

# Parkinson's Disease

# Current Awareness

# Bulletin

July 2017

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**Title: Palliative care for Parkinson's disease: Patient and carer's perspectives explored through qualitative interview**

**Citation:** Palliative Medicine; Jul 2017; vol. 31 (no. 7); p. 634

**Author(s):** Fox, Siobhan; Cashell, Alison; Kernohan, W George; Lynch, Marie; McGlade, Ciara; O'Brien, Tony; O'Sullivan, Sean S; Foley, Mary J; Timmons, Suzanne

**Background:** Palliative care is recommended for non-malignant illnesses, including Parkinson's disease. However, past research with healthcare workers highlights unmet palliative needs in this population and referral rates to Specialist Palliative Care are low. Some healthcare workers perceive a 'fear' in their patients about introducing palliative care. However, less is known about the views of people with Parkinson's disease and their carers about palliative care.

**Aim:** (1) To explore the palliative care and related issues most affecting people with Parkinson's disease and their families and (2) to examine perceptions about/understanding of palliative care.

**Design:** This was a qualitative study; semi-structured interviews were conducted, transcribed and analysed using thematic analysis. Setting/participants: A total of 31 people participated, both people with Parkinson's disease (n = 19) and carers (n = 12), across three Movement Disorder Clinics in the Republic of Ireland.

**Results:** People with Parkinson's disease and their carers were unfamiliar with the term palliative care. When informed of the role of palliative care, most felt that they would benefit from this input. People with Parkinson's disease and carers experienced a high illness burden and wanted extra support. Crises requiring Specialist Palliative Care involvement may occur at diagnosis and later, with advancing illness. Participants wanted more information about palliative care and especially further supports to address their psychosocial needs.

**Conclusion:** A holistic palliative care approach could address the complex physical and psychosocial symptoms experienced by people with Parkinson's disease and their carers, and people with Parkinson's disease and their carers are open to palliative care. Further research needs to explore how palliative care can be introduced into the routine care for people with Parkinson's disease.

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**Title: Effect of Dual-Mode and Dual-Site Noninvasive Brain Stimulation on Freezing of Gait in Patients With Parkinson Disease.**

**Citation:** Archives of Physical Medicine & Rehabilitation; Jul 2017; vol. 98 (no. 7); p. 1283-1290

**Author(s):** Chang, Won Hyuk; Kim, Min Soo; Park, Eunhee; Cho, Jin Whan; Youn, Jinyoung; Kim, Yun Kwan; Kim, Yun-Hee

**Objective:** To investigate the effect of dual-mode noninvasive brain stimulation (NIBS) with high-frequency repetitive transcranial magnetic stimulation (rTMS) over the primary motor cortex of the lower leg and anodal transcranial direct current stimulation (tDCS) over the left dorsolateral prefrontal cortex compared with rTMS alone in patients with Parkinson disease (PD) with freezing of gait (FOG).

**Design:** Randomized, double-blind, controlled study.

**Setting:** Outpatient rehabilitation clinics. Participants Patients diagnosed as having PD with FOG (N=32). Interventions Patients in the dual-mode group underwent 5 consecutive daily sessions of dual-mode NIBS with high-frequency rTMS and tDCS simultaneously, whereas patients in the rTMS group underwent high-frequency rTMS and sham tDCS.

**Main Outcome Measures:** Assessments of FOG and motor, ambulatory, and cognitive function were performed 3 times: at baseline before NIBS, immediately after NIBS, and 1 week after cessation of NIBS. Results Serious adverse effects were not observed in either group. Significant changes over time were observed in FOG, motor function, and ambulatory function in each group; however, there was no significant difference between the 2 groups. Executive function showed significant improvement after NIBS only in the dual-mode group.

**Conclusions:** These results suggest the potential for dual-mode NIBS to modulate 2 different cortices simultaneously. Dual-mode NIBS might be considered a novel therapeutic approach for patients with PD.

