

# Parkinson's Disease

# Current Awareness

# Bulletin

**June 2017**

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**Title: Caring for patients with Parkinson's disease in general hospital settings.**

**Citation:** Nursing older people; May 2017; vol. 29 (no. 5); p. 30-37

**Author(s):** Queen, Vicky

**Abstract:** Parkinson's disease (PD) is a common progressive neurological condition. There are 127,000 people with the disease in the UK, that is, one in every 500 of the population. In 2014-15 there were 14,000 hospital admissions of people with PD in England. However, PD is often not the primary cause of admission. Urinary tract infections and pneumonia, for example, are frequent causes of hospital admission for people with PD. Therefore, nurses on general medical and surgical wards will often care for people with PD. This article aims to provide an update on PD and explore the nurse's role in assessment and provision of safe and effective care for patients with PD in acute hospital settings.

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**Title: Effects of supervised slackline training on postural instability, freezing of gait, and falls efficacy in people with Parkinson's disease.**

**Citation:** Disability & Rehabilitation; Jul 2017; vol. 39 (no. 16); p. 1573-1580

**Author(s):** Santos, Luis; Fernandez-Rio, Javier; Winge, Kristian; Barragán-Pérez, Beatriz; Rodríguez-Pérez, Vicente; González-Díez, Vicente; Blanco-Traba, Miguel; Suman, Oscar E.; Gabel, Charles Philip; Rodríguez-Gómez, Javier

**Purpose:** The aim of this study was to assess whether supervised slackline training reduces the risk of falls in people with Parkinson's disease (PD).

**Methods:** Twenty-two patients with idiopathic PD were randomized into experimental (EG, N=11) and control (CG, N=11) groups. Center of Pressure (CoP), Freezing of Gait (FOG), and Falls Efficacy Scale (FES) were assessed at pre-test, post-test and re-test. Rate perceived exertion (RPE, Borg's 6-20 scale) and local muscle perceived exertion (LRPE) were also assessed at the end of the training sessions.

**Results:** The EG group showed significant improvements in FOG and FES scores from pre-test to post-test. Both decreased at re-test, though they did not return to pre-test levels. No significant differences were detected in CoP parameters. Analysis of RPE and LRPE scores revealed that slackline was associated with minimal fatigue and involved the major lower limb and lumbar muscles.

**Conclusions:** These findings suggest that slacklining is a simple, safe, and challenging training and rehabilitation tool for PD patients. It could be introduced into their physical activity routine to reduce the risk of falls and improve confidence related to fear of falling.

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**Title: Land Plus Aquatic Therapy Versus Land-Based Rehabilitation Alone for the Treatment of Balance Dysfunction in Parkinson Disease: A Randomized Controlled Study With 6-Month Follow-Up.**

**Citation:** Archives of Physical Medicine & Rehabilitation; Jun 2017; vol. 98 (no. 6); p. 1077-1085

**Author(s):** Palamara, Grazia; Gotti, Francesco; Maestri, Roberto; Bera, Rossana; Gargantini, Roberto; Bossio, Fabiola; Zivi, Ilaria; Volpe, Daniele; Ferrazzoli, Davide; Frazzitta, Giuseppe

**Objectives:** To assess whether a specific land-based physical intervention with the inclusion of aquatic therapy is more effective than land-based rehabilitation alone for the treatment of balance

dysfunction in patients with Parkinson disease (PD), immediately after therapy and at 6 months' follow-up. Design Randomized controlled study with 6-month follow-up.

**Setting:** A PD and brain injury rehabilitation department in a general hospital. Participants Patients (N=34) with moderate-stage PD. Intervention Seventeen patients underwent a land-based rehabilitation protocol called multidisciplinary intensive rehabilitation treatment (MIRT), and 17 underwent MIRT plus aquatic therapy (MIRT-AT).

**Main Outcome Measures:** The primary outcome measure was the Berg Balance Scale (BBS); secondary outcome measures were the Unified Parkinson Disease Rating Scale parts II and III (UPDRS II/III) and the Timed Up and Go (TUG) test. These measures were assessed in both groups at admission, at discharge, and after 6 months.

**Results:** BBS improved after treatment in both groups. Even though no statistically significant difference between groups was observed at each observation time, BBS scores at follow-up were significantly higher than at baseline in MIRT-AT patients. Both groups also showed an improvement in UPDRS II/III and TUG at the end of treatment compared with baseline, but these findings were lost at the 6-month follow-up.

**Conclusions:** Aquatic therapy added to land-based rehabilitation could provide a contribution to the treatment of balance dysfunction in patients with moderate-stage PD.

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**Title: Preferences and concerns for care needs in advanced Parkinson's disease: a qualitative study of couples.**

**Citation:** Journal of Clinical Nursing; Jun 2017; vol. 26 (no. 11/12); p. 1650-1656

**Author(s):** Habermann, Barbara; Shin, Ju Young

**Aims and objectives:** To explore how couples with Parkinson's disease discuss their needs, concerns and preferences at the advanced stages of illness.

