

## Parkinson's Disease Current Awareness Bulletin October 2020

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# Title: Evaluation of a psychoeducational intervention compared with education in people with Parkinson's disease and their informal caregivers: a quasi-experimental study

Citation: Journal of Advanced Nursing; Oct 2020; vol. 76 (no. 10); p. 2719

**Author(s):** María Victoria Navarta-Sánchez; Ambrosio, Leire; Portillo, Mari Carmen; Ursúa, Maria Eugenia; Senosiain, Juana M; Riverol, Mario

**Aim:** To evaluate the effects of a psychoeducational intervention compared with an education programme to strengthen quality of life, psychosocial adjustment, and coping in people with Parkinson's disease and their informal caregivers.

**Design:** A quasi-experimental study was performed with repeated measures at baseline, after the intervention and 6 months post-intervention.

**Methods:** The study was carried out at seven primary care centres from 2015-2017. A total of 140 people with Parkinson's and 127 informal caregivers were allocated to the experimental and the control groups. The experimental group received a 9-week psychoeducational intervention, whereas the control group received a 5-week education programme. Repeated measures ANOVA were used to test differences in quality of life, psychosocial adjustment, and coping between the experimental and control groups and over time.

**Results:** Patients and informal caregivers in both the experimental and control groups showed significantly better psychosocial adjustment at the post-intervention measurement compared with baseline data. We also found significantly greater quality of life in patients and coping skills in caregivers after the end of the interventions in the experimental and control groups. Nevertheless, no significant differences were identified on the outcomes at the 6-month post-intervention measurement.

**Conclusion:** The effect of the psychoeducational intervention was not different from the effect of the education programme. The strategies applied in both interventions followed a group approach led by a multidisciplinary team covering information about PD, healthy lifestyles, and social resources. They might be easily sustained in Primary Care to improve care for people with Parkinson's and informal caregivers.

#### Title: COVID-19 and selective vulnerability to Parkinson's disease.

**Citation:** Lancet Neurology; Sep 2020; vol. 19 (no. 9); p. 719-719 **Author(s):** Pavel ; Murray, Danielle K; Stoessl, A Jon

### Title: Giving and receiving a diagnosis of a progressive neurological condition: A scoping review of doctors' and patients' perspectives.

**Citation:** Patient Education & Counseling; Sep 2020; vol. 103 (no. 9); p. 1709-1723 **Author(s):** Anestis ; Eccles, Fiona; Fletcher, Ian; French, Maddy; Simpson, Jane

**Objective:** Delivering a life changing diagnosis can be a distressing experience for patients and a challenging task for professionals. Diagnosis delivery can be especially difficult for individuals with neurodegenerative diseases such as motor neurone disease (MND), multiple sclerosis (MS) and Parkinson's disease (PD). This review aims to scope the

literature on doctors' and patients' perspectives on diagnosis delivery for these conditions in order to enhance our understanding in this area and identify potential research gaps.

**Methods:** A scoping review methodology was used, and data were summarised using content analysis.

**Results:** 47 studies fulfilled the inclusion criteria. Studies showed that although patients were generally satisfied with diagnosis delivery, a considerable proportion was still dissatisfied with aspects of the consultation, especially the information and time provided and the doctor's approach. Only six studies addressed doctors' perspectives, which focused more on doctors' practice.

**Conclusion:** There was a significant research gap in professionals' perspectives. The review also found that although basic standards of good practice were being met, a significant proportion of patients were dissatisfied with diagnosis communication.Practice Implications: Professionals delivering such diagnoses need to assess and respond to patients' information needs, provide time for questions and maintain an empathic attitude.

#### Title: The effect on deep brain stimulation of subthalamic nucleus and dopaminergic treatment in Parkinson disease.

#### Citation: Medicine; Aug 2020; vol. 99 (no. 32); p. 1-5

**Author(s):** Buono ; Palmeri, Rosanna; Stroscio, Giuseppe; Corallo, Francesco; Lorenzo, Giuseppe Di; Sorbera, Chiara; Ciurleo, Rosella; Cimino, Vincenzo; Bramanti, Placido; Marino, Silvia; Bonanno, Lilla; Lo Buono, Viviana; Di Lorenzo, Giuseppe

Abstract: Impulsivity is a frequent non-motor symptom in Parkinson disease (PD). It comprises psycho-behavioral alterations that negatively impact quality of life. Dopaminergic treatments underpin many impulsive controls disorders however, side effects, such as increased impulsivity, are described also after neurosurgical procedure of deep brain stimulation (DBS). We investigated the effect of deep brain stimulation on psycho-behavioral alterations and guality of life (QoL) in PD patients, analyzing, also, the role of dopaminergic therapies. Twenty idiopathic PD patients with and 20 idiopathic PD patients without DBS were included in the study. All patient underwent to neuropsychological assessment for a screening of executive functions, impulsivity, anxiety and depressive symptoms and QoL. Differences were found between DBS and no DBS groups and in term of dopaminergic therapies. The comparison between 2 groups showed a greater motor and attentional impulsivity in DBS patients. Moreover, this impulsivity worse QoL and interpersonal relationships. The combination of Levodopa and dopamine agonists exerted a great impact on impulsivity behavior. The emergence of postoperative impulsivity seems to be a neurostimulator phenomenon related to the computational role of the subthalamic nucleus in modulation of behavior.

### Title: Utilizing patient advocates in Parkinson's disease: A proposed framework for patient engagement and the modern metrics that can determine its success.

**Citation:** Health Expectations; Aug 2020; vol. 23 (no. 4); p. 722-730 **Author(s):** Feeney ; Evers, Christiana; Agpalo, Danielle; Cone, Lisa; Fleisher, Jori; Schroeder, Karlin

**Abstract:** The wide application of patient engagement and its associated benefits has increased across government, academic and pharmaceutical research. However, neither an identified standard practice for the process of engagement, nor utilization of common metrics

to assess associated outcomes, exists. Parkinson's Foundation developed a patient engagement framework and metrics to assess engagement within the academic research and drug development sectors. This approach was developed over the course of several years through assessing the literature, acquiring feedback from researchers and people with Parkinson's disease and adapting practices to be relevant and generalizable across patient engagement projects. This framework includes the: 1) creation of a scope of work, 2) establishment of guiding principles, 3) selection and training of participants, 4) codetermination of project metrics, 5) execution of the project and 6) dissemination of project findings. Parkinson's Foundation has also worked with academic, government and pharmaceutical stakeholders to identify metrics that assess both the quality of patient engagement and outcomes associated with patient engagement on projects. By improving patient engagement project methodologies and metrics, global clinical trials can have access to evidence-based patient engagement practices to more efficiently capture the needs of, and potentially benefit, the patient community.

