

Parkinson's Disease

Current Awareness

Bulletin

August 2017

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Title: Scientific Research -- Parkinson's Disease.

Citation: Age & Ageing; Jul 2017; vol. 46

Abstract: This article discusses a study which aims to quantify and interpret important contributors to fear of falling (FoF) in people with Parkinson's disease (PD). Topics covered include the motor symptoms that characterized PD, such as gait deficit, the motor and non-motor dysfunctions that are common in PD, and the Falls Efficacy Scale International used in assessing study participants. Discussed also is a study which looked into availability of dopaminergic drugs in hospitalized PD patients.

Title: Parkinson's disease: a complex disease revisited

Citation: The Lancet; Jul 2017; vol. 390 (no. 10093); p. 430

Author(s): The Lancet

Abstract: On July 19, in the first update since 2006, the UK's National Institute for Health and Care Excellence puts a new emphasis on managing daytime sleepiness, rapid eye movement sleep behaviour disorder, depression, psychotic symptoms, and Parkinson's dementia. Additionally, it recommends early physiotherapy, occupational and speech therapy, and nutrition advice. In many of the recommendations, early referral to health-care professionals with experience of Parkinson's disease is advised.

Title: Experiences of caring for a family member with Parkinson's disease: a meta-synthesis.

Citation: Aging & Mental Health; Oct 2017; vol. 21 (no. 10); p. 1007-1016

Objective: The aim of this qualitative meta-synthesis was to search and then synthesise family caregivers' experiences of providing care to individuals with Parkinson's disease (PD).

Method: A systematic search resulted in the identification of 11 qualitative studies. Noblit and Hare's seven-stage approach was used to provide a higher-order interpretation of how family caregivers' experienced the effects of taking on a caregiving role.

Results: The process of reciprocal translation resulted in four overarching themes: (1) the need to carry on as usual – 'the caregiver must continue with his life'; (2) the importance of support in facilitating coping – 'I'm still going back to the support group'; (3) the difficult balancing act between caregiving and caregiver needs – 'I cannot get sick because I'm a caregiver'; (4) conflicts in seeking information and knowledge – 'maybe better not to know'.

Conclusion: The themes reflected different aspects of family caregivers' lives that were affected as a result of caring for a relative diagnosed with PD and these raise challenges for more simplistic theories of family caring and appropriate support structures. The findings also highlight several recommendations for clinical practice.

Title: Water-based vs. non-water-based physiotherapy for rehabilitation of postural deformities in Parkinson's disease: a randomized controlled pilot study.

Citation: Clinical Rehabilitation; Aug 2017; vol. 31 (no. 8); p. 1107-1115

Author(s): Volpe, Daniele; Giantin, Maria Giulia; Manuela, Pilleri; Filippetto, Consuelo; Pelosin, Elisa; Abbruzzese, Giovanni; Antonini, Angelo

Objective: To compare the efficacy of two physiotherapy protocols (water-based vs. non-water-based) on postural deformities of patients with Parkinson's disease.

Design: A single blind, randomized controlled pilot study.

Setting: Inpatient (Rehabilitative Department). **Participants:** A total of 30 patients with idiopathic Parkinson's disease. **Interventions:** Participants were randomly assigned to one of two eight-week treatment groups: Water-based (n = 15) or non-water-based physiotherapy exercises (n = 15).

Outcome measures: Changes in the degree of cervical and dorsal flexion and in the angle of lateral inclination of the trunk (evaluated by means of a posturographic system) were used as primary outcomes. Unified Parkinson Disease Rating Scale section III, Time Up and Go Test, Berg Balance Scale, Activities-specific Balance Confidence, Falls Efficacy Scale and the Parkinson's disease quality of life questionnaire (39 items) were the secondary outcomes. All outcomes were assessed at baseline, at the end of training and eight weeks after treatment. Patients were always tested at the time of their optimal antiparkinsonian medication ('on' phase).

Results: After the treatment, only Parkinson's disease subjects randomized to water-based treatment showed a significant improvement of trunk posture with a significant reduction of cervical flexion (water-based group: -65.2° ; non-water-based group: $+1.7^\circ$) and dorsal flexion (water-based group: -22.5° ; non-water-based group: -6.5°) and lateral inclination of the trunk (water-based group: -2.3° ; non-water-based group: $+0.3^\circ$). Both groups presented significant improvements in the secondary clinical outcomes without between-group differences.

Conclusion: Our results show that water-based physiotherapy was effective for improving postural deformities in patients with Parkinson's disease.

Title: Examining chronic care patient preferences for involvement in health-care decision making: the case of Parkinson's disease patients in a patient-centred clinic.

Citation: Health Expectations; Aug 2017; vol. 20 (no. 4); p. 655-664

Author(s): Zizzo, Natalie; Bell, Emily; Lafontaine, Anne-Louise; Racine, Eric

Background: Patient-centred care is a recommended model of care for Parkinson's disease (PD). It aims to provide care that is respectful and responsive to patient preferences, values and perspectives. Provision of patient-centred care should entail considering how patients want to be involved in their care.

Objective: To understand the participation preferences of patients with PD from a patient-centred care clinic in health-care decision-making processes.

Design, setting and participants: Mixed-methods study with early-stage Parkinson's disease patients from a patient-centred care clinic. Study involved a modified Autonomy Preference Index survey (N=65) and qualitative, semi-structured in-depth interviews, analysed using thematic qualitative content analysis (N=20, purposefully selected from survey participants). Interviews examined (i) the patient preferences for involvement in health-care decision making; (ii) patient perspectives on the patient-physician relationship; and (iii) patient preferences for communication of information relevant to decision making.

Results: Preferences for participation in decision making varied between individuals and also within individuals depending on decision type, relational and contextual factors. Patients had high preferences for communication of information, but with acknowledged limits. The importance of communication in the patient-physician relationship was emphasized. Discussion Patient preferences for involvement in decision making are dynamic and support shared decision making. Relational autonomy corresponds to how patients envision their participation in decision making. Clinicians may need to assess patient preferences on an on-going basis.