**Background:** The majority of care for people with Parkinson's disease is provided at home by family members. Parkinson's disease is characterised by a slow progressive decline with care needs often exceeding a decade.

**Design:** A descriptive qualitative study with 14 couples. Methods Data were collected on two occasions over a one-month period using semi-structured interviews, with both individual and couple interviews. Data were analysed thematically by the research team.

**Results:** All participants discussed the strong desire to remain in their homes for as long as possible. For the people with Parkinson's disease, placement to long-term facilities was not an option to be considered. For spouses, there was an acknowledgement there may come a time when they could no longer continue to provide care. Concerns regarding falls, choking, voice production, financial strain and need for prognostic information from providers were influences on what they believed the future would hold and the decisions they would need to make.

**Conclusions:** The need for improved communication between providers and Parkinson's disease couples is evident. Interventions to support the couple in their discussions and decision-making regarding remaining in the home or not, and options to support advanced care needs are required. Relevance to clinical practice Nurses can help support decision-making by providing tangible information regarding the advanced stages of Parkinson's disease including adequate prognostic information.

**Title: Professional Pulse. Informal Exercise May Help Slow PD Mobility Losses.**

**Citation:** PT in Motion; Jun 2017; vol. 9 (no. 5); p. 46-47

**Abstract:** The article discusses the highlights of a study published in the "Journal of Parkinson's Disease" to show the positive effects of supervised exercise interventions on the mobility and health-related quality-of-life (HRQL) of individuals with Parkinson disease (PD). Topics covered include the National Parkinson Foundation Quality Improvement Initiative (NPF-QII), the reported functional mobility improvements in different PD stages, and the effects of self-reported information home exercise.

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**Title: Feasibility and safety of group exercises for individuals with Parkinson's disease: A case series.**

**Citation:** International Journal of Therapy & Rehabilitation; May 2017; vol. 24 (no. 5); p. 223-227

**Author(s):** Vianna, Érica Guimarães; de Carvalho Rodrigues, Erika; Horsczaruk, Carlos Henrique Ramos; Martins, José Vicente Pereira; Lemos, Thiago; de Oliveira, Laura Alice Santos

**Abstract:** The article present a 2017 case series on group exercises for persons with Parkinson's disease. Participants engaged on a programme of exercises with regular interventions and were assessed on outcomes measured related to feasibility and safety. Results show that no episodes of adverse events occurred during the programme, with most participants being considered independent to engage in daily activities. Balance, fall risk, gait, and quality of life changed positively after the intervention.

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**Title: Enhancing Care for Hospitalized Patients With Parkinson's Disease: Development of a Formal Educational Program for Nursing Staff.**

**Citation:** Journal of Gerontological Nursing; May 2017; vol. 43 (no. 5); p. 18-22

**Author(s):** DiBartolo, Mary C.

**Abstract:** Although not generally a primary admission diagnosis, Parkinson's disease (PD) can be a significant comorbidity during hospitalization. Hospitalized individuals with PD can experience a variety of complications, such as confusion, pneumonia, and urinary infections. More than 20% of patients experience deterioration in symptoms and hospital stays are extended by an average of 4 days. Late, omitted, or inappropriate medications are frequent culprits leading to serious consequences, including falls and aspiration. To address an identified gap in staff knowledge about PD, a formal educational program was developed to review its etiology, symptoms, treatments, and unique considerations in care and medication administration. This 2-hour intervention comprises a knowledge pre-test, PowerPoint® presentation, two concise handouts for reference, discussion of an unfolding case study, and review of the Aware in Care kit. Nurses can play a key role in educating staff to reduce avoidable hospital-related complications and enhance outcomes for this vulnerable group.

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**Title: Direct and indirect effects of attention and visual function on gait impairment in Parkinson's disease: influence of task and turning.**

**Citation:** The European journal of neuroscience; Apr 2017

**Author(s):** Stuart, Samuel; Galna, Brook; Delicato, Louise S; Lord, Sue; Rochester, Lynn

**Abstract:** Gait impairment is a core feature of Parkinson's disease (PD) which has been linked to cognitive and visual deficits, but interactions between these features are poorly understood. Monitoring saccades allows investigation of real-time cognitive and visual processes and their impact on gait when walking. This study explored; 1) saccade frequency when walking under different attentional manipulations of turning and dual-task; and 2) direct and indirect relationships between saccades, gait impairment, vision and attention. Saccade frequency (number of fast eye-movements per-second) was measured during gait in 60 PD and 40 age-matched control participants using a mobile eye-tracker. Saccade frequency was significantly reduced in PD compared to controls during all conditions. However, saccade frequency increased with a turn and decreased under dual-task for both groups. Poorer attention directly related to saccade frequency, visual function and gait impairment in PD, but not controls. Saccade frequency did not directly relate to gait in PD, but did in controls. Instead, saccade frequency and visual function deficit indirectly impacted gait impairment in PD, which was underpinned by their relationship with attention. In conclusion, our results suggest a vital role for attention with direct and indirect influences on gait impairment in PD. Attention directly impacted saccade frequency, visual function and gait impairment in PD, with connotations for falls. It also underpinned indirect impact of visual and saccadic impairment on gait. Attention therefore represents a key therapeutic target that should be considered in future research. This article is protected by copyright. All rights reserved.