#### Title: "On time - every time" A new strategy for dosing levodopa in hospital.

**Citation:** Journal of Pharmacy Practice & Research; Aug 2020; vol. 50 (no. 4); p. 339-344 **Author(s):** Ortiz

**Abstract:** Most Parkinson's Disease (PD) patients are hospitalised for reasons other than their PD. Their PD symptoms are usually under control before admission, however, too many seem to experience medication-related problems in hospital. Hospitalised PD patients should receive their levodopa within 30 min of the scheduled time ("on time") and not miss doses ("every time"). Hospital staff should avoid prescribing and administering contraindicated dopamine antagonists to PD patients in their care. Multiple studies have shown the failure to deliver levodopa "on time" to PD patients, with less than 50% of doses being "on time" and an average 0.7 of doses missed each day. The evidence points to hospital medication administration systems (HMAS) as the likely cause of late and missed levodopa doses. PD medication administration guidelines were reviewed to find strategies that reduced late and missed doses. An integrated "on time – every time" medication administer their medication in hospital. More PD nurse navigators will be needed to facilitate PD patient care in Australian hospitals.

#### Title: The Effect of Virtual Reality on the Ability to Perform Activities of Daily Living, Balance During Gait, and Motor Function in Parkinson Disease Patients: A Systematic Review and Meta-Analysis.

**Citation:** American Journal of Physical Medicine & Rehabilitation; Oct 2020; vol. 99 (no. 10); p. 917-924

**Author(s):** Lina ; Guoen, Cai; Huidan, Weng; Yingqing, Wang; Ying, Chen; Xiaochun, Chen; Qinyong, Ye

**Abstract:** Supplemental digital content is available in the text. Objective: The study aimed to evaluate the effect of virtual reality on balance, motor function, gait, and the ability to perform activities of daily living in patients with Parkinson disease. Methods: We searched Cochran Central Register of Controlled Trials, Embase, PubMed, Wanfang Data, VIP Database, and China National Knowledge Infrastructure from their inception to June 2019. Two authors independently screened articles for inclusion, extracted data, and evaluated quality. Results: Twelve randomized clinical trials involving 360 patients were included. It demonstrated that

virtual reality can improve balance, measured by the Berg Balance Scale (fixed model weighted mean difference = 2.28, 95% CI = 1.39 to 3.16, P < 0.00001); strengthen motor function, assessed by the Timed Up and Go test (fixed model weighted mean difference = -1.66, 95% CI = -2.74 to 0.58, P = 0.003); enhance gait ability, assessed by the 10-Meter Walk Test Time (fixed model weighted mean difference = 0.13, 95% CI = 0.02 to 0.24, P = 0.02) in patients with Parkinson disease. It also showed that virtual reality can improve individuals' ability to perform activities of daily living, assessed by modified Barthel Index (fixed model weighted mean difference = 2.93, 95% CI = 0.8 to 5.06, P = 0.007). Conclusions: The findings suggest that virtual reality rehabilitation may be valuable in improving the balance, motor function, gait, and ability to perform activities of daily living in patients with Parkinson disease.

### Title: A walking dance to improve gait speed for people with Parkinson disease: a pilot study.

**Citation:** Neurodegenerative Disease Management; Oct 2020; vol. 10 (no. 5); p. 301-308 **Author(s):** Harrison ; Earhart, Gammon M; Leventhal, David; Quinn, Lori; Pietro Mazzoni

**Aim:** To determine the effectiveness of a targeted dance intervention to improve walking speed for people with Parkinson disease (PD) by increasing motor motivation.

**Materials and Methods:** 11 participants with PD participated in a 6-week pilot study in which they learned a contemporary dance composed of walking steps and designed to mimic everyday walking. 1 h classes occurred twice-weekly.

**Results:** Pre- and post-intervention assessments revealed a significant increase in gait speed (t9 = 3.30; p = 0.009), cadence (t9 = 2.345; p = 0.044), and stride length (t9 = 3.757; p = 0.005), and a significant decrease (improvement) in single support time variability (t9 = -2.744; p = 0.022). There were no significant changes in other measures of gait variability nor in motor symptoms, mood and anxiety, extent of life-space mobility, or quality of life. No adverse events were reported.

**Conclusion:** Joywalk provides preliminary evidence that a targeted physical intervention for people with PD may specifically counter bradykinesia.

### Title: Application of the '5-2-1' screening criteria in advanced Parkinson's disease: interim analysis of DUOGLOBE.

Citation: Neurodegenerative Disease Management; Oct 2020; vol. 10 (no. 5); p. 309-323

**Author(s):** Aldred ; Anca-Herschkovitsch, Marieta; Antonini, Angelo; Bajenaru, Ovidiu; Bergmann, Lars; Bourgeois, Paul; Cubo, Esther; Davis, Thomas L; Iansek, Robert; Kovács, Norbert; Kukreja, Pavnit; Onuk, Koray; Pontieri, Francesco E; Robieson, Weining; Siddiqui, Mustafa S; Simu, Mihaela; Standaert, David G; Chaudhuri, K Ray

**Aim:** A Delphi expert consensus panel proposed that fulfilling  $\geq 1$  of the '5-2-1 criteria' ( $\geq$ fivetimes daily oral levodopa use,  $\geq$ two daily hours with 'Off' symptoms or  $\geq$ one daily hour with troublesome dyskinesia) suggests advanced Parkinson's disease (PD).

**Patients and Methods:** DUOdopa/Duopa in Patients with Advanced PD – a GLobal OBservational Study Evaluating Long-Term Effectiveness (DUOGLOBE) – is a single-arm, postmarketing, observational, long-term effectiveness study of levodopa–carbidopa intestinal gel (LCIG) for advanced PD.