Conclusion: Our results highlight the complexities of decision-making processes. Improved understanding of individual preferences could enhance respect for persons and make for patient-centred care that is truly respectful of individual patients' wants, needs and values.

Title: Variables associated with communicative participation in Parkinson's disease and its relationship to measures of health-related quality-of-life.

Citation: International Journal of Speech-Language Pathology; Aug 2017; vol. 19 (no. 4); p. 407-417

Author(s): McAuliffe, Megan J.; Baylor, Carolyn R.; Yorkston, Kathryn M.

Purpose: Communication disorders associated with Parkinson's disease (PD) often lead to restricted participation in life roles, yet there is a limited understanding of influencing factors and few quantitative measurement tools available. This study aimed to identify variables associated with communicative participation in PD and to examine the relationship between the Communicative Participation Item Bank (CPIB) and existing health-related quality-of-life (HRQoL) measures.

Method: Self-report data from 378 participants with PD from the US and New Zealand were analysed. Data included responses to the CPIB, PD Questionnaire-8, sub-scales of the Global Health instrument from the Patient Reported Outcomes Measurement Information System (PROMIS) and additional self-report instruments.

Result: Greater perceived speech disorder, lower levels of speech usage, fatigue, cognitive and emotional problems and swallowing difficulties were associated with lower levels of communicative participation. Participants' age significantly influenced findings, interacting with country of residence, sex and speech usage. Scores on the CPIB were moderately correlated with HRQoL measures.

Conclusion: Communicative participation in PD is complex and influenced by both demographic and disease-based variables, necessitating a broader view of the communicative experiences of those with PD. Measurement of communicative participation as a separate construct to existing HRQoL measures is recommended.

Title: Speech Motor Sequence Learning: Effect of Parkinson Disease and Normal Aging on Dual-Task Performance.

Source: Journal of Speech, Language & Hearing Research; Jun 2017; vol. 60; p. 1752-1765

Author(s): Whitfield, Jason A.; Goberman, Alexander M.

Purpose: Everyday communication is carried out concurrently with other tasks. Therefore, determining how dual tasks interfere with newly learned speech motor skills can offer insight into the cognitive mechanisms underlying speech motor learning in Parkinson disease (PD). The current investigation examines a recently learned speech motor sequence under dual-task conditions.

Method: A previously learned sequence of 6 monosyllabic nonwords was examined using a dual-task paradigm. Participants repeated the sequence while concurrently performing a visuomotor task, and performance on both tasks was measured in single- and dual-task conditions.

Results: The younger adult group exhibited little to no dual-task interference on the accuracy and duration of the sequence. The older adult group exhibited variability in dual-task costs, with the group as a whole exhibiting an intermediate, though significant, amount of dual-task interference. The PD group exhibited the largest degree of bidirectional dual-task interference among all the groups.

Conclusions: These data suggest that PD affects the later stages of speech motor learning, as the dual-task condition interfered with production of the recently learned sequence beyond the effect of normal aging. Because the basal ganglia is critical for the later stages of motor sequence learning, the observed deficits may result from the underlying neural dysfunction associated with PD.

Title: Game-Based Augmented Visual Feedback for Enlarging Speech Movements in Parkinson's Disease.

Citation: Journal of Speech, Language & Hearing Research; Jun 2017; vol. 60 ; p. 1818-1825

Author(s): Yunusova, Yana; Kearney, Elaine; Kulkarni, Madhura; Haworth, Brandon; Baljko, Melanie; Faloutsos, Petros

Purpose: The purpose of this pilot study was to demonstrate the effect of augmented visual feedback on acquisition and short-term retention of a relatively simple instruction to increase movement amplitude during speaking tasks in patients with dysarthria due to Parkinson's disease (PD).

Method: Nine patients diagnosed with PD, hypokinetic dysarthria, and impaired speech intelligibility participated in a training program aimed at increasing the size of their articulatory (tongue) movements during sentences. Two sessions were conducted: a baseline and training session, followed by a retention session 48 hr later. At baseline, sentences were produced at normal, loud, and clear speaking conditions. Game-based visual feedback regarding the size of the articulatory working space (AWS) was presented during training.

Results: Eight of nine participants benefited from training, increasing their sentence AWS to a greater degree following feedback as compared with the baseline loud and clear conditions. The majority of participants were able to demonstrate the learned skill at the retention session.

Conclusions: This study demonstrated the feasibility of augmented visual feedback via articulatory kinematics for training movement enlargement in patients with hypokinesia due to PD.

Title: Music-based interventions in neurological rehabilitation.

Citation: The Lancet. Neurology; Aug 2017; vol. 16 (no. 8); p. 648-660

Author(s): Sihvonen, Aleks J; Särkämö, Teppo; Leo, Vera; Tervaniemi, Mari; Altenmüller, Eckart; Soinila, Seppo

Abstract: During the past ten years, an increasing number of controlled studies have assessed the potential rehabilitative effects of music-based interventions, such as music listening, singing, or playing an instrument, in several neurological diseases. Although the number of studies and extent of available evidence is greatest in stroke and dementia, there is also evidence for the effects of music-based interventions on supporting cognition, motor function, or emotional wellbeing in people with Parkinson's disease, epilepsy, or multiple sclerosis. Music-based interventions can

affect divergent functions such as motor performance, speech, or cognition in these patient groups. However, the psychological effects and neurobiological mechanisms underlying the effects of music interventions are likely to share common neural systems for reward, arousal, affect regulation, learning, and activity-driven plasticity. Although further controlled studies are needed to establish the efficacy of music in neurological recovery, music-based interventions are emerging as promising rehabilitation strategies.

Title: Cannabis use in people with Parkinson's disease and Multiple Sclerosis: A web-based investigation.