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**Title: Uncertainty and depression in people with Parkinson's disease: A cross-sectional study.**

**Citation:** Nursing & Health Sciences; Jun 2017; vol. 19 (no. 2); p. 220-227

**Author(s):** Ahn, Sangwoo; Lee, JuHee; Chu, Sang Hui; Sohn, Young H.

**Abstract:** Adults with chronic disease may experience uncertainty and depression when coping with their illness. This study identifies degrees of uncertainty and depression, as well as factors associated with depression in people with Parkinson's disease. The 120 participants included patients who visited the neurology outpatient department of a tertiary hospital in Seoul and individuals who attended public events managed by the Korean Parkinson's Disease Association. The mean age of the sample was 65.01 and 50.8% of patients were men. The mean scores of uncertainty and depression, measured using the Mishel Uncertainty in Illness Scale and Short Form Geriatric Depression Scale were 99.03 and 6.73, respectively. Approximately 68% of participants scored above the cut-off score for depression. Multiple regression analyses showed that uncertainty, perceived health status, and fatigue were factors significantly associated with depression. Nurses should be aware of and address these factors and their effects in order to implement interventions to prevent depression in people with Parkinson's disease.

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**Title: Passport to better care: Difficulties faced by patients inspired the development of a Parkinson's Passport to ensure people receive the right care.**

**Citation:** Nursing Standard; May 2017; vol. 31 (no. 39); p. 36-36

**Author(s):** Ramnath, Lorraine

**Abstract:** The author describes the Parkinson's Passport that was designed and implemented at her hospital trust in Great Britain to help improve care of patients with Parkinson's disease. Topics discussed include the use of the passport to share important information relating to a patient's treatment, helping patients remain independent with their own medication regimen, and helping healthcare professionals understand patients' individual care needs.

**Title: Safinamide for the treatment of Parkinson's disease.**

**Citation:** Expert opinion on pharmacotherapy; May 2017; p. 1-7

**Author(s):** de Souza, Ruth Mary; Schapira, Anthony

**Introduction:** The major unmet needs in the medical treatment of Parkinson disease (PD) are reduction of motor side effects from dopaminergic drugs, management of non-motor symptoms and disease modification.

**Areas covered:** Motor fluctuations and OFF periods are a significant determinant of quality of life in PD and reducing their duration and severity can significantly improve motor function. This aim may be partly facilitated by the development of effective adjunctive drugs for dopamine replacement. Safinamide (Xadago), which is a first generation anticonvulsant, has pharmacological properties which are of interest in the context of neurodegenerative diseases, leading to research into its potential as an adjunct to levodopa in PD.

**Expert opinion:** Although its mechanism has not been fully defined, safinamide provides enhanced symptom control of motor function in advanced PD and improves quality of life.

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**Title: Longitudinal decline in speech production in Parkinson's disease spectrum disorders.**

**Citation:** Brain and language; May 2017; vol. 171 ; p. 42-51

**Author(s):** Ash, Sharon; Jester, Charles; York, Collin; Kofman, Olga L; Langey, Rachel; Halpin, Amy; Firn, Kim; Dominguez Perez, Sophia; Chahine, Lama; Spindler, Meredith; Dahodwala, Nabila; Irwin, David J; McMillan, Corey; Weintraub, Daniel; Grossman, Murray

**Abstract:** We examined narrative speech production longitudinally in non-demented (n=15) and mildly demented (n=8) patients with Parkinson's disease spectrum disorder (PDSD), and we related increasing impairment to structural brain changes in specific language and motor regions. Patients provided semi-structured speech samples, describing a standardized picture at two time points (mean±SD interval=38±24months). The recorded speech samples were analyzed for fluency, grammar, and informativeness. PDSD patients with dementia exhibited significant decline in their speech, unrelated to changes in overall cognitive or motor functioning. Regression analysis in a subset of patients with MRI scans (n=11) revealed that impaired language performance at Time 2 was associated with reduced gray matter (GM) volume at Time 1 in regions of interest important for language functioning but not with reduced GM volume in motor brain areas. These results dissociate language and motor systems and highlight the importance of non-motor brain regions for declining language in PDSD.