**Results:** This 6-month interim analysis (n = 139) affirms that most (98%) enrolled patients fulfill  $\geq$ 1 of the 5-2-1 criteria. These patients responded favorably to LCIG treatment. Safety was consistent with other LCIG studies.

**Conclusion:** In advanced PD patients, the 5-2-1 criteria generally aligns with clinician assessment. Clinical Trial Registration: NCT02611713 (ClinicalTrials.gov)

#### Title: Promoting Physical Activity via Telehealth in People With Parkinson Disease: The Path Forward After the COVID-19 Pandemic?

**Citation:** Physical Therapy; Oct 2020; vol. 100 (no. 10); p. 1730-1736 **Author(s):** Quinn ; Macpherson, Chelsea; Long, Katrina; Shah, Hiral

**Objective:** There is mounting evidence in support of exercise and physical activity as a firstline approach to managing symptoms and potentially altering disease progression in people with Parkinson disease (PD). For many patients, a critical gap is the need for expert guidance to overcome barriers, set realistic goals, and provide personalized advice to optimize exercise uptake and adherence. The purpose of this case report is to describe a physical activity coaching program (Engage-PD) for individuals newly diagnosed with PD and to highlight rapid modifications made to this program in response to the COVID-19 pandemic.

**Methods (Case Description):** Engage-PD is a single cohort implementation study of a coaching intervention grounded in self-determination theory being conducted at Columbia University Parkinson's Foundation Center of Excellence in New York City, NY (USA), the early epicenter of the COVID-19 pandemic in the United States. The project was uniquely positioned to be adapted to telehealth delivery and to address an immediate need for support and guidance in the home environment, including people with early-mid–stage PD. Participants completed baseline and follow-up (3 months) assessments and participated in up to 4 coaching sessions, all delivered via a telehealth platform. The intervention incorporated 1:1 coaching, goal-setting, physical activity monitoring, and use of a disease-specific workbook to promote and support safe exercise uptake.

**Results:** While the program is ongoing, 52 referrals were received and 27 individuals with PD enrolled in the first 2 months of the pandemic for a recruitment rate of 52%. Although direct comparisons with pre-coronavirus recruitment are difficult due to the recency of the Engage-PD implementation study, this recruitment rate was larger than expected, which may have been due to several factors (eg, most patients had limited, if any, access to inperson programs and therapy services during this time, so the Engage program filled an immediate need to provide exercise and activity guidance). There was a wide range of scores for both baseline physical activity and self-efficacy measures.

**Conclusion:** Remotely delivered interventions may serve as a sustainable platform for physical activity coaching programs for people with PD as well as other neurodegenerative diseases. Impact With the uncertainty brought about by the current pandemic, this case report highlights the opportunity to shift the current model of care for individuals with neurodegenerative diseases such as PD.

### Title: Elevated Serum Ceruloplasmin Levels Are Associated with Higher Impulsivity in People with Parkinson's Disease.

Citation: Parkinson's Disease (20420080); Sep 2020 ; p. 1-7

**Author(s):** Bakeberg ; Riley, Maddeson; Byrnes, Michelle; Jefferson, Alexa; Ghosh, Souyma; Horne, Malcom K.; McGregor, Sarah; Stell, Rick; Walters, Sue; Evans, Tess; Roberts, Katherine; Mastaglia, Frank L.; Anderton, Ryan S.

**Background:** Heightened impulsivity has been reported in a subset of people with Parkinson's disease (PwP) and is considered a risk factor for the development of impulse control disorders (ICDs). However, at present, there are no recognised biochemical markers of heightened impulsivity. Objectives. To determine if ceruloplasmin, a serum marker involved in the regulation of iron and copper homeostasis, is associated with trait impulsivity in PwP.

**Methods:** The study measured serum ceruloplasmin and impulsivity using the Barratt Impulsiveness Scale (BIS-11) in an Australian cohort of 214 PwP. Multivariate general linear models (GLMs) were used to identify whether higher serum ceruloplasmin levels (>75th percentile) were significantly predictive of BIS-11 scores.

**Results:** Serum ceruloplasmin was higher in females with PD (p < 0.001) and associated with MDS-UPDRS III, Hoehn and Yahr, and ACE-R scores (p < 0.05). When correcting for covariates, higher serum ceruloplasmin concentrations were associated with the 2nd order nonplanning impulsivity and with the 1st order self-control and cognitive complexity impulsivity domains.

**Conclusions:** Higher serum ceruloplasmin levels are independently associated with heightened nonplanning impulsivity in PwP. Thus, serum ceruloplasmin levels may have clinical utility as a marker for heightened impulsivity in PD.

### Title: Parkinson's Disease-Related Risk of Suicide and Effect of Deep Brain Stimulation: Meta-Analysis.

Citation: Parkinson's Disease (20420080); Sep 2020 ; p. 1-10

**Author(s):** Du ; Liu, Xi; Zhou, Xuan; Wang, Hui; Zhou, Wen; Jiang, Jin; Peng, Wuxue; Mo, Lijuan; Tan, Changhong; Chen, Lifen

**Background:** Previous studies investigated the risk of suicide in patients with Parkinson's disease (PD) but reported discrepant results. Deep brain stimulation (DBS) is an effective therapy for PD, while its effect on suicide risk has seldom been researched. This metaanalysis aimed to estimate the risk of suicide and/or suicidal ideation in PD patients and in PD patients who underwent DBS.

**Methods:** Relevant articles published in the PubMed or EMBASE or CNKI database from 1990 to December 2019 were sourced, and the combined standardized mortality rate (SMR) or odds ratio (OR) was pooled.

**Result:** A total of 1070 articles were found. After screening, 4 cross-sectional studies, 4 cohort studies, 2 randomized controlled trial studies, and 2 case-control studies were included in this meta-analysis. Pooled data indicated that PD patients may have increased risk of suicide (InSMR, 0.459; 95% confidence interval (CI), 0.286 to 0.632; p < 0.001). No significant difference was found in the risk of suicide when comparing PD patients who underwent DBS with PD patients who received only drug therapy (OR = 2.844, 95%CI: 0.619 to 13.072, p = 0.179). DBS may increase the risk of suicide and/or suicidal ideation in PD patients compared with general population (InSMR = 3.383, 95%CI: 2.839 to 3.927, p < 0.001).