Citation: Complementary therapies in medicine; Aug 2017; vol. 33 ; p. 99-104

Author(s): Kindred, John H; Li, Kaigang; Ketelhut, Nathaniel B; Proessl, Felix; Fling, Brett W; Honce, Justin M; Shaffer, William R; Rudroff, Thorsten

Objectives: Cannabis has been used for medicinal purpose for thousands of years; however the positive and negative effects of cannabis use in Parkinson's disease (PD) and Multiple Sclerosis (MS) are mostly unknown. Our aim was to assess cannabis use in PD and MS and compare results of self-reported assessments of neurological disability between current cannabis users and non-users.

Methods: An anonymous web-based survey was hosted on the Michael J. Fox Foundation and the National Multiple Sclerosis Society webpages from 15 February to 15 October 2016. The survey collected demographic and cannabis use information, and used standardized questionnaires to assess neurological function, fatigue, balance, and physical activity participation. Analysis of variance and chi-square tests were used for the analysis.

Results: The survey was viewed 801 times, and 595 participants were in the final data set. Seventy-six percent and 24% of the respondents reported PD and MS respectively. Current users reported high efficacy of cannabis, 6.4 (SD 1.8) on a scale from 0 to 7 and 59% reported reducing prescription medication since beginning cannabis use. Current cannabis users were younger and less likely to be classified as obese ($P < 0.035$). Cannabis users reported lower levels of disability, specifically in domains of mood, memory, and fatigue ($P < 0.040$).

Conclusions: Cannabis may have positive impacts on mood, memory, fatigue, and obesity status in people with PD and MS. Further studies using clinically and longitudinally assessed measurements of these domains are needed to establish if these associations are causal and determine the long-term benefits and consequences of cannabis use in people with PD and MS.

Title: An update on the recognition and treatment of autonomic symptoms in Parkinson's disease.

Citation: Expert review of neurotherapeutics; Aug 2017; vol. 17 (no. 8); p. 791-799

Author(s): Jost, Wolfgang H

Introduction: Parkinson's disease (PD) is characterized by motor, autonomic, and neuropsychiatric symptoms. These occur in varying degrees in all stages of the disease. Among the autonomic disorders, cardiovascular, urogenital, gastrointestinal and thermoregulatory disorders are the most relevant. Within cardiovascular disorders drop of blood pressure after orthostasis and non-dipper behavior are very important; but also the influence of cardiovascular medication. Urgency, nocturia, and incontinence are of particular note within the urological problems. Among the gastrointestinal disturbances, swallowing disorders, gastric emptying disorders and constipation are particularly noteworthy.

Areas covered: Autonomic symptoms are inherent in PD, in premotor and all other stages of the disease. In this overview, the current status was summarized taking into account original articles and reviews based on relevance to the field and quality of evidence.

Expert commentary: The involvement of the autonomic nervous system in Parkinson's disease is still neglected. Because of the significant effects on the quality of life and even the prognosis, appropriate diagnostics and therapy should be performed at all stages of the disease. Despite intensive scientific work the area is still not sufficiently considered and the relevance in pathology is not yet understood.

Title: Integration of technology-based outcome measures in clinical trials of Parkinson and other neurodegenerative diseases.

Citation: Parkinsonism & related disorders; Jul 2017

Author(s): Artusi, Carlo Alberto; Mishra, Murli; Latimer, Patricia; Vizcarra, Joaquin A; Lopiano, Leonardo; Maetzler, Walter; Merola, Aristide; Espay, Alberto J

Introduction: We sought to review the landscape of past, present, and future use of technology-based outcome measures (TOMs) in clinical trials of neurodegenerative disorders.

Methods: We systematically reviewed PubMed and ClinicalTrials.gov for published and ongoing clinical trials in neurodegenerative disorders employing TOMs. In addition, medical directors of selected pharmaceutical companies were surveyed on their companies' ongoing efforts and future plans to integrate TOMs in clinical trials as primary, secondary, or exploratory endpoints.

Results: We identified 164 published clinical trials indexed in PubMed that used TOMs as outcome measures in Parkinson disease (n = 132) or other neurodegenerative disorders (n = 32). The ClinicalTrials.gov search yielded 42 clinical trials using TOMs, representing 2.7% of ongoing trials. Sensor-based technology accounted for over 75% of TOMs applied. Gait and physical activity were the most common targeted domains. Within the next 5 years, 83% of surveyed pharmaceutical companies engaged in neurodegenerative disorders plan to deploy TOMs in clinical trials.

Conclusion: Although promising, TOMs are underutilized in clinical trials of neurodegenerative disorders. Validating relevant endpoints, standardizing measures and procedures, establishing a single platform for integration of data and algorithms from different devices, and facilitating regulatory approvals should advance TOMs integration into clinical trials.

Title: Clinical Significance of REM Sleep Behavior Disorders and Other Non-motor Symptoms of Parkinsonism.

Citation: Neuroscience bulletin; Aug 2017

Author(s): Jin, Hong; Zhang, Jin-Ru; Shen, Yun; Liu, Chun-Feng

Abstract: Rapid eye movement sleep behavior disorder (RBD) is one of the most common non-motor symptoms of parkinsonism, and it may serve as a prodromal marker of neurodegenerative disease. The mechanism underlying RBD is unclear. Several prospective studies have reported that specific non-motor symptoms predict a conversion risk of developing a neurodegenerative disease, including olfactory dysfunction, abnormal color vision, autonomic dysfunction, excessive daytime sleepiness, depression, and cognitive impairment. Parkinson's disease (PD) with RBD exhibits clinical heterogeneity with respect to motor and non-motor symptoms compared with PD without RBD. In this review, we describe the main clinical and pathogenic features of RBD, focusing on its association with other non-motor symptoms of parkinsonism.

Title: New Drug Approved For Parkinson's Disease.

