a two-year cohort (1999–2001) of brain injury rehabilitation programme clients in New South Wales, Australia. Clients and their principal carers were recruited and followed up after one year and two years. This abstract examines factors related to the expressed needs of the carers of TBI clients using a subset of the BIOS admission dataset.

Matching data from 118 clients and their principal carers have been analysed. Demographic, injury, initial hospitalization and admission to rehabilitation details for clients and carers were recorded. Clinician-rated outcomes (Disability Rating Scale (DRS) and Mayo-Portland Adaptability Inventory) and client self-rated outcomes (Medical Outcome Survey Short Form (SF-36) and Sydney Psychosocial Reintegration Scale (SPRS)) were scored, except for clients remaining in post-traumatic amnesia. A BIOS family questionnaire exploring the importance of the carer's needs and the extent to which their needs were met was completed, in addition to the General Health Questionnaire (GHQ30). The carer's perception of life changes for the person with

TBI was also measured using the SPRS.

Seventy per cent of carers exhibited GHQ caseness (≥ 5), reporting inadequate opportunities for getting a break ($p = 0.007$), inadequate help coping with their doubts and fears ($p = 0.012$) and remaining hopeful ($p = 0.017$). The high degree of caseness was not related to abnormal family functioning (FAD) or the severity of the initial disability of the relative (DRS, MPAI).

Carers of TBI clients experience high levels of psychological distress, which may require clinical intervention; additional long-term support for carers is indicated.

Everyday physical activity in young adults with cerebral palsy

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Background: Little is known about the activity level of young adults with cerebral palsy (CP). We therefore started a pilot-study on everyday physical activity in this patient group.

Aims: To determine the level of everyday physical activity in patients with CP in comparison with healthy subjects and to explore potential determinants of everyday physical activity in the CP group.

Method: Eight ambulatory patients with hemiplegic CP (25–35 years) and eight matched (age, gender) healthy comparison subjects were included. Everyday physical activity was measured with an activity monitor (based on long-term ambulatory monitoring of signals from body fixed accelerometers) during two consecutive week days. Body composition was estimated by length, weight and skinfold thickness.

Data analysis: Differences between patients and comparison subjects were tested with the Mann–Whitney *U*-test. Correlations were calculated with Spearman's correlation coefficient.

Results: Mean (SD) duration of dynamic activities (walking, cycling, general movement; calculated as a percentage of a 24-hour period) was 9.8 (4.1)% in the CP group and 10.7 (3.8)% in the comparison group ($p = 0.67$). Total motility (representing intensity of everyday activity) was

0.16 (0.06) in the CP group, and 0.16 (0.05) in the comparison group ($p = 0.56$). There were also no significant differences in number of walking periods between patients and comparison subjects (216 (87) versus 219 (67), $p = 1.00$). No correlation was found between body composition and level of everyday physical activity.

Conclusion: These preliminary results suggest that the level of everyday physical activity in adult patients with CP is comparable to levels in healthy subjects.

No relevant effects of pyridostigmine in postpoliomyelitis syndrome in a randomized double-blinded study

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Background: Neuromuscular transmission (NMT) defects in postpoliomyelitis syndrome (PPS) may contribute to fatigue symptoms. Pyridostigmine has been shown to improve NMT in PPS. Recently an RCT¹ gave a negative result for which several factors may have accounted: inadequate patient selection and responsiveness of outcome measures. This study investigated the effect of pyridostigmine on fatigue, walking performance and NMT defects in selected PPS patients.

Method: A randomized double-blinded placebo-controlled trial of pyridostigmine 60 mg four times per day during 14 weeks in 67 PPS patients with severe fatigue and a quadriceps with symptoms of new weakness and NMT defects. Main outcome measures were the category Energy of the Nottingham Health Profile, the distance walked at comfortable speed and NMT defects in the symptomatic quadriceps. Motor unit size of

the vastus lateralis, quadriceps strength, and the extent of paresis were studied as potential effect modifiers. The primary data analysis compared the subjects receiving pyridostigmine and the subjects receiving placebo with regard to differences in the changes of outcomes in the last week of medication compared with the pre-treatment period.

Results: No significant effect of pyridostigmine was found with regard to fatigue or NMT defects. The improvement in walking distance was 5.8% larger in subjects receiving pyridostigmine than in subjects receiving placebo ($p < 0.01$). The subjects receiving pyridostigmine with normal sized motor units ($n = 16$) showed an improvement in walking distance of 11.0%, which was larger than the improvement of 4.6% in subjects with enlarged motor units ($n = 12$; $p = 0.04$).

Discussion: Except for a limited improvement in walking distance, no significant beneficial effects of pyridostigmine were found in PPS subjects, who were selected as most likely to benefit from this treatment.

Conclusion: Pyridostigmine is not advocated as a useful treatment for PPS.

Reference

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Effectiveness of a balance rehabilitation programme with visual cue deprivation after stroke: a randomized controlled trial

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Background: On the basis of the visual dependence observed in patients with hemiplegia, we tested the hypothesis that balance rehabilitation with visual cue deprivation is more effective than rehabilitation with free vision, in a single blind randomized controlled trial.

Method: Twenty patients with hemiplegia following a single hemispheric stroke at least 12 months previously, were randomly assigned to a programme of balance rehabilitation, with or

without visual cue deprivation. The programmes were similar except for this deprivation. They lasted for one hour, and were implemented five days a week for four weeks. The main outcome measures were: balance under six different sensory conditions, expressed as the equilibrium score (ES) and assessed by computerized dynamic posturography (Equi-Test, Neurocom); gait velocity, timed stair climbing, self-assessment of ease of gait, and quality of life evaluation according to the Nottingham Health Profile, before and after programme completion.

Results: After completing the programme, all patients improved significantly as regards balance, gait velocity, and self-assessment of gait.

The improvement in gait velocity and timed stair climbing correlated significantly with improved balance ($p = 0.03$ and $p = 0.01$ respectively). In the visual deprivation group, balance improved more than in the undeprived control group, both when the eyes were opened (ES 4, mean 7.2 [SD 12] versus $-1[7.6]$, $p = 0.04$), and blinded (ES 5, mean 28 [SD 22] versus $8.8[17]$, $p = 0.08$). There was no significant difference in gait between the two groups.

Conclusion: Balance rehabilitation is more effective with visual deprivation than with free vision. The above programme probably enabled patients to increase their use of somatosensory and vestibular information.