**Conclusion:** PD patients have higher risk of suicide and/or suicidal ideation compared with controls, while PD patients who received DBS tend to have an increased risk of suicide or

suicidal ideation. Psychological evaluation is needed in PD patients, and pre- and postoperation evaluations are necessary for PD patients who underwent DBS.

### Title: Evaluation of Wearable Sensor Devices in Parkinson's Disease: A Review of Current Status and Future Prospects.

Citation: Parkinson's Disease (20420080); Sep 2020 ; p. 1-8

**Author(s):** Lu ; Xu, Yan; Li, Xiaohui; Fan, Yongli; Zeng, Weiqi; Tan, Yang; Ren, Kang; Chen, Wenwu; Cao, Xuebing

**Abstract:** Parkinson's disease (PD) decreases the quality of life of the affected individuals. The incidence of PD is expected to increase given the growing aging population. Motor symptoms associated with PD render the patients unable to self-care and function properly. Given that several drugs have been developed to control motor symptoms, highly sensitive scales for clinical evaluation of drug efficacy are needed. Among such scales, the objective and continuous evaluation of wearable devices is increasingly utilized by clinicians and patients. Several electronic technologies have revolutionized the clinical monitoring of PD development, especially its motor symptoms. Here, we review and discuss the recent advances in the development of wearable devices for bradykinesia, tremor, gait, and myotonia. Our aim is to capture the experiences of patients and clinicians, as well as expand our understanding on the application of wearable technology. In so-doing, we lay the foundation for further research into the use of wearable technology in the management of PD.

### Title: Clinical Features and Correlates of Poor Nighttime Sleepiness in Patients with Parkinson's Disease.

Citation: Parkinson's Disease (20420080); Sep 2020 ; p. 1-9

**Author(s):** Qin ; Li, Xue; Chen, Gang; Chen, Xu; Shi, Mingyu; Liu, Xue-kui; Li, Zai-li; Xin, Zai-e; Gao, Dianshuai

**Objective:** The present study investigated the clinical features and correlates of poor nighttime sleepiness (PNS) in patients with Parkinson's disease (PD).

**Methods:** One hundred ten patients with PD (divided into PD-PNS group and PD-nPNS group) and forty-seven controls (nPD-PNS group) were enrolled in this study. Demographic information was collected. Patients were assessed according to the unified Parkinson's disease rating scale (UPDRS) and Hoehn–Yahr (H&Y) stage scale. Patients were also evaluated according to the Pittsburgh sleep quality index (PSQI), Epworth sleepiness scale (ESS), rapid eye movement sleep behavior disorder screening questionnaire (RBD-SQ), restless leg syndrome (RLS) diagnosis, Hamilton's depression scale (HAMD), and Hamilton's anxiety scale (HAMA).

**Results:** The prevalence of PNS was 55.45% (61/110) in patients with PD. The PD-PNS group tended to have a longer duration of disease, higher UPDRS-I and UPDRS-III scores, a higher percentage of RLS patients, and higher HAMA and HAMD scores than those of the PD-nPNS group. The PD-PNS group tended to have a higher percentage of RBD and RLS patients and higher HAMA and HAMD scores than those of the nPD-PNS group. Analysis of the PSQI components and PSQI impact factors showed that the PD-PNS group had worse subjective sleep quality ( $\chi 2 = -2.267$ , P = 0.023), shorter sleep latency ( $\chi 2 = -2.262$ , P = 0.024), fewer sleep medications ( $\chi 2 = -4.170$ , P  $\leq$  0.001), worse daytime functioning ( $\chi 2 = -2.347$ , P = 0.019), and an even higher prevalence of increased nocturia ( $\chi 2 = 4.447$ , P =

0.035), nightmares ( $\chi$ 2 = 7.887, P = 0.005), and pain ( $\chi$ 2 = 9.604, P = 0.002) than those of the nPD-PNS group. Analysis also indicated that the PSQI global score positively correlated with BMI (r = 0.216, P < 0.05), H&Y stage (r = 0.223, P < 0.05), UPDRS-I (r = 0.501, P < 0.01), UPDRS-III (r = 0.425, P < 0.01), ESS (r = -0.296, P < 0.01), RBD (r = 0.227, P < 0.05), RLS (r = 0.254, P < 0.01), HAMA (r = 0.329, P < 0.01), and HAMD (r = 0.466, P < 0.01). In the final model, H&Y stage, RLS, UPDRS-III, and HAMD remained associated with the PQSI score (P ≤ 0.001, P ≤ 0.001, P = 0.049, P ≤ 0.001, respectively).

**Conclusions:** Our data showed that PNS was common in patients with PD. H&Y stage, UPDRS-III, HAMD, and RLS were positively associated with PNS. Attention to the management of motor symptoms, RLS, and depression may be beneficial to nighttime sleep quality in patients with PD.

#### Title: Visual Impairment Is More Common in Patients with Parkinson's Disease.

Citation: Neurology Today; Sep 2020; vol. 20 (no. 17); p. 6-7 Author(s): Fitzgerald, Susan

### Title: Comparing the influence of exercise intensity on brain-derived neurotrophic factor serum levels in people with Parkinson's disease: a pilot study.

**Citation:** Aging Clinical & Experimental Research; Sep 2020; vol. 32 (no. 9); p. 1731-1738 **Author(s):** O'Callaghan ; Harvey, Marguerite; Houghton, David; Gray, William K.; Weston, Kathryn L.; Oates, Lloyd L.; Romano, Barbara; Walker, Richard W.

**Introduction:** Endogenous brain-derived neurotrophic factor (BDNF) is thought to be protective against the neurodegeneration seen in Parkinson's disease (PD), and is thought to increase during exercise. This has been proposed as a possible mechanism by which exercise improves outcomes for people with PD. We conducted a pilot study to investigate the role of exercise intensity on BDNF levels in people with PD.

**Methods:** Participants of early- to mid-stage disease were recruited from a single PD service in north-east England, UK into two separate studies of exercise in PD, one involving moderate-intensity continuous training (MICT) and one involving high-intensity interval training (HIIT), both had control groups. In both the interventions, participants exercise three times per week for 12 weeks. Blood samples were taken for BDNF analysis at the start and end of the first session and the start and end of the final session, with corresponding samples taken in controls.