Citation: American Journal of Nursing; Jul 2017; vol. 117 (no. 7); p. 22-23

Author(s): Aschenbrenner, Diane S.

Abstract: The article reports on the approval of the drug Safinamide (Xadago) for the treatment of Parkinson's disease. It mentions that Safinamide is a monoamine oxidase type B (MAO-B) inhibitor which is useful in the treatment of depression because they increase serotonin which is a monoamine neurotransmitter. It states that Safinamide is contraindicated in patients with hepatic impairment because it may cause hypertension or hypertensive crisis by increasing nonselective MAO inhibition.

Title: Baseline motor findings and Parkinson disease prognostic subtypes.

Citation: Neurology; Jul 2017; vol. 89 (no. 2); p. 138-143

Author(s): Rajput, Ali H; Rajput, Michele L; Ferguson, Leslie W; Rajput, Alex

Objective: To identify the significance of baseline motor features to the lifelong prognostic motor subtypes in a Parkinson disease (PD) cohort.

Methods: In a previous study of 166 PD cases, we observed different prognosis in tremor-dominant, akinetic-rigid, and mixed subtypes. This study includes the same cases, but we excluded 10 cases with symptoms of ≥ 15 years duration at baseline. Relative severity of tremor, bradykinesia/akinesia, and rigidity at baseline were evaluated as predictors of the motor subtypes, which are known to have different prognosis.

Results: The most common motor subtype was mixed, followed by akinetic-rigid and then the tremor-dominant. Seventy cases were not receiving antiparkinsonian drugs at baseline. The prognostic subtypes could be predicted at baseline in 85% of all and in 91% of the treatment-naive cases. Sensitivity, specificity, and positive predictive values were strong for the mixed and the akinetic-rigid but weak for the tremor-dominant subtype.

Conclusions: Our data show that motor profile at baseline can predict prognosis in most PD cases. These findings can be incorporated into clinical practice.

Title: Mortality from Amyotrophic Lateral Sclerosis and Parkinson's Disease Among Different Occupation Groups - United States, 1985-2011.

Citation: MMWR. Morbidity and mortality weekly report; Jul 2017; vol. 66 (no. 27); p. 718-722

Author(s): Beard, John D; Steege, Andrea L; Ju, Jun; Lu, John; Luckhaupt, Sara E; Schubauer-Berigan, Mary K

Abstract: Amyotrophic lateral sclerosis (ALS) and Parkinson's disease, both progressive neurodegenerative diseases, affect >1 million Americans (1,2). Consistently reported risk factors for ALS include increasing age, male sex, and cigarette smoking (1); risk factors for Parkinson's disease include increasing age, male sex, and pesticide exposure, whereas cigarette smoking and caffeine consumption are inversely associated (2). Relative to cancer or respiratory diseases, the role of occupation in neurologic diseases is much less studied and less well understood (3). CDC evaluated associations between usual occupation and ALS and Parkinson's disease mortality using data from CDC's National Institute for Occupational Safety and Health (NIOSH) National

Occupational Mortality Surveillance (NOMS), a population-based surveillance system that includes approximately 12.1 million deaths from 30 U.S. states.* Associations were estimated using proportionate mortality ratios (PMRs), standardizing indirectly by age, sex, race, and calendar year to the standard population of all NOMS deaths with occupation information. Occupations associated with higher socioeconomic status (SES) had elevated ALS and Parkinson's disease mortality. The shifts in the U.S. workforce toward older ages and higher SES occupations† highlight the importance of understanding this finding, which will require studies with designs that provide evidence for causality, detailed exposure assessment, and adjustment for additional potential confounders.

Title: Parkinson's disease with mild cognitive impairment: severe cortical thinning antedates dementia.

Citation: Brain imaging and behavior; Jul 2017

Author(s): Gasca-Salas, Carmen; García-Lorenzo, Daniel; Garcia-Garcia, David; Clavero, Pedro; Obeso, José A; Lehericy, Stephane; Rodríguez-Oroz, María C

Abstract: Mild cognitive impairment (MCI) in Parkinson's disease (PD) is a risk factor for dementia and thus, it is of interest to elucidate if specific patterns of atrophy in PD-MCI patients are associated with a higher risk of developing dementia. We aim to define pattern(s) of regional atrophy in PD-MCI patients who developed dementia during 31 months of follow-up using cortical thickness analysis. Twenty-three PD-MCI patients and 18 controls underwent brain MRI and completed a neuropsychological examination at baseline, PD-MCI patients were followed after a 31 month follow-up in order to assess their progression to dementia. At follow up, 8 PD-MCI patients had converted to dementia (PD-MCI converters) whereas 15 remained as PD-MCI (PD-MCI non-converters). All patients were at least 60 years old and suffered PD \geq 10 years. There were no baseline differences between the two groups of patients in clinical and neuropsychological variables. The cortex of PD-MCI converters was thinner than that of PD-MCI non-converters, bilaterally in the frontal, insula and the left middle temporal areas, also displaying a more widespread pattern of cortical thinning relative to the controls. This study shows that aged and long-term PD patients with MCI who convert to dementia in the short-mid term suffer a thinning of the cortex in several areas (frontal cortex, and middle temporal lobe and insula), even when their cognitive impairment was similar to that of PD-MCI non-converters. Thus, MRI analysis of cortical thickness may represent a useful measure to identify PD-MCI patients at a higher risk of developing dementia.

Title: Effects of progressive resistance training on cardiovascular autonomic regulation in patients with Parkinson`s Disease: a randomized controlled trial.

Citation: Archives of physical medicine and rehabilitation; Jul 2017

Author(s): Kanegusuku, Hércio; Silva-Batista, Carla; Peçanha, Tiago; Nieuwboer, Alice; Silva, Natan D; Costa, Luiz A R; de Mello, Marco T; Piemonte, Maria E P; Ugrinowitsch, Carlos; Forjaz, Cláudia L M

Objective: To evaluate the effects of a progressive resistance training (RT) on cardiac autonomic modulation and on cardiovascular responses to autonomic stress tests in patients with Parkinson disease (PD).