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**Title: The Everyday Cognition Scale in Parkinson's disease.**

**Citation:** Baylor University Medical Center Proceedings; Jul 2017; vol. 30 (no. 3); p. 265-267

**Author(s):** Cooper, Rachel A.; Benge, Jared; Lantrip, Crystal; Soileau, Michael J.

**Abstract:** This brief report describes caregiver ratings on the Everyday Cognition (ECog) scale, a psychometrically robust measure of cognitively driven daily activities that was initially designed for other neurodegenerative conditions, in individuals with Parkinson's disease (PD). In 49 individuals with PD, those with suspected PD dementia had more difficulties across ECog domains than those with normal cognition or mild cognitive impairment. Results from multiple regression analyses revealed that activities captured by the ECog were related to measured cognitive ability, over and above disease duration and demographic factors. The lack of floor and ceiling effects speaks to the potential utility of the instrument in practice and research regarding this population. Preliminary data support the utility of the ECog as a marker of functional impact of cognitive problems in PD, though further research will be required to validate the instrument in this population.

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**Title: Low to moderate relationships between gait and postural responses in Parkinson's disease.**

**Citation:** Journal of Rehabilitation Medicine (Stiftelsen Rehabiliteringsinformation); Jul 2017; vol. 49 (no. 6); p. 505-511

**Objective:** To evaluate the relationship between spatiotemporal parameters of forward and backward gait and quality of compensatory stepping responses in forward and backward directions in people with Parkinson's disease with and without freezing of gait.

**Design:** Cross-sectional analysis.

**Subjects:** A total of 111 individuals with mild to moderate Parkinson's disease.

**Methods:** Forward and backward gait velocity and step length were evaluated using a GAITRite walkway. Forward and backward postural responses were evaluated using items from the Mini Balance Evaluation Systems Test and the Movement Disorders Society Unified Parkinson Disease Rating Scale motor subsection. Relationships between gait and postural responses were examined for the full sample and for sub-groups with and without freezing of gait.

**Results:** There were significant ( $p < 0.05$ ) low to moderate correlations between postural responses and gait overall. Correlations were similar in the freezer and non-freezer sub-groups. Freezers performed worse than non-freezers on all gait parameters and backward postural response items ( $p < 0.05$ ).

**Conclusion:** Low to moderate relationships between gait and postural responses indicate the complexity of postural control and the potential involvement of different neural circuitry across

these tasks. Better understanding of the relationships between gait and postural deficits in Parkinson's disease may inform the future development of targeted interventions to address these impairments.

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**Title: A Continuing Education Conference About Patients With Parkinson's Disease and Their Caregivers.**

**Citation:** Journal of Continuing Education in Nursing; Jun 2017; vol. 48 (no. 6); p. 270-275

**Author(s):** Bhimani, Rozina; Palluck, Hailey; Moore, Michelle A. Mathiason; Anderson, Lisa Carney

**Background:** Conferences--formal meetings for learning--are a common venue for nurses to receive continuing education. This study used multimodal strategies, such as storytelling, lecture, case presentation and discussions, to deliver conference presentation. Method: Seventy-five and 69 rehabilitation nurses completed pretest and posttest surveys, respectively. Using an evaluative research design, seven questions measured the change in knowledge for Parkinson's disease (PD) and PD patient caregiver's needs. Two additional questions measured the change in comfort level with both topics. Results: For knowledge questions, the mean ( $\pm$  SO) number of correct questions significantly increased from 3.4 ( $\pm$  1 .0) to 5.2 ( $\pm$ 0 .9 ) ( $f = -10 .0$  ,  $p < .001$ ). Participants reported increased comfort with PD and caregiver's needs, which was also statistically significant. Conclusion: Multimodal education strategies can provide robust conference experiences and improve learning. For the successful transfer of knowledge to diverse learners, careful planning of conference content must include attention to diverse teaching strategies.

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**Title: 'Locus of control', health-related quality of life, emotional distress and disability in Parkinson's disease.**

**Citation:** Journal of Health Psychology; Jun 2017; vol. 22 (no. 7); p. 844-852

**Author(s):** Rizza, Federica; Gison, Annalisa; Bonassi, Stefano; Dall'Armi, Valentina; Tonto, Francesca; Giaquinto, Salvatore

**Abstract:** This cross-sectional study evaluated locus of control and its subscales in Parkinson's disease. A total of 50 consecutive Parkinson's disease participants and 50 healthy volunteers (control group) were enrolled. External locus of control was significantly higher in Parkinson's disease participants, whereas internal locus of control had no significant differences. External locus of control and internal locus of control were correlated in control group, but not in Parkinson's disease. In Parkinson's disease participants, external locus of control was negatively associated with health-related quality of life as well as positively associated with emotional distress and disease severity (but not with disability). After adjusting to confound variables, the associations remained. On the other hand, internal locus of control was negatively associated with depression.