**Results:** Data were available for 27 participants (13 intervention, 14 control) in the MICT intervention and 17 (9 intervention, 8 control) in the HIIT intervention. BDNF level did not rise significantly from the start to end of individual sessions. Across the 12 week period, they rose significantly in the HIIT intervention group, but not in controls or the MICT intervention group.

**Conclusions:** High-intensity interval training appears to have a greater impact on BDNF than MICT. Future work should directly compare exercise modalities and investigate the impact of BDNF levels on disease progression and quality of life.

Title: Highly challenging balance and gait training for individuals with Parkinson's disease improves pace, rhythm and variability domains of gait - A secondary analysis from a randomized controlled trial.

Citation: Clinical rehabilitation; Sep 2020 ; p. 269215520956503

Author(s): Rennie, Linda; Opheim, Arve; Dietrichs, Espen; Löfgren, Niklas; Franzén, Erika

**Objective:** Evaluate immediate and long-term effects of highly challenging balance and gait training on pace-, rhythm-, variability-, asymmetry-, and postural control domains of gait for individuals with Parkinson's disease (PD).

Design: Randomized controlled trial - a secondary analysis.

Setting: University hospital setting.

**Participants:** One-hundred older adults with mild to moderate PD (Hoehn & Yahr 2 and 3). **Intervention:** Training group (n = 51): 10 weeks (3 times/week) of intensive balance and gait training, incorporating dual tasks. Control group (n = 49): care as usual.

**Main Outcome Measures:** Spatiotemporal gait variables collected during normal and fast walking on a pressure-sensitive mat. A linear mixed model was used to evaluate training effects post intervention and at the 6 and 12 month follow-up.

**Results:** Immediate training effects in the pace domain of gait were increased step velocity (normal speed: 8.2 cm/s, P = 0.04; fast: 10.8 cm/s, P < 0.01), increased step length (normal speed: 3 cm, P = 0.05; fast: 2.3 cm, P = 0.05) and reduced swing time variability (fast speed: -2.5 ms, P = 0.02). In the rhythm domain reduced step time (fast speed: -19.3 ms, P = 0.02), stance time (normal: -24.3 ms, P = 0.01; fast: -29.6 ms, P = 0.02) and swing time (fast speed: -8.7 ms, P = 0.04) was seen. Relative to the variability domain, the training decreased step time variability (fast: -2.8 ms, P = 0.02) and stance time variability (fast: -3.9 ms, P = 0.02). No training effects were retained at 6 months.

**Conclusions:** Highly challenging balance and gait training improved pace, rhythm and variability aspects of PD gait in the short-term, but effects are not retained long-term. **Trial Registration Number:** NCT01417598

### Title: A new swallowing supplement for dysphagia in patients with Parkinson's disease.

**Citation:** Neurological sciences : official journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology; Sep 2020

**Author(s):** Oh, Eungseok; Jee, Sungju; Kim, Beom Keun; Lee, Jung Seon; Cho, Kanghee; Ahn, Soyoung

**Abstract:** Dysphagia associated with Parkinson's disease (PD) affects the mortality and quality of life of patients with PD. Avoiding aspiration and maintaining swallowing ability are among the concerns regarding PD care. Therefore, we developed a swallowing supplement for easier swallowing and tolerability in patients with PD. Thirty patients with PD and 50 healthy controls were enrolled and their swallowing function measured using the videofluoroscopic swallowing study (VFSS) and several dysphagia scales. The Unified Parkinson's Disease Rating Scale motor scores, Hoehn and Yahr stage, and levodopa doses were evaluated in patients with PD. The VFSS and survey were used to assess the viscosity, color, taste, nutrition, safety, and tolerability of the swallowing supplement. The MMSE score, serum albumin, and hemoglobin levels, and oral conditions were worse in the PD group than in the control group. Compared with controls, patients with PD had significantly lower total and sub-item scores of the swallowing quality of life (swal-QoL). Using commercialized yogurt, the pharyngeal delay time (PDT) and the modified penetration

aspiration scale were higher in the PD group than in the control group. The swallowing supplement significantly shortened the PDT and pharyngeal transit time (PTT). Moreover, compared with commercialized yogurt, it improved pharyngeal wall coating, PTT, and aspiration in the videofluoroscopic dysphagia subscales. The survey scores were above average to good in the "easy swallowing" and "pharyngeal residual sense" items and tolerable in the remaining 6 preference items. This swallowing supplement could prevent aspiration and dysphagia complications in patients with PD.

### Title: The ability of the eating assessment tool-10 to detect penetration and aspiration in Parkinson's disease.

**Citation:** European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery; Sep 2020

**Author(s):** Schlickewei, Ole; Nienstedt, Julie Cläre; Frank, Ulrike; Fründt, Odette; Pötter-Nerger, Monika; Gerloff, Christian; Buhmann, Carsten; Müller, Frank; Lezius, Susanne; Koseki, Jana-Christiane; Pflug, Christina

**Purpose:** Dysphagia is common in patients with Parkinson's disease (PD) and often leads to pneumonia, malnutrition, and reduced quality of life. This study investigates the ability of the Eating Assessment Tool-10 (EAT-10), an established, easy self-administered screening tool, to detect aspiration in PD patients. This study aims to validate the ability of the EAT-10 to detect FEES-proven aspiration in patients with PD.

**Methods:** In a controlled prospective cross-sectional study, a total of 50 PD patients completed the EAT-10 and, subsequently, were examined by Flexible Endoscopic Evaluation of Swallowing (FEES) to determine the swallowing status. The results were rated through the Penetration-Aspiration Scale (PAS) and data were analyzed retrospectively.

**Results:** PAS and EAT-10 did not correlate significantly. Selected items of the EAT-10 could not predict aspiration or residues. 19 (38%) out of 50 patients with either penetration or aspiration were not detected by the EAT-10. The diagnostic accuracy was established at only a sufficient level (AUC 0.65). An optimal cut-off value of  $\geq$  6 presented a sensitivity of 58% and specificity of 82%.