Design: Randomized clinical trial.

Setting: The Brazilian Parkinson Association.

Participants: 30 patients with PD (modified Hoehn and Yahr stages 2-3) were randomly divided into 2 groups: a progressive RT group (PDT) and a control group (PDC). In addition, a group of paired healthy control subjects without PD (HC) was evaluated

Interventions: PDT group performed 5 resistance exercises, 2 to 4 sets, 12 to 6 repetitions maximum per set. PDC group maintained their usual lifestyle. MAIN

Outcome Measures: PDT and PDC groups were evaluated before and after 12-weeks. HC group was evaluated once. Autonomic function was assessed by spectral analysis of heart rate (HR) variability and cardiovascular responses to autonomic stress tests (deep breathing, Valsalva maneuver and orthostatic stress).

Results: Compared with baseline, normalized low-frequency component of HR variability decreased significantly after 12 weeks in the PDT group only (PDT = 61 ± 17 vs. 47 ± 20 nu and PDC = 60 ± 14 vs. 63 ± 10 nu, interaction $P < 0.05$). Similar result was observed for systolic blood pressure fall during orthostatic stress that also reduced only in the PDT group (PDT = -14 ± 11 vs. -6 ± 10 mmHg and PDC = -12 ± 10 vs. -11 ± 10 mmHg, interaction $P < 0.05$). In addition, after 12 weeks, these parameters in the PDT achieved values similar to the HC group.

Conclusion: In patients with PD, progressive RT improved cardiovascular autonomic dysfunction.

Title: Predictors of weight loss in early treated Parkinson's disease from the NET-PD LS-1 cohort.

Citation: Journal of neurology; Jul 2017

Author(s): Wills, Anne-Marie; Li, Ruosha; Pérez, Adriana; Ren, Xuehan; Boyd, James; NINDS NET-PD Investigators

Abstract: Weight loss is a common symptom of Parkinson's disease and is associated with impaired quality of life. Predictors of weight loss have not been studied in large clinical cohorts. We previously observed an association between change in body mass index and change in Unified Parkinson's Disease Rating Scale (UPDRS) motor and total scores. In this study, we performed a secondary analysis of longitudinal data (1-6 years) from 1619 participants in the NINDS Exploratory Trials in PD Long-term Study-1 (NET-PD LS1) to explore predictors of weight loss in a large prospective clinical trial cohort of early treated Parkinson's disease. The NET-PD LS1 study was a double-blind randomized placebo controlled clinical trial of creatine monohydrate 10 gm/day in early treated PD (within 5 years of diagnosis and within 2 years of starting dopaminergic medications). Linear mixed models were used to estimate the effect of baseline clinical covariates on weight change over time. On average, participants lost only 0.6 kg per year. Higher age, baseline weight, female gender, higher baseline UPDRS scores, greater postural instability, difficulty eating and drinking, lower cognitive scores and baseline levodopa use (compared to dopamine agonists) were all associated with weight loss. Surprisingly baseline difficulty swallowing, dyskinesia, depression, intestinal hypomotility (constipation) and self-reported nausea/vomiting/anorexia were not significantly associated with weight loss in this cohort of early treated Parkinson's disease patients. On average, participants with Parkinson's disease experience little weight loss during the first 1-6 years after starting dopaminergic replacement therapy, however levodopa use and postural instability were both predictors of early weight loss. Trial Registration clinicaltrials.gov identifier# NCT00449865.

Title: Mentally stimulating activities associate with better cognitive performance in Parkinson disease.

Citation: Journal of neural transmission (Vienna, Austria : 1996); Jul 2017

Author(s): Bohnen, Jeffrey L B; Müller, Martijn L T M; Haugen, Jacob; Bohnen, Nicolaas I

Abstract: Subjects at risk of dementia benefit from participation in mentally stimulating activities, but no prior studies have investigated similar associations in Parkinson disease (PD). The aim of this study was to investigate the relationship between times spent engaging in mentally stimulating activities and cognitive functions in PD while accounting for the degree of primary neurodegenerations. PD patients (N = 41, 33 males; age 68.5 ± 7.2 ; Hoehn and Yahr stage 2.6 ± 0.6) completed the Community Health Activities Model Program for Seniors questionnaire, mini-mental state examination (MMSE), and [11C] dihydrotetrabenazine dopaminergic and [11C]piperidiny propionate acetylcholinesterase PET imaging. The subset of mentally stimulating activity items of the Community Health Activities Model Program for Seniors questionnaire was used to develop a rating scale as primary outcome variable in this study. Findings showed that mean rating scale score of time spent in mentally stimulating activities over a 4-week timespan was 20.0 ± 8.3 h and mean MMSE score was 28.4 ± 1.9 . Regression analysis showed that duration of participation in mentally stimulating activities was a significant predictor of MMSE scores (standardized $\beta = 0.39$, $t = 2.8$, $p = 0.009$; total model: $F(6,34) = 3.5$, $p = 0.005$) independent from significant effects for cortical cholinergic activity ($\beta = 0.35$, $t = 2.4$, $p = 0.024$). Caudate nucleus dopaminergic activity, age, education, or duration of disease were not significant regressors. Post hoc analysis did not show significant effects of motor disease severity or level of physical activities. We conclude that engagement in mentally stimulating activities is associated with better cognitive abilities in PD, independent of education, severity of motor disease, nigrostriatal dopaminergic and cortical cholinergic degenerations.

Title: The effects of gaze stabilization on gait parameters in individuals with Parkinson's disease.