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**Title: Levodopa has primarily negative influences on postural control in patients with Parkinson's disease.**

**Citation:** Behavioural brain research; May 2017

**Author(s):** Bonnet, Cédric T; Delval, Arnaud; Szafrarczyk, Sébastien; Defebvre, Luc

**Abstract:** Patients with Parkinson's disease have better functional status and motor performance under on-drug conditions. However, the administration of levodopa leads to greater postural sway. The present study's primary objective was to determine whether this on-drug problem may be related to a lack of adjustment in postural control mechanisms and body segment rotations. Fourteen patients with Parkinson's disease and 14 controls performed two gaze-shift tasks (40° to

the left and 40° to the right, at 0.125 and 0.25Hz) and a stationary gaze task in two sessions (an off-drug session and an on-drug session for the patients, and two off-drug sessions for the controls). At baseline, the "on-drug" patients indeed swayed significantly more than the controls during the gaze-shift tasks. As expected, acute L-dopa administration did not increase eye, head, neck and lower back rotation of the patients during the gaze-shift tasks. Unexpectedly, levodopa appeared to enable the patients to significantly increase the contribution of their postural control mechanisms (relative to controls) during the gaze-shift tasks. However, and as expected, this adjustment was not great enough to enable the patients to maintain their postural sway as well as the controls did. Overall, the administration of levodopa seemed to destabilize the patients- especially with regard to the lower back region. In addition, the patients used hypermetric eye rotations during the gaze-shift tasks under both off- and on-drug conditions. If they had not used these compensatory eye rotations, their unsafe behavior at the hip level might have been even more pronounced. Future research should focus on this lower back weakness.

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**Title: Mindfulness-based stress reduction in Parkinson's disease: a systematic review.**

**Citation:** BMC neurology; May 2017; vol. 17 (no. 1); p. 92

**Author(s):** McLean, G; Lawrence, M; Simpson, R; Mercer, S W

**Background:** Mindfulness based stress reduction (MBSR) is increasingly being used to improve outcomes such as stress and depression in a range of long-term conditions (LTCs). While systematic reviews on MBSR have taken place for a number of conditions there remains limited information on its impact on individuals with Parkinson's disease (PD).

**Methods:** Medline, Central, Embase, Amed, CINAHAL were searched in March 2016. These databases were searched using a combination of MeSH subject headings where available and keywords in the title and abstracts. We also searched the reference lists of related reviews. Study quality was assessed based on questions from the Cochrane Collaboration risk of bias tool.

**Results:** Two interventions and three papers with a total of 66 participants were included. The interventions were undertaken in Belgium (n = 27) and the USA (n = 39). One study reported significantly increased grey matter density (GMD) in the brains of the MBSR group compared to the usual care group. Significant improvements were reported in one study for a number of outcomes including PD outcomes, depression, mindfulness, and quality of life indicators. Only one intervention was of reasonable quality and both interventions failed to control for potential confounders in the analysis. Adverse events and reasons for drop-outs were not reported. There was also no reporting on the costs/benefits of the intervention or how they affected health service utilisation.

**Conclusion:** This systematic review found limited and inconclusive evidence of the effectiveness of MBSR for PD patients. Both of the included interventions claimed positive effects for PD patients but significant outcomes were often contradicted by other results. Further trials with larger sample sizes, control groups and longer follow-ups are needed before the evidence for MBSR in PD can be conclusively judged.

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**Title: An interactive videogame for arm and hand exercise in people with Parkinson's disease: A randomized controlled trial.**

**Citation:** Parkinsonism & related disorders; May 2017

**Author(s):** Allen, Natalie E; Song, Joejun; Paul, Serene S; Smith, Stuart; O'Duffy, Jonathan; Schmidt, Matthew; Love, Rachelle; Sherrington, Catherine; Canning, Colleen G

**Introduction:** People with Parkinson's disease (PD) have difficulty performing upper extremity (UE) activities. The aim of this study was to investigate if exergames targeting the UE improve arm and hand activities and impairments and to establish the acceptability and feasibility of these games in people with PD.

**Methods:** Two tablet-based exergames were developed which were controlled with finger movements or unimanual whole arm movements. Participants with PD were randomized to an exergame (n = 19) or control (n = 19) group. The exergame group performed UE exergames at home, 3 times per week for 12 weeks. The primary outcome measure was the nine hole peg test. Secondary outcomes included measures of UE activities and impairments, including the tapping test [speed (taps/60s), and error (weighted error score/speed)].

**Results:** There were no between group differences in the nine hole peg test, or in any secondary outcome measures except for the tapping test. Horizontal tapping test results showed that exergame participants improved their speed (mean difference = 10.9 taps/60s,  $p < 0.001$ ) but increased error (mean difference = 0.03,  $p = 0.03$ ) compared to the control group. Participants enjoyed the games and improved in their ability to play the games. There were no adverse events.

**Conclusions:** The UE exergames were acceptable and safe, but did not translate to improvement in functional activities. It is likely that the requirement of the games resulted in increased movement speed at the detriment of accuracy. The design of exergames should consider task specificity.

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**Title: Three-dimensional evaluation of postural stability in Parkinson's disease with mobile technology.**

**Citation:** NeuroRehabilitation; May 2017

**Author(s):** Ozinga, Sarah J; Koop, Mandy Miller; Linder, Susan M; Machado, Andre G; Dey, Tanujit; Alberts, Jay L

**Background:** Postural instability is a hallmark of Parkinson's disease. Objective metrics to characterize postural stability are necessary for the development of treatment algorithms to aid in the clinical setting.