**Conclusions:** The EAT-10 is not suited for the detection of penetration and aspiration in PD patients. Therefore, it cannot be used as a screening method in this patient population. There is still a need for a valid, simple, and efficient screening tool to assist physicians in their daily diagnostics and to avoid clinical complications.

### Title: Longitudinal prediction of falls and near falls frequencies in Parkinson's disease: a prospective cohort study.

Citation: Journal of neurology; Sep 2020

Author(s): Lindholm, Beata; Brogårdh, Christina; Odin, Per; Hagell, Peter

**Introduction and Objective:** Several prediction models for falls/near falls in Parkinson's disease (PD) have been proposed. However, longitudinal predictors of frequency of falls/near falls are poorly investigated. Therefore, we aimed to identify short- and long-term predictors of the number of falls/near falls in PD.

**Methods:** A prospective cohort of 58 persons with PD was assessed at baseline (mean age and PD duration, 65 and 3.2 years, respectively) and 3.5 years later. Potential predictors

were history of falls and near falls, comfortable gait speed, freezing of gate, dyskinesia, retropulsion, tandem gait (TG), pain, and cognition (Mini-Mental State Exam, MMSE). After each assessment, the participants registered a number of falls/near falls during the following 6 months. Multivariate Poisson regression was used to identify short- and long-term predictors of a number of falls/near falls.

**Results:** Baseline median (q1-q3) motor (UPDRS) and MMSE scores were 10 (6.75-14) and 28.5 (27-29), respectively. History of falls was the only significant short-time predictor [incidence rate ratio (IRR), 15.17] for the number of falls/near falls during 6 months following baseline. Abnormal TG (IRR, 3.77) and lower MMSE scores (IRR, 1.17) were short-term predictors 3.5 years later. Abnormal TG (IRR, 7.79) and lower MMSE scores (IRR, 1.49) at baseline were long-term predictors of the number of falls/near falls 3.5 years later.

**Conclusion:** Abnormal TG and MMSE scores predict the number of falls/near falls in short and long term, and may be indicative of disease progression. Our observations provide important additions to the evidence base for clinical fall prediction in PD.

### Title: Merging Yoga and Occupational Therapy for Parkinson's Disease: A Feasibility and Pilot Program.

Citation: Occupational therapy in health care; Sep 2020 ; p. 1-22

**Author(s):** Swink, Laura A; Fling, Brett W; Sharp, Julia L; Fruhauf, Christine A; Atler, Karen E; Schmid, Arlene A

**Abstract:** The purpose of this study was to assess feasibility and changes in outcome measures following the Merging Yoga and Occupational Therapy for Parkinson's Disease (MY-OT for PD) program: a 14-session program which combined community-based yoga for PD, and fall-risk focused group occupational therapy sessions. Seventeen participants completed an 8-week control period consisting of their normal participation, and an 8-week intervention period (14 MY-OT for PD sessions). There were fewer self-reported falls in the intervention (6) vs. control periods (10). One fall risk factor management scale (the Fall Prevention and Management Questionnaire, p=.02), and balance (p<.01) showed significant improvement between the control and intervention. The MY-OT for PD program is an encouraging occupational therapist-led program, which may improve balance and reduce self-reported falls.

#### Title: The spectrum of sleep disorders in Parkinson's disease: a review.

Citation: Chest; Sep 2020 Author(s): Ac, Lajoie; Al, Lafontaine; M, Kaminska

**Abstract:** There is increasing interest in the effects of sleep and sleep disturbances on the brain, particularly in relation to aging and neurodegenerative processes. Parkinson's disease (PD) is the second most common neurodegenerative disorder, with growing prevalence worldwide. Sleep disorders, including sleep-disordered breathing (SDB), are amongst the most frequent non-motor manifestations of PD. They can substantially impair quality of life, and possibly affect the course of the disease. This article reviews the etiology, implications and management of sleep disturbances in PD, such as excessive daytime sleepiness, insomnia, restless legs syndrome, rapid eye movement sleep behavior disorder and SDB. We also briefly explore the potential role of sleep disorders, including SDB, in the progression of neurodegeneration.

#### Title: Probiotics for constipation in Parkinson's disease: A randomized placebocontrolled study.

#### Citation: Neurology; Oct 2020

**Author(s):** Tan, Ai Huey; Lim, Shen-Yang; Chong, Kah Kian; Azhan A Manap, Mohammad Addin; Hor, Jia Wei; Lim, Jia Lun; Low, Soon Chai; Chong, Chun Wie; Mahadeva, Sanjiv; Lang, Anthony E

**Objective:** To determine whether probiotics are effective for constipation, a common and often difficult-to-treat problem, in Parkinson's disease (PD).

**Methods:** In this double-blind, randomized placebo-controlled single-centre trial, 280 PD patients were screened and 72 eligible patients were block-randomized (1:1) to receive either multi-strain probiotics capsules (n=34), or identical-appearing placebo (n=38), for four weeks. The primary endpoint was the change in the average number of spontaneous bowel movements (SBM) per week during the last two weeks of intervention, compared with the two-week pre-intervention phase, recorded by daily stool diary. Secondary outcome measures included changes in stool consistency, constipation severity score, and quality of life related to constipation. Satisfaction with intervention received was assessed. Change in levels of fecal calprotectin, a marker of intestinal inflammation, was an exploratory outcome.

**Results:** SBM increased by  $1.0\pm1.2$ /week after treatment with probiotics, and decreased by  $0.3\pm1.0$ /week in the placebo group (mean difference 1.3, 95%CI: 0.8-1.8, P<0.001). Significant improvements were also seen for secondary outcomes after correction for multiple comparisons, including stool consistency (P=0.009) and quality of life related to constipation (P=0.001). In the treatment group, 65.6% reported satisfaction with the intervention, vs. only 21.6% in the placebo group (P<0.001). One patient (2.9%) in the treatment group withdrew due to a non-serious adverse event. Fecal calprotectin did not change significantly during the study.

**Conclusions:** Multi-strain probiotics treatment was effective for constipation in PD. Further studies are needed to investigate the long-term efficacy and safety of probiotics in PD, as well as their mechanisms of action.