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**Title: Assessing postural balance in early Parkinson's Disease—validity of the BDL balance scale.**

**Citation:** Physiotherapy Theory & Practice; Jun 2017; vol. 33 (no. 6); p. 490-496

**Author(s):** Claesson, Ingrid M; Grooten, Wilhelmus JA; Lökk, Johan; Ståhle, Agneta

**Background:** There is a need for a valid assessment test of balance in early Parkinson's disease (PD).

**Objective:** To validate the Bäckstrand Dahlberg Liljenäs Balance Scale (BDL), a test of balance performance constructed to assess mild to moderate balance disability due to neurological disease, for use in persons with early PD.

**Methods:** Cross-sectional psychometric evaluation study from a convenience sample community-dwelling persons with PD (n = 28).

**Main measures:** The BDL was validated using the Berg Balance Scale (BBS), the motor part of the Unified Parkinson's Disease Rating Scale (mUPDRS), the Timed Up and Go (TUG) and Timed Up and Go-cognition (CTUG). Correlations were calculated by Spearman's rank correlation coefficient ( $\rho$ ). Rasch analyses were used to test the internal construct of the BDL. The result from the BDL was compared to a healthy reference group.

**Results:** The correlation between the BDL and the BBS ( $\rho = 0.703$ ) was high positive, while for mUPDRS ( $\rho = -0.280$ ), TUG ( $\rho = -0.321$ ) and CTUG ( $\rho = -0.361$ ) the correlations with the BDL were negligible to low negative. The Rasch analyses for the BDL showed a good distribution of the task difficulties with neither ceiling nor floor effect among individual measures. There was a significant difference ( $p = 0.03$ ) in performance of the BDL between the PD group and the healthy reference group.

**Conclusions:** The BDL Balance Scale can be considered a valid clinical assessment test when evaluating balance training interventions in persons with early PD. It can be recommended as an outcome measure in clinical practice and in clinical research within this population.

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**Title: Longitudinal Changes in Speech Breathing in Older Adults with and without Parkinson's Disease.**

**Citation:** Seminars in Speech & Language; Aug 2017; vol. 38 (no. 3); p. 200-209

**Author(s):** Huber, Jessica E.; Darling-White, Meghan

**Abstract:** This longitudinal study examines changes to speech production and speech breathing in older adults with Parkinson's disease (PD) and older adults without PD. Eight participants with PD and eight age- and sex-matched older adults participated in two data collection sessions, separated by 3.7 years on average. Speech severity and speech rate increased for people with PD. Vital capacity decreased for both groups. Older adult control participants displayed significant increases in lung volume initiation and excursion and percent vital capacity expended per syllable. These changes allow older adults to utilize higher recoil pressures to generate subglottal pressure for speech production, potentially reducing work of breathing. Participants with PD displayed significant decreases in lung volume initiation and termination. Thus, unlike older adults, people with PD exert more expiratory muscle pressure during speech production, leading to increased effort. Speech-language pathologists need to consider direct treatment of respiratory patterns for speech to reduce effort and fatigue.

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**Title: Incorporating the Principles of Self-Management into Treatment of Dysarthria Associated with Parkinson's Disease.**

**Citation:** Seminars in Speech & Language; Aug 2017; vol. 38 (no. 3); p. 210-219

**Author(s):** Yorkston, Kathryn; Baylor, Carolyn; Britton, Deanna

**Abstract:** Although understanding patient perspectives on treatment is a major component of patient-centered care, little is known about patient perspectives related to dysarthria treatment in

Parkinson's disease (PD). This article attempts to explore the perspective of patients with dysarthria associated with PD by interviewing them before and after treatment. Treatment expectations and experiences are summarized along with a discussion of how patients are using the tools they learned once treatment was completed. Comments about treatment were generally positive and suggested increased awareness and improved speech loudness. However, areas for improvement were also identified including: (1) treatment was not addressing some communication problems that were of concern to patients; (2) therapy programs were not enjoyable; and (3) it was difficult to maintain gains after therapy ended. Principles of self-management are reviewed to address some of the shortcomings of current treatment approaches.