**Objective:** The aim of this project was to validate a mobile device platform and resultant three-dimensional balance metric that characterizes postural stability.

**Methods:** A mobile Application was developed, in which biomechanical data from inertial sensors within a mobile device were processed to characterize movement of center of mass in the medial-lateral, anterior-posterior and trunk rotation directions. Twenty-seven individuals with Parkinson's disease and 27 age-matched controls completed various balance tasks. A postural stability metric quantifying the amplitude (peak-to-peak) of sway acceleration in each movement direction was compared between groups. The peak-to-peak value in each direction for each individual with Parkinson's disease across all trials was expressed as a normalized value of the control data to identify individuals with severe postural instability, termed Cleveland Clinic-Postural Stability Index.

**Results:** In all conditions, the balance metric for peak-to-peak was significantly greater in Parkinson's disease compared to controls ( $p < 0.01$  for all tests).

**Conclusions:** The balance metric, in conjunction with mobile device sensors, provides a rapid and systematic metric for quantifying postural stability in Parkinson's disease.



**Title: Effect of expiratory muscle strength training intervention on the maximum expiratory pressure and quality of life of patients with Parkinson disease.**

**Citation:** NeuroRehabilitation; May 2017

**Author(s):** Kuo, Yu-Chi; Chan, Jomei; Wu, Yu-Ping; Bernard, Jeffrey R; Liao, Yi-Hung

**Purpose:** The purpose of this study was to investigate the effects of 4-weeks expiratory muscle strength training (EMST) on the maximum expiratory pressure (PEmax) and quality of life (QoL) in patients with Parkinson disease (PD).

**Methods:** Thirteen outpatients diagnosed with PD participated in this study, and were assigned into either a 5DE training group (5DE group; n=4; 75% PEmax for 5-d/wk), 3DE training group (3DE group; n=5; 75% PEmax for 3-d/wk) and control group (3DC group; n=4; 0% PEmax for 3-d/wk) by matching their Hoehn and Yahr scale, genders, and age. The PEmax and Parkinson disease questionnaire-39 item (PDQ-39) were evaluated pre- and post-intervention.

**Results:** The posttest PEmax of the 5DE was significantly higher than that of the 3DC ( $P < 0.05$ ). Moreover, 5DE and 3DE but not 3DC significantly increased PEmax after training. There were no differences in the overall quality of life in PD patients measured by PDQ-39 among three groups, but the 5DE group significantly improved the mobility constructs of PDQ-39 compared with 3DC ( $P < 0.05$ ).

**Conclusion:** Both 5 d/wk and 3 d/wk of EMST effectively enhance respiratory muscle strength and improve mobility construct measured by PDQ-39 in patients with PD.

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**Title: Effects of happy and sad facial expressions on the perception of time in Parkinson's disease patients with mild cognitive impairment.**

**Citation:** Journal of clinical and experimental neuropsychology; May 2017; p. 1-16

**Author(s):** Mioni, Giovanna; Grondin, Simon; Meligrana, Lucia; Perini, Francesco; Bartolomei, Luigi; Stablum, Franca

**Introduction:** Parkinson's disease (PD) is a movement disorder caused by deterioration of the dopaminergic system. Previous studies have demonstrated temporal as well as emotional facial recognition impairment in PD patients. Moreover, it has been demonstrated that emotional facial expressions alter temporal judgments. In the present study, we investigate the magnitude of temporal distortions caused by the presentation of emotional facial expressions (happiness, sadness, and neutral) in PD patients with mild cognitive impairment (PD-MCI) and controls.

**Methods:** Seventeen older adults with PD-MCI and 22 healthy older adults took part in the present study. Participants were tested with a time bisection task with standard intervals lasting 400 ms and 1600 ms. Moreover, a complete neuropsychological evaluation was conducted to characterize the sample.

**Results:** Differences between groups were observed indicating a general underestimation of time in PD-MCI patients. Temporal impairments in PD-MCI patients seem to be caused mainly by a dysfunction at the level of reference memory. The effect of emotional facial expressions on time perception was evident in both PD patients and controls, with an overestimation of perceived duration when happiness was presented and an underestimation when sadness was presented.

**Conclusion:** Overall, our results indicate that reduced cognitive abilities might be responsible for the lower temporal ability observed in PD-MCI patients. Moreover, similar effects of emotional stimuli were observed in both PD-MCI patients and controls.