**Classification Of Evidence:** This study provides Class I evidence that for people with PD, multi-strain probiotics significantly increased the average number of spontaneous bowel movements per week

#### Title: A case of probable Parkinson's disease after SARS-CoV-2 infection.

Citation: The Lancet. Neurology; Oct 2020; vol. 19 (no. 10); p. 804-805

**Author(s):** Cohen, Mikhal E; Eichel, Roni; Steiner-Birmanns, Bettina; Janah, Amir; Ioshpa, Maxim; Bar-Shalom, Rachel; Paul, Jefri J; Gaber, Hanaa; Skrahina, Volha; Bornstein, Natan M; Yahalom, Gilad

### Title: Sleep Problems Are Related to a Worse Quality of Life and a Greater Non-Motor Symptoms Burden in Parkinson's Disease.

Citation: Journal of geriatric psychiatry and neurology; Oct 2020 ; p. 891988720964250

**Author(s):** Santos-García, Diego; Castro, E Suárez; de Deus Fonticoba, T; Panceiras, M J Feal; Enriquez, J G Muñoz; González, J M Paz; Bartolomé, C Cores; Planellas, L L; Caldentey, J García; Caballol, N; Legarda, I; López, I Cabo; Manzanares, L López; Rivera, M A Ávila; Catalán, M J; Nogueira, V; Borrué, C; Sauco, M Álvarez; Vela, L; Cubo, E; Castrillo, J C Martínez; Alonso, P Sánchez; Losada, M G Alonso; Ariztegui, N López; Gastón, M I; Kulisevsky, J; Pagonabarraga, J; Seijo, M; Martínez, J Ruíz; Valero, C; Kurtis, M; Ardura, J González; Prieto, C; Mir, P; Martinez-Martin, P

**Introduction:** The aim of the present study was to examine the frequency of self-reported sleep problems and their associated factors in a large cohort of PD patients.

**Methods:** PD patients and controls, recruited from 35 centers of Spain from the COPPADIS cohort were included in this cross-sectional study. Sleep problems were assessed by the Spanish version of the Parkinson's disease Sleep Scale version 1 (PDSS-1). An overall score below 82 or a score below 5 on at least 1 item was defined as sleep problems.

**Results:** The frequency of sleep problems was nearly double in PD patients compared to controls: 65.8% (448/681) vs 33.5% (65/206) (p < 0.0001). Mean total PDSS score was lower in PD patients than controls:  $114.9 \pm 28.8$  vs  $132.8 \pm 16.3$  (p < 0.0001). Quality of life (QoL) was worse in PD patients with sleep problems compared to those without: PDQ-39SI,  $19.3 \pm 14$  vs  $13 \pm 11.6$  (p < 0.0001); EUROHIS-QoL8,  $3.7 \pm 0.5$  vs  $3.9 \pm 0.5$  (p < 0.0001). Non-motor symptoms burden (NMSS; OR = 1.029; 95%CI 1.015-1.043; p < 0.0001) and impulse control behaviors (QUIP-RS; OR = 1.054; 95%CI 1.009-1.101; p = 0.018) were associated with sleep problems after adjustment for age, gender, disease duration, daily equivalent levodopa dose, H&Y, UPDRS-III, UPDRS-IV, PD-CRS, BDI-II, NPI, VAS-Pain, VAFS, FOGQ, and total number of non-antiparkinsonian treatments.

**Conclusion:** Sleep problems were frequent in PD patients and were related to both a worse QoL and a greater non-motor symptoms burden in PD. These findings call for increased awareness of sleep problems in PD patients.

Title: A systematic review of active group-based dance, singing, music therapy and theatrical interventions for quality of life, functional communication, speech, motor function and cognitive status in people with Parkinson's disease.

**Citation:** BMC neurology; Oct 2020; vol. 20 (no. 1); p. 371 **Author(s):** Barnish, Maxwell S; Barran, Susannah M

**Background:** Parkinson's disease (PD) is a common neurodegenerative condition associated with a wide range of motor and non-motor symptoms. There has been increasing interest in the potential benefit of performing arts as a therapeutic medium in PD. While there have been previous reviews, none have considered all performing arts modalities and most have focused on dance. This systematic review examined the potential benefit of all active group-based performing arts interventions for quality of life, functional communication, speech, motor function and cognitive status.

**Methods:** Searches were conducted in February 2020 on five scholarly databases. Supplementary searches were conducted. Included studies were quantitative in design, and assessed the potential benefit of any active group-based performing arts intervention for quality of life, functional communication, speech, motor function or cognitive status in people with PD. Full text papers were eligible for inclusion, as were conference abstracts since January 2018. Screening, data extraction, narrative synthesis and quality assessment were conducted independently by two reviewers. Quality assessment used the SURE checklists.

**Results:** Fifty-six studies were eligible for inclusion in this systematic review, reported in 67 publications. Published from 1989 to 2020, these studies included a total of 1531 people with PD from 12 countries, and covered four broad performing arts modalities: dance, singing, music therapy and theatre. Dance remains the most commonly studied performing arts modality for PD (38 studies), while there were 12 studies on singing interventions, four

on music therapy, and only two on theatrical interventions. There was evidence for a beneficial effect of all four performing arts modalities on at least some outcome domains.

**Conclusions:** This is the first systematic review to assess the potential benefit of all active group-based performing arts interventions in PD. The evidence suggests that performing arts may be a useful therapeutic medium in PD. However, a substantial limitation of the evidence base is that no studies compared interventions from different performing arts modalities. Moreover, not all performing arts modalities were assessed for all outcome domains. Therefore it is not currently possible to determine which performing arts modalities are most beneficial for which specific outcomes.

#### Title: Health behaviors a year after an early intervention exercise and education program for people with Parkinson's disease.

**Citation:** Neurodegenerative disease management; Oct 2020 **Author(s):** Li, Gillian; Horne, Jeremey; Paul, Serene S

**Aim:** To evaluate the impact of an early intervention program on exercise behavior and mood in people with Parkinson's disease (PD) 1 year following participation.

**Patients and Methods:** Education and exercise program participants (n = 152) were followed up for 1 year. Changes in exercise behavior and mood and factors associated with these changes were examined.