Citation: Neuroscience letters; Jul 2017

Author(s): Reed-Jones, Rebecca J; Powell, Douglas W

Abstract: The purpose of this study was to examine the effects of gaze fixation on head stabilization and gait during straight over ground walking in individuals with Parkinson's disease (PD). Eight individuals with PD (Age: 62.3 ± 8.1 years) volunteered for the study. Full body kinematic data were collected at 120Hz using a Vicon motion capture system. Two visual conditions were used to determine the effects of gaze fixation: FREE gaze and FIXED gaze. During FIXED gaze, participants were required to fixate on a still target 13meters ahead. During FREE gaze, participants were free to visually scan the environment. Five straight walking trials were performed in each experimental condition for a total of ten walking trials. Head segment stabilization strategies as well as gait parameters were compared between conditions. Step width, step length, stride time, cadence, double support time, centre of mass (CoM) velocity and CoM medial-lateral deviation were calculated for two strides of each over ground walking trial. Comparisons of mean values and variability were made using repeated measures ANOVAs. Results revealed that maintaining a FIXED gaze had no significant effect on head stabilization strategies or gait parameters with the exception of a significant increase in step width variability ($p=0.003$). CoM velocity was not significantly different between FREE and FIXED gaze conditions (FREE: 1.17 ± 0.20 m/s; FIXED: 1.16 ± 0.19 m/s). CoM medial-lateral deviation was observed to be greater in FIXED (47.1 ± 36.9 cm) compared to FREE (26.9 ± 15.1 cm), though not significantly. These results suggest that gaze fixation to a target in front while walking increases step width variability and CoM

M-L deviations indicative of reduced postural stability. This is an important consideration for use of visual cues to promote gait in PD.

Title: Reduction of white matter integrity correlates with apathy in Parkinson's disease.

Author(s): Zhang, Yang; Wu, Jiayong; Wu, Wenbo; Liu, Renyuan; Pang, Lingen; Guan, Dening; Xu, Yun

Citation: The International journal of neuroscience; Jul 2017; p. 1-7

Background: Apathy is a common non-motor symptom in Parkinson's disease (PD), but little is known about apathy and white matter (WM) change. In this study, we investigated whether fractional anisotropy (FA) of the WM can distinguish apathetic patients from non-apathetic PD patients, and whether the FA value correlates with the severity of apathy in PD.

Methods: Thirty-nine PD patients participated in our study, of which 18 participants were with apathy symptom, and 21 without apathy symptom. Diffusion tensor imaging was performed on all the subjects.

Results: Compared to non-apathetic PD patients, the apathetic group had reduced FA values in the genu and body of corpus callosum, bilateral anterior corona radiata, left superior corona radiata and left cingulum. Furthermore, in these WM regions, the FA values were negatively correlated with the Lille Apathy Rating Scale scores in apathetic subjects.

Conclusion: The WM change is associated with apathy in PD patients. In addition, the FA values of specific regions of WM could be a promising marker to predict the severity of apathy.

Title: Metabolic and kinematic parameters during walking with poles in Parkinson's disease.

Citation: Journal of neurology; Jul 2017

Author(s): Nardello, Francesca; Bombieri, F; Tinazzi, M; Schena, F; Pellegrini, B

Abstract: In healthy people, energy expenditure is generally higher during walking with poles (WP) than during conventional walking (W). In persons with Parkinson's disease (PD), walking is slower and may be associated with greater energy consumption, stride-to-stride variability, and difficulty in regulating stride length. The aim of this study was to determine whether treadmill WP at three different speeds could induce changes in gait kinematics and oxygen consumption in PD patients. The study sample was 20 patients with mild-to-moderate PD and 20 age-matched healthy controls. Subjects underwent 5-min W and WP treadmill tests at three different speeds (2.5, 3.5, and 4.5 km/h). Metabolic and gait parameters (ventilation, gas exchange, stride count and length) were recorded. As compared with the healthy controls, higher energy consumption ($P < 0.05$) (and other metabolic parameters), shorter stride, and reduced cadence ($P < 0.05$) were observed for the PD patients, independent of the walking technique. All subjects were noted to take longer strides during WP ($P < 0.001$), especially at the lowest treadmill speed. However, significantly higher energy consumption was observed only for the healthy controls ($P < 0.05$). No changes in metabolic parameters during WP were recorded; however, a substantial improvement in gait cycle length was noted for the PD patients.

Title: Visual System Involvement in Patients with Newly Diagnosed Parkinson Disease.

Citation: Radiology; Jul 2017 ; p. 161732

Author(s): Arrigo, Alessandro; Calamuneri, Alessandro; Milardi, Demetrio; Mormina, Enricomaria; Rania, Laura; Postorino, Elisa; Marino, Silvia; Di Lorenzo, Giuseppe; Anastasi, Giuseppe Pio; Ghilardi, Maria Felice; Aragona, Pasquale; Quartarone, Angelo; Gaeta, Michele

Purpose: To assess intracranial visual system changes of newly diagnosed Parkinson disease in drug-naïve patients.

Materials and Methods: Twenty patients with newly diagnosed Parkinson disease and 20 age-matched control subjects were recruited. Magnetic resonance (MR) imaging (T1-weighted and diffusion-weighted imaging) was performed with a 3-T MR imager. White matter changes were assessed by exploring a white matter diffusion profile by means of diffusion-tensor imaging-based parameters and constrained spherical deconvolution-based connectivity analysis and by means of white matter voxel-based morphometry (VBM). Alterations in occipital gray matter were investigated by means of gray matter VBM. Morphologic analysis of the optic chiasm was based on manual measurement of regions of interest. Statistical testing included analysis of variance, t tests, and permutation tests.

Results: In the patients with Parkinson disease, significant alterations were found in optic radiation connectivity distribution, with decreased lateral geniculate nucleus V2 density (F, -8.28; $P < .05$), a significant increase in optic radiation mean diffusivity (F, 7.5; $P = .014$), and a significant reduction in white matter concentration. VBM analysis also showed a significant reduction in visual cortical volumes ($P < .05$). Moreover, the chiasmatic area and volume were significantly reduced ($P < .05$).