**Title: Management of lower urinary tract symptoms in Parkinson's disease in the neurology clinic.**

**Citation:** The International journal of neuroscience; May 2017; p. 1-14

**Author(s):** Madan, Arina; Ray, Sudeshna; Burdick, Daniel; Agarwal, Pinky

**Abstract:** This clinical review aims to evaluate lower urinary tract symptoms (LUTS) in Parkinson's disease (PD) patients and the current treatment options available for these symptoms in a neurology setting. The review also addresses when referral to urology is appropriate. A literature search was conducted using the keywords 'LUTS', 'non-motor symptoms', 'overactive bladder', 'Parkinson's disease' and 'urinary symptoms' using the Medline/Pubmed search engine. Data collected ranged from 2000 to present with emphasis on recent publications. This review was conducted because LUTS in PD has a major impact on quality of life and is associated with early institutionalization. Emphasis is placed on treating overactive bladder with conservative strategies and medical management in the neurology setting. Quality of life can be improved and institutionalization can be delayed with a multimodal approach to bladder care.

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**Title: No clear support for a role for vitamin D in Parkinson's disease: A Mendelian randomization study.**

**Citation:** Movement disorders : official journal of the Movement Disorder Society; Jun 2017

**Author(s):** Larsson, Susanna C; Singleton, Andrew B; Nalls, Mike A; Richards, J Brent; International Parkinson's Disease Genomics Consortium (IPDGC)

**Background:** Observational studies have found that relative to healthy controls, patients with Parkinson's disease have lower circulating concentrations of 25-hydroxyvitamin D, a clinical biomarker of vitamin D status. However, the causality of this association is uncertain. We undertook a Mendelian randomization study to investigate whether genetically decreased 25-hydroxyvitamin D concentrations are associated with PD to minimize confounding and prevent bias because of reverse causation.

**Methods:** As instrumental variables for the Mendelian randomization analysis, we used 4 single-nucleotide polymorphisms that affect 25-hydroxyvitamin D concentrations (rs2282679 in GC, rs12785878 near DHCR7, rs10741657 near CYP2R1, and rs6013897 near CYP24A1). Summary effect size estimates of the 4 single-nucleotide polymorphisms on PD were obtained from the International Parkinson's Disease Genomics Consortium (including 5333 PD cases and 12,019 controls). The estimates of the 4 single-nucleotide polymorphisms were combined using an inverse-variance weighted meta-analysis.

**Results:** Of the 4 single-nucleotide polymorphisms associated with 25-hydroxyvitamin D concentrations, one (rs6013897 in CYP24A1) was associated with PD (odds ratio per 25-hydroxyvitamin D-decreasing allele, 1.09; 95% confidence interval, 1.02-1.16;  $P = 0.008$ ), whereas no association was observed with the other 3 single-nucleotide polymorphisms ( $P > 0.23$ ). The odds ratio of PD per genetically predicted 10% lower 25-hydroxyvitamin D concentration, based on the 4 single-nucleotide polymorphisms, was 0.98 (95% confidence interval, 0.93-1.04;  $P = 0.56$ ).

**Conclusions:** This Mendelian randomization study provides no clear support that lowered 25-hydroxyvitamin D concentration is causally associated with risk of PD. © 2017 International Parkinson and Movement Disorder Society.

**Title: Response of non-motor symptoms to levodopa in late-stage Parkinson's disease: Results of a levodopa challenge test.**

**Citation:** Parkinsonism & related disorders; Jun 2017; vol. 39 ; p. 37-43

**Author(s):** Fabbri, Margherita; Coelho, Miguel; Guedes, Leonor Correia; Chendo, Ines; Sousa, Catarina; Rosa, Mario M; Abreu, Daisy; Costa, Nilza; Godinho, Catarina; Antonini, Angelo; Ferreira, Joaquim J

**Background:** Non-motor symptoms (NMS) are extremely common among late-stage Parkinson's disease (LSPD) patients. Levodopa (L-dopa) responsiveness seems to decrease with disease progression but its effect on NMS in LSPD still needs to be investigated.

**Objective:** To assess the response of blood pressure (BP), pain, fatigue and anxiety to L-dopa in LSPD patients. **METHODS** 20 LSPD patients, defined as Schwab and England ADL Scale 3 (MED ON) and 22 PD patients treated with subthalamic deep brain stimulation (advanced PD group) underwent an L-dopa challenge. BP and orthostatic hypotension (OH) assessment, a visual analogue scale (VAS) for pain and fatigue and the Strait Trait Anxiety (STAI) were evaluated before and after the L-dopa challenge.

**Results:** Systolic BP dropped significantly after L-dopa intake ( $p < 0.05$ ) in LSPD patients, while there was no change in pain, fatigue or anxiety. L-dopa significantly improved ( $p < 0.05$ ) pain and anxiety in the advanced PD group, whereas it had no effect on BP or fatigue. L-dopa-related adverse effects (AEs), namely OH and sleepiness, were more common among LSPD patients. 40% and 65% of LSPD patients were not able to fill out the VAS and the STAI, respectively, while measurement of orthostatic BP was not possible in four LSPD patients.

**Conclusions:** This exploratory study concludes that some non-motor variables in LSPD do not benefit from the acute action of L-dopa while it can still induce disabling AEs. There is a need for assessment tools of NMS adapted to these disabled LSPD patients.