**Results:** At follow-up, 28% more participants exercised (p < 0.001). Changes in the proportion reporting depression (12% reduction; p = 0.10) or anxiety (4% increase, p = 0.09) were not statistically significant.

**Conclusion:** An education and exercise program promoted positive exercise behavior change sustained for a year, supporting the importance of early intervention for people with PD. Future research should explore sustainable ways to encourage prolonged behavior change, including regular follow-up.

### Title: Hoping for the best, planning for the worst: Palliative care approach to Parkinson disease during the COVID-19 pandemic.

**Citation:** Parkinsonism & related disorders; Oct 2020 **Author(s):** Indu Subramanian; Christina L Vaughan

**Abstract:** Palliative care emphasizes expertise in handling difficult conversations, discussing patients' wishes and supporting the caregiver(s). Here we outline the palliative approach of hoping for the best while preparing for the worst in several "what if" scenarios for people with Parkinson disease and their families during the COVID-19 pandemic.

#### Title: A Mobile App Specifically Designed to Facilitate Exercise in Parkinson Disease: Single-Cohort Pilot Study on Feasibility, Safety, and Signal of Efficacy.

**Citation:** JMIR mHealth and uHealth; Oct 2020; vol. 8 (no. 10); p. e18985 **Author(s):** Landers, Merrill R; Ellis, Terry D

**Background:** Many people with Parkinson disease do not have access to exercise programs that are specifically tailored to their needs and capabilities. This mobile app allows

people with Parkinson disease to access Parkinson disease-specific exercises that are individually tailored using in-app demographic questions and performance tests which are fed into an algorithm which in turn produces a video-guided exercise program.

**Objective:** To test the feasibility, safety, and signal of efficacy of a mobile app that facilitates exercise for people with Parkinson disease.

Methods: A prospective, single-cohort design of people with Parkinson disease who had downloaded the 9zest app for exercise was used for this 12-week pilot study. Participants, who were recruited online, were encouraged to exercise with the full automated app for ≥150 minutes each week. The primary endpoints were feasibility (app usage and usability questions) and safety (adverse events and falls). The primary endpoints for signal of efficacy were a comparison of the in-app baseline and 8-week outcomes on the 30-second Sit-To-Stand (STS) test, Timed Up and Go (TUG) test, and the Parkinson's Disease Questionnaire 8 (PDQ8).

**Results:** For feasibility, of the 28 participants that completed the study, 12 participants averaged >150 minutes of app usage per week (3 averaged 120-150, 4 averaged 90-120, and 9 averaged less than 90 minutes). A majority of participants (>74%) felt the exercise was of value (16/19; 9 nonrespondents), provided adequate instruction (14/19; 9 nonrespondents), and was appropriate for level of function (16/19; 9 nonrespondents). For safety, there were no serious adverse events that occurred during the app-guided exercise. There were 4 reports of strain/sprain injuries while using the app among 3 participants, none of which necessitated medical attention. For signal of efficacy, there was improvement for each of the primary endpoints: STS (P=.01), TUG (P<.001), and PDQ8 (P=.01). **Conclusions:** Independent, video-guided exercise using a mobile app designed for exercise in Parkinson disease was safe and feasible though there was variability in app usage. Despite this, the results provide evidence for a signal of efficacy as there were improvements in 3 of the 3 outcomes.

### Title: Diabetes medications and risk of Parkinson's disease: a cohort study of patients with diabetes.

#### Citation: Brain : a journal of neurology; Oct 2020

**Author(s):** Brauer, Ruth; Wei, Li; Ma, Tiantian; Athauda, Dilan; Girges, Christine; Vijiaratnam, Nirosen; Auld, Grace; Whittlesea, Cate; Wong, Ian; Foltynie, Tom

Abstract: The elevated risk of Parkinson's disease in patients with diabetes might be mitigated depending on the type of drugs prescribed to treat diabetes. Population data for risk of Parkinson's disease in users of the newer types of drugs used in diabetes are scarce. We compared the risk of Parkinson's disease in patients with diabetes exposed to thiazolidinediones (glitazones), glucagon-like peptide-1 (GLP-1) receptor agonists and dipeptidyl peptidase 4 (DPP4) inhibitors, with the risk of Parkinson's disease of users of any other oral glucose lowering drugs. A population-based, longitudinal, cohort study was conducted using historic primary care data from The Health Improvement Network. Patients with a diagnosis of diabetes and a minimum of two prescriptions for diabetes medications between January 2006 and January 2019 were included in our study. The primary outcome was the first recording of a diagnosis of Parkinson's disease after the index date, identified from clinical records. We compared the risk of Parkinson's disease in individuals treated with glitazones or DPP4 inhibitors and/or GLP-1 receptor agonists to individuals treated with other antidiabetic agents using a Cox regression with inverse probability of treatment weighting based on propensity scores. Results were analysed separately for insulin users. Among 100 288 patients [mean age 62.8 years (standard deviation 12.6)], 329 (0.3%) were diagnosed with Parkinson's disease during the median follow-up of 3.33 years. The incidence of Parkinson's disease was 8 per 10 000 person-years in 21 175 patients using glitazones, 5 per 10 000 person-years in 36 897 patients using DPP4 inhibitors and 4 per

10 000 person-years in 10 684 using GLP-1 mimetics, 6861 of whom were prescribed GTZ and/or DPP4 inhibitors prior to using GLP-1 mimetics. Compared with the incidence of Parkinson's disease in the comparison group (10 per 10 000 person-years), adjusted results showed no evidence of any association between the use of glitazones and Parkinson's disease [incidence rate ratio (IRR) 1.17; 95% confidence interval (CI) 0.76-1.63; P = 0.467], but there was strong evidence of an inverse association between use of DPP4 inhibitors and GLP-1 mimetics and the onset of Parkinson's disease (IRR 0.64; 95% CI 0.43-0.88; P < 0.01 and IRR 0.38; 95% CI 0.17-0.60; P < 0.01, respectively). Results for insulin users were in the same direction, but the overall size of this group was small. The incidence of Parkinson's disease in patients diagnosed with diabetes varies substantially depending on the treatment for diabetes received. The use of DPP4 inhibitors and/or GLP-1 mimetics is associated with a lower rate of Parkinson's disease compared to the use of other oral antidiabetic drugs.

#### 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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