Conclusion: The findings show that visual system alterations can be detected in early stages of Parkinson disease and that the entire intracranial visual system can be involved. © RSNA, 2017
Online supplemental material is available for this article.

Title: Peripheral neuropathy in idiopathic Parkinson's disease: A systematic review.

Citation: Journal of the neurological sciences; Jul 2017; vol. 378 ; p. 204-209

Author(s): Zis, Panagiotis; Grünewald, Richard A; Chaudhuri, Ray Kallol; Hadjivassiliou, Marios

Background: Parkinson's disease (PD) has been associated with peripheral neuropathy (PN). PN has been demonstrated in some rare genetic forms of PD (e.g. PARK2 mutations) but has also been linked to levodopa exposure.

Objective: The aim of this systematic review is to clarify any evidence of peripheral nervous system involvement in idiopathic PD.

Methods: A systematic computer-based literature search was conducted on PubMed database.

Findings: The pooled estimate of the prevalence of large fiber PN in PD was 16.3% (based on 1376 patients). The pooled estimate of the prevalence of biopsy-proven small fiber neuropathy was 56.9% (based on 72 patients). Large fiber PN in PD is in the majority of cases distal, symmetrical, axonal and predominantly sensory. There are, however, few reports of chronic idiopathic demyelinating polyneuropathy and very occasional cases of acute neuropathies. Although nerve conduction studies have been performed in the majority of the studies, they included only a limited number of nerves, mainly in the lower limbs. There is little evidence to support a direct link between levodopa treatment and the development of PN in idiopathic PD. In the majority of the cases PN has been linked to abnormalities in vitamin B12, methylmalonic acid or fasting homocysteine levels. Additional aetiological risk factors for PN may be responsible for any apparent link between PD and PN.

Conclusions: Large-scale prospective studies with long-term follow-up with detailed baseline assessments are needed in order to understand the natural history of PN in PD, both on clinical and neurophysiological parameters.

Title: The effect of dopaminergic medication on conflict adaptation in Parkinson's disease.

Citation: Journal of neuropsychology; Jul 2017

Author(s): Ruitenbergh, Marit F L; Abrahamse, Elger L; Santens, Patrick; Notebaert, Wim

Abstract: Parkinson's disease (PD) is a neurological disorder associated primarily with motor symptoms such as tremor, slowness of movement, and difficulties with gait and balance. Most patients take dopaminergic medication to improve their motor functions. Previous studies reported indications that such medication can impair higher cognitive functions (cf. dopamine overdose hypothesis). In the present study, we examined the effect of medication status on conflict adaptation. PD patients performed a Stroop task in which we manipulated the proportion of congruent and incongruent items, thereby allowing us to explore conflict adaptation. The use of mouse movements allowed us to examine the action dynamics of conflict adaptation in PD, and their sensitivity to dopaminergic medication. Each patient performed the same task twice: once without making changes to their regular medication regime, and once after overnight withdrawal from their medication. Results showed that medication improved mouse movements and alleviated motor symptoms. Moreover, patients' mouse movements were modulated as a function of the proportion congruency manipulation, revealing conflict adaptation in PD, which was unaffected by medication status. The present study extends earlier work on conflict adaptation in PD where reduced transient (trial-by-trial) conflict adaptation was observed ON compared to OFF medication (Duthoo et al., 2013, *Neuropsychology*, 27, 556). Our findings suggest that more sustained cognitive control processes may not be sensitive to dopamine overdose effects

Title: Brain iron concentrations in regions of interest and relation with serum iron levels in Parkinson disease.

Citation: Journal of the neurological sciences; Jul 2017; vol. 378 ; p. 38-44

Author(s): Costa-Mallen, Paola; Gatenby, Christopher; Friend, Sally; Maravilla, Kenneth R; Hu, Shu-Ching; Cain, Kevin C; Agarwal, Pinky; Anzai, Yoshimi

Abstract: Brain iron has been previously found elevated in the substantia nigra pars compacta (SNpc), but not in other brain regions, of Parkinson's disease (PD) patients. However, iron in circulation has been recently observed to be lower than normal in PD patients. The regional selectivity of iron deposition in brain as well as the relationship between SNpc brain iron and serum iron within PD patients has not been completely elucidated. In this pilot study we measured brain iron in six regions of interest (ROIs) as well as serum iron and serum ferritin, in 24 PD patients and 27 age- gender-matched controls. Brain iron was measured on magnetic resonance imaging (MRI) with a T2 prime (T2') method. Difference in brain iron deposition between PD cases and controls for the six ROIs were calculated. SNpc/white matter brain iron ratios and SNpc/serum iron ratios were calculated for each study participant, and differences between PD patients and controls were tested. PD patients overall had higher brain iron than controls in the SNpc. PD patients had significantly higher SNpc/white matter brain iron ratios than controls, and significantly higher brain SNpc iron/serum iron ratios than controls. These results indicate that PD patients' iron metabolism is disrupted toward a higher partitioning of iron to the brain SNpc at the expenses of iron in the circulation.

Title: Effects of dopamine on reinforcement learning and consolidation in Parkinson's disease.

Citation: eLife; Jul 2017; vol. 6

Author(s): Grogan, John P; Tsivos, Demitra; Smith, Laura; Knight, Brogan E; Bogacz, Rafal; Whone, Alan; Coulthard, Elizabeth J

Abstract: Emerging evidence suggests that dopamine may modulate learning and memory with important implications for understanding the neurobiology of memory and future therapeutic targeting. An influential hypothesis posits that dopamine biases reinforcement learning. More recent data also suggest an influence during both consolidation and retrieval. Eighteen Parkinson's disease patients learned through feedback ON or OFF medication with memory tested 24 hours later ON or OFF medication (4 conditions, within-subjects design with matched healthy control group). Patients OFF medication during learning decreased in memory accuracy over the following 24 hours. In contrast to previous studies, however, dopaminergic medication during learning and testing did not affect expression of positive or negative reinforcement. Two further experiments were run without the 24-hour delay, but they too failed to reproduce effects of dopaminergic medication on reinforcement learning. While supportive of a dopaminergic role in consolidation, this study failed to replicate previous findings on reinforcement learning.