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**Title: Speech and communication in Parkinson's disease: a cross-sectional exploratory study in the UK.**

**Citation:** BMJ open; May 2017; vol. 7 (no. 5); p. e014642

**Author(s):** Barnish, Maxwell S; Horton, Simon M C; Butterfint, Zoe R; Clark, Allan B; Atkinson, Rachel A; Deane, Katherine H O

**Objective:** To assess associations between cognitive status, intelligibility, acoustics and functional communication in PD.

**Design:** Cross-sectional exploratory study of functional communication, including a within-participants experimental design for listener assessment.

**Setting:** A major academic medical centre in the East of England, UK.

**Participants:** Questionnaire data were assessed for 45 people with Parkinson's disease (PD), who had self-reported speech or communication difficulties and did not have clinical dementia. Acoustic and listener analyses were conducted on read and conversational speech for 20 people with PD and 20 familiar conversation partner controls without speech, language or cognitive difficulties.

**Main Outcome Measures:** Functional communication assessed by the Communicative Participation Item Bank (CPIB) and Communicative Effectiveness Survey (CES).

**Results:** People with PD had lower intelligibility than controls for both the read (mean difference 13.7%,  $p=0.009$ ) and conversational (mean difference 16.2%,  $p=0.04$ ) sentences. Intensity and pause were statistically significant predictors of intelligibility in read sentences. Listeners were less

accurate identifying the intended emotion in the speech of people with PD (14.8% point difference across conditions,  $p=0.02$ ) and this was associated with worse speaker cognitive status (16.7% point difference,  $p=0.04$ ). Cognitive status was a significant predictor of functional communication using CPIB ( $F=8.99$ ,  $p=0.005$ ,  $\eta^2 = 0.15$ ) but not CES. Intelligibility in conversation sentences was a statistically significant predictor of CPIB ( $F=4.96$ ,  $p=0.04$ ,  $\eta^2 = 0.19$ ) and CES ( $F=13.65$ ,  $p=0.002$ ,  $\eta^2 = 0.43$ ). Read sentence intelligibility was not a significant predictor of either outcome.

**Conclusions:** Cognitive status was an important predictor of functional communication-the role of intelligibility was modest and limited to conversational and not read speech. Our results highlight the importance of focusing on functional communication as well as physical speech impairment in speech and language therapy (SLT) for PD. Our results could inform future trials of SLT techniques for PD.

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**Title: Longitudinal falls data in Parkinson's disease: feasibility of fall diaries and effect of attrition.**

**Citation:** Disability and rehabilitation; Jun 2017; p. 1-6

**Author(s):** Hunter, Heather; Rochester, Lynn; Morris, Rosie; Lord, Sue

**Background:** Identifying causes of falls for people with Parkinson's disease has met with limited success. Prospective falls measurement using the "gold standard" approach is challenging. This paper examines the process and outcomes associated with longitudinal falls reporting in this population.

**Methods:** Participants were recruited from ICICLE-GAIT (a collaborative study with ICICLE-PD; an incident cohort study). Monthly falls diaries were examined over 48 months for accuracy of data and rate of attrition. To further inform analysis, characteristics of participants with 36-month completed diaries were compared with those who did not complete diaries.

**Results:** One hundred and twenty-one participants were included at baseline. By 12 months, falls diary data had reduced to 107 participants; to 81 participants by 36 months; and to 59 participants by 48 months. Key reasons for diary attrition were withdrawal from ICICLE-gait ( $n = 16$ ) (13.2%), and noncompliance ( $n = 11$ ) (9.1%). The only significant difference between the completed and non-completed diary groups was age at 36 months, with older participants being more likely to send in diaries.

**Conclusions:** Prospective falls data is feasible to collect over the long term. Attrition rates are high; however, participants retained in the study are overall representative of the total falls diary cohort. Implications for Rehabilitation Understanding falls evolution in Parkinson's disease through consistent, personalized monitoring of falls events is critical to inform effective management. Our study shows that it is feasible to collect longitudinal falls data using "gold standard" methodology, although significant resources are required for implementation. We anticipate that our study methodology is broadly applicable to any at-risk falls cohort including older adults and diverse neurological conditions. Researchers and clinicians collating prospective falls data must ensure that participants understand what constitutes a fall, as per the World Health Organization definition. A second key point is to ensure prompt recording of any fall event.

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**Title: More than just dancing: experiences of people with Parkinson's disease in a therapeutic dance program.**

**Citation:** Disability and rehabilitation; Jun 2017; vol. 39 (no. 11); p. 1073-1078

**Author(s):** Bogнар, Stephanie; DeFaria, Anne Marie; O'Dwyer, Casey; Pankiw, Elana; Simic Bogler, Jennifer; Teixeira, Suzanne; Nyhof-Young, Joyce; Evans, Cathy

**Purpose:** To understand why individuals with Parkinson's disease (PD) participate in a community-based therapeutic dance program and to explore its influence on perceived physical, social and emotional well-being of participants.