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**Title: Body Posture, Postural Stability, and Metabolic Age in Patients with Parkinson's Disease.**

**Citation:** BioMed Research International; Jun 2017; p. 1-9

**Author(s):** Wilczyński, Jacek; Pedrycz, Agnieszka; Mucha, Dariusz; Ambroży, Tadeusz; Mucha, Dawid

**Background:** The study aims to analyze the relationship between body posture and composition, as well as postural stability in Parkinson's disease patients.

**Material and Methods:** 32 people were evaluated. The study was conducted in the Laboratory of Posturology at Jan Kochanowski University in Kielce (Poland). Body posture was examined using the optoelectronic body posture Formetric Diers Method III 4D. Postural stability was evaluated using the Biodex Balance System platform. Body composition was assessed with the method of bioelectrical impedance analysis using the Tanita MC 780 MA analyzer.

**Results:** 11 patients (34.37%) had hyperkyphosis, 10 (31.25%) hyperlordosis, and 3 (9.37%) hyperkyphosis-hyperlordosis posture. Scoliosis ( $>10^\circ$ ) was observed in 28 (87.5%) subjects, whereas 4 (12.5%) presented scoliotic body posture ( $1-9^\circ$ ). In the examined population, all parameters of postural stability were within normal limits.

**Conclusions:** A significant positive correlation was observed between surface rotation ( $^\circ$ ), General Stability Index ( $r=0.4075$ ,  $p=0.0206$ ), and Anteroposterior Stability Index ( $r=0.3819$ ,  $p=0.0310$ ). There was also a significant positive correlation between surface rotation (+max) ( $^\circ$ ), General Stability Index ( $r=0.3526$ ,  $p=0.0206$ ), and Anteroposterior Stability Index ( $r=0.3873$ ,  $p=0.0285$ ). Metabolic age also presented a significant positive correlation between metabolic age and General Stability Index ( $r=0.4057$ ,  $p=0.0212$ ), as well as Anteroposterior Stability Index ( $r=0.3507$ ,  $p=0.0490$ ).

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**Title: Speech Versus Speaking: The Experiences of People With Parkinson's Disease and Implications for Intervention.**

**Citation:** American Journal of Speech-Language Pathology; Jun 2017; vol. 26 (no. 3); p. 561-568

**Author(s):** Yorkston, Kathryn; Baylor, Carolyn; Britton, Deanna

**Purpose:** In this project, we explore the experiences of people who report speech changes associated with Parkinson's disease as they describe taking part in everyday communication situations and report impressions related to speech treatment.

**Method:** Twenty-four community-dwelling adults with Parkinson's disease took part in face-to-face, semi-structured interviews. Qualitative research methods were used to code and develop themes related to the interviews.

**Results:** Two major themes emerged. The first, called "speaking," included several subthemes: thinking about speaking, weighing value versus effort, feelings associated with speaking, the environmental context of speaking, and the impact of Parkinson's disease on speaking. The second theme involved "treatment experiences" and included subthemes: choosing not to have treatment, the clinician, drills and exercise, and suggestions for change.

**Conclusions:** From the perspective of participants with Parkinson's disease, speaking is an activity requiring both physical and cognitive effort that takes place in a social context. Although many report positive experiences with speech treatment, some reported dissatisfaction with speech drills and exercises and a lack of focus on the social aspects of communication. Suggestions for improvement include increased focus on the cognitive demands of speaking and on the psychosocial aspects of communication.

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**Title: Dance for Parkinson's-The effects on whole body co-ordination during turning around.**

**Citation:** Complementary Therapies in Medicine; Jun 2017; vol. 32; p. 91-97

**Author(s):** Hulbert, Sophia; Ashburn, Ann; Roberts, Lisa; Verheyden, Geert

**Objective:** To investigate the effects of ballroom and Latin American dancing classes on turning in people with Parkinson's.

**Design:** This study employed a randomised, controlled, experimental design.

**Setting:** Dance classes were performed in a community dance centre in Southern England and all assessments took place a gait laboratory.

**Participants:** Twenty-seven people with mild-moderate Parkinson's participated.

**Intervention:** Participants were randomly allocated to receive either 20, 1-h dancing classes over 10 weeks (n=15), or a 'usual care' control group (n=12).

**Main Outcome Measure:** Twelve, 180° on-the-spot turns to the predicted/un-predicted and preferred/un-preferred direction were analysed for each participant, using 3-dimensional motion analysis before and after the intervention period, alongside clinical measures.

**Results:** Movement of the head, pelvis, and feet during turning in people with Parkinson's are affected by dancing with tighter coupling of body segments. Significant 4-way interactions between the groups, over time and turn style, with longer latency of the head (p=0.008) and greater rotation in the pelvis (p=0.036), alongside a trend of slower movement of the first (p=0.063) and second (p=0.081) foot in controls were shown, with minimal change in dancers. All interactions were affected by the type of turn. No significant differences were found in the centre of mass displacement, turn time or clinical measures

**Conclusion:** Those who danced were better able to coordinate their axial and perpendicular segments and surprisingly became more 'en bloc' in their turning behaviour, suggesting this may be a beneficial adaptation, rather than a maladaptive result of Parkinson's, as previously suggested.

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**Title: Treadmill training with additional body load: Effects on the gait of people with Parkinson's disease.**

**Citation:** International Journal of Therapy & Rehabilitation; Jun 2017; vol. 24 (no. 6); p. 248-254

**Author(s):** Filippin, Nadiesca; Lobo da Costa, Paula Hentschel; Mattioli, Rosana

**Aim:** The aim of this study was to assess the effects of treadmill walking training with additional body load on the gait of people with moderate Parkinson's disease.

**Methods:** Nine people with Parkinson's disease (Hoehn and Yahr Scale 2-3) and gait disturbance participated in this study. This study was an A1--B--A2 single-case. Phases A1 and A2 included 6 weeks of gait training on a treadmill with a 10% increase of normal body mass. Phase B included 6 weeks of conventional physical therapy (control condition). Measurements included ground reaction forces, spatiotemporal and kinematic variables during walking on the ground at baseline and after each phase.

**Findings:** A significant increase in propulsive forces, stride length, speed, and maximum hip extension during stance were observed after the training programme. No changes in joint range of motion of ankle, knee, and hip were observed.

**Conclusions:** Treadmill training with additional body load was associated with an improvement in important variables for the maintenance of a functional gait, and it is a promising alternative to optimise the rehabilitation process together with conventional physical therapy. However, further studies are needed.

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**Title: Psychosocial therapy for Parkinson's-related dementia: study protocol for the INVEST randomised controlled trial.**

**Citation:** BMJ open; Jun 2017; vol. 7 (no. 6); p. e016801

**Introduction:** Parkinson's disease (PD) with mild cognitive impairment (MCI-PD) or dementia (PDD) and dementia with Lewy bodies (DLB) are characterised by motor and 'non-motor' symptoms which impact on quality of life. Treatment options are generally limited to pharmacological approaches. We developed a psychosocial intervention to improve cognition, quality of life and companion burden for people with MCI-PD, PDD or DLB. Here, we describe the protocol for a single-blind randomised controlled trial to assess feasibility, acceptability and tolerability of the intervention and to evaluate treatment implementation. The interaction among the intervention and selected outcome measures and the efficacy of this intervention in improving cognition for people with MCI-PD, PDD or DLB will also be explored.

**Methods and Analysis:** Dyads will be randomised into two treatment arms to receive either 'treatment as usual' (TAU) or cognitive stimulation therapy specifically adapted for Parkinson's-related dementias (CST-PD), involving 30 min sessions delivered at home by the study companion three times per week over 10 weeks. A mixed-methods approach will be used to collect data on the operational aspects of the trial and treatment implementation. This will involve diary keeping, telephone follow-ups, dyad checklists and researcher ratings. Analysis will include descriptive statistics summarising recruitment, acceptability and tolerance of the intervention, and treatment implementation. To pilot an outcome measure of efficacy, we will undertake an inferential analysis to test our hypothesis that compared with TAU, CST-PD improves cognition. Qualitative approaches using thematic analysis will also be applied. Our findings will inform a larger definitive trial.

**Ethics and Dissemination:** Ethical opinion was granted (REC reference: 15/YH/0531). Findings will be published in peer-reviewed journals and at conferences. We will prepare reports for dissemination by organisations involved with PD and dementia. TRIAL REGISTRATION NUMBER ISRCTN (ISRCTN11