Title: Feasibility and Efficacy of Mat Pilates on people with mild to moderate Parkinson's disease: a preliminary study.

Citation: Rejuvenation research; Jul 2017

Author(s): Cancela, Jose Maria; Mollinedo, Irimia; Ayán Perez, Carlos; Machado de Oliveira, Iris

Objectives: This pilot study aimed at assessing the feasibility and efficacy of a Mat Pilates program in people with mild to moderate Parkinson's disease. Equipment and methods: The participants carried out a Mat Pilates program twice a week for 12 weeks. The Senior Fitness Test battery and the 39-item Parkinson's Disease Questionnaire were used to assess the effects of the program on the participants' fitness level and quality of life.

Results: A total of 16 patients with mild to moderate Parkinson's disease volunteered and finished the study. The Mat Pilates program proved to be feasible. Adherence to the program was excellent and no adverse effects were observed. The program had a positive effect on the participants' fitness levels, except for shoulder range of motion and dynamic balance, and on their quality of life. Assessments at follow-up indicated a regression in the improvements obtained by the end of the intervention, even though the sample still showed higher levels of fitness and quality of life than those recorded initially.

Conclusions: Mat Pilates is a feasible rehabilitation strategy to improve fitness and quality of life in people with mild to moderate Parkinson's disease.

Title: Protective effects of fisetin and other berry flavonoids in Parkinson's disease.

Citation: Food & function; Jul 2017

Author(s): Maher, Pamela

Abstract: Parkinson's disease (PD) is an age-associated degenerative disease of the midbrain that results from the loss of dopaminergic neurons in the substantia nigra. It initially presents as a

movement disorder with cognitive and other behavioral problems appearing later in the progression of the disease. Current therapies for PD only delay the onset or reduce the motor symptoms. There are no treatments to stop the nerve cell death or to cure the disease. It is becoming increasingly clear that neurological diseases such as PD are multi-factorial involving disruptions in multiple cellular systems. Thus, it is unlikely that modulating only a single factor will be effective at either preventing disease development or slowing disease progression. A better approach is to identify small molecules that have multiple biological activities relevant to the maintenance of brain function. Flavonoids are polyphenolic compounds that are widely distributed in fruits and vegetables and therefore regularly consumed in the human diet. While flavonoids were historically characterized on the basis of their antioxidant and free radical scavenging effects, more recent studies have shown that flavonoids have a wide range of activities that could make them particularly effective as agents for the treatment of PD. In this article, the multiple physiological benefits of flavonoids in the context of PD are first reviewed. Then, the evidence for the beneficial effects of the flavonol fisetin in models of PD are discussed. These results, coupled with the known actions of fisetin, suggest that it could reduce the impact of PD on brain function.

Title: Procedural learning in Parkinson's disease, specific language impairment, dyslexia, schizophrenia, developmental coordination disorder, and autism spectrum disorders: A second-order meta-analysis.

Citation: Brain and cognition; Jul 2017; vol. 117; p. 41-48

Author(s): Clark, Gillian M; Lum, Jarrad A G

Abstract: The serial reaction time task (SRTT) has been used to study procedural learning in clinical populations. In this report, second-order meta-analysis was used to investigate whether disorder type moderates performance on the SRTT. Using this approach to quantitatively summarise past research, it was tested whether autism spectrum disorder, developmental coordination disorder, dyslexia, Parkinson's disease, schizophrenia, and specific language impairment differentially affect procedural learning on the SRTT. The main analysis revealed disorder type moderated SRTT performance ($p=0.010$). This report demonstrates comparable levels of procedural learning impairment in developmental coordination disorder, dyslexia, Parkinson's disease, schizophrenia, and specific language impairment. However, in autism, procedural learning is spared.

Title: Wearables in epilepsy and Parkinson's disease-A focus group study.

Citation: Acta neurologica Scandinavica; Jul 2017

Author(s): Ozanne, A; Johansson, D; Hällgren Graneheim, U; Malmgren, K; Bergquist, F; Alt Murphy, M

Objectives: Wearable sensors that measure movement and physiological variables are attractive for clinical evaluation of neurological diseases such as epilepsy and Parkinson's disease (PD). The aim of this study was to explore perceptions regarding the use of wearable technology in disease monitoring and management as reported by individuals with epilepsy and Parkinson's disease as well as health professionals working with these patient groups.

Materials And Methods: Six patient groups ($n=25$) and two groups with health professionals ($n=15$) participated in this qualitative, descriptive study with focus group interviews. A manifest qualitative content analysis was used.

Results: Four categories and nine subcategories emerged from the analysis. Participants saw possible benefits for improved treatment effect and valued this benefit more than possible

inconvenience of wearing the sensors. Discrete design and simplicity were considered as facilitators for improved usability. They emphasized the importance of interactive information between patients and health professionals. However, they were concerned about unclear information and inconclusive recordings and some fears about personal integrity were at odds with the expectations on interactivity.

Conclusions: Patients need to feel well informed and find an added value in using wearables. Wearables need to be user-friendly, have an attractive design, and show clinical efficacy in improving disease management. Variations in perceptions regarding integrity, benefits, and effectiveness of monitoring indicate possible conflicts of expectations among participants. The engagement of end users, patients, and health professionals, in the design and implementation process, is crucial for the development of wearable devices that enhance and facilitate neurological rehabilitation practice.

Sources Used

The following databases are searched on a regular basis in the development of this bulletin: Amed, British Nursing Index, Cinahl, Medline

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