**Methods:** A qualitative descriptive design was employed using one-on-one semi-structured interviews. Individuals with PD who participated in the Dancing with Parkinson's program were recruited from two locations. Interviews were audio-recorded, transcribed, de-identified and then placed into NVivo 10 software for analysis. A content analysis approach was used with an inductive analysis method to generate a coding scheme. Group discussion facilitated development of overarching themes.

**Results:** Ten participants' responses revealed that the dance program allows for self-improvement and regaining identity through disease self-management. Positive influences of socialization arose through the class, decreasing isolation and improving quality of life. Participants communicate through music and dance to enhance connection with others.

**Conclusions:** Dancing with Parkinson's classes allow for re-development of the social self, which can increase sense of enjoyment in life. Dance programs provide opportunities for social interaction, non-verbal communication and self-improvement, reestablishing self-identity and a sense of usefulness. This study provides unique insight into the experience of participating in a dance program from the perspective of individuals with PD. Implications for rehabilitation Dance is emerging as a strategy to address the physical and psychosocial effects of Parkinson's disease (PD), but little is known regarding participants' perceptions of community-based therapeutic dance programs for PD. This study found that Dancing with Parkinson's (DWP) facilitated an improvement in social participation, resulting in decreased isolation and improved quality of life. Participation in the DWP program can facilitate a positive change in perspective and attitude toward a PD diagnosis, thereby increasing feelings of self-efficacy and improving self-management of the disease. Participants of this study emphasized the multifaceted benefits of DWP, suggesting that it has great potential for addressing not only the physical challenges, but also the cognitive and emotional challenges associated with PD.

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**Title: Parkinsonian signs are a risk factor for falls.**

**Citation:** Gait & posture; Jun 2017; vol. 55 ; p. 1-5

**Author(s):** Dahodwala, Nabila; Nwadiogbu, Chinwe; Fitts, Whitney; Partridge, Helen; Karlawish, Jason

**Background:** Parkinsonian signs are common, non-specific findings in older adults and associated with increased rates of dementia and mortality. It is important to understand which motor outcomes are associated with parkinsonian signs.

**Objectives:** To determine the role of parkinsonian signs on fall rates among older adults.

**Methods:** We conducted a longitudinal study of primary care patients from the University of Pennsylvania Health System. Adults over 55 years were assessed at baseline through surveys and a neurological examination. We recorded falls over the following 2 years. Parkinsonian signs were defined as the presence of 2 of 4 cardinal signs. Incident falls were compared between subjects with and without parkinsonian signs, and modified Poisson regression used to adjust for potential confounders in the relationship between parkinsonian signs and falls.

**Results:** 982 subjects with a mean age of 68 (s.d. 8.8) years participated. 29% of participants fell and 12% exhibited parkinsonian signs at baseline. The unadjusted RR for falls among individuals with parkinsonian signs was 1.36 (95% CI 1.05-1.76, p=0.02). After adjusting for age, cognitive function, urinary incontinence, depression, diabetes, stroke and arthritis, individuals with parkinsonian signs were still 38% more likely to fall than those without parkinsonian signs (RR

1.38, 95% CI 1.04-1.82;  $p=0.03$ ). Falls among those with parkinsonian signs were more likely to lead to injury (53% vs 37%;  $p=0.04$ ).

**Conclusions:** Parkinsonian signs are a significant, independent risk factor for falls. Early detection of this clinical state is important in order to implement fall prevention programs among primary care patients.

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**Title: Falls in people with Parkinson's disease: A prospective comparison of community and home-based falls.**

**Citation:** Gait & posture; Jun 2017; vol. 55; p. 62-67

**Author(s):** Lamont, Robyn M; Morris, Meg E; Menz, Hylton B; McGinley, Jennifer L; Brauer, Sandra G

**Background:** Falls are common and debilitating in people with Parkinson's disease (PD) and restrict participation in daily activities. Understanding circumstances of falls in the community and at home may assist clinicians to target therapy more effectively.

**Objective:** To compare the characteristics of community and home fallers and the circumstances that contribute to falls in people living with PD.

**Methods:** People with mild-moderately severe PD ( $n=196$ ) used a daily falls diary and telephone hotline to report prospectively the occurrence, location and circumstances of falls over 14 months.

**Results:** 62% of people with PD fell, with most falling at least once in the community. Compared to people who fell at home, the community-only fallers had shorter durations of PD ( $p=0.012$ ), less severe disease ( $p=0.008$ ) and reported fewer falls in the year prior to the study ( $p=0.003$ ). Most falls occurred while people were ambulant, during postural transitions and when medication was working well. Community-based falls were frequently attributed to environmental factors such as challenging terrains ( $p<0.001$ ), high attention demands ( $p=0.029$ ), busy or cluttered areas ( $p<0.001$ ) and tasks requiring speed ( $p=0.020$ ). Physical loads were more often present in home than community-based falls ( $p=0.027$ ).

**Conclusion:** Falls that occur in the community typically affect people with earlier PD and less severe disease than home-based falls. Individuals experiencing community-based falls may benefit from physiotherapy to manage challenging environments and high attention demands.

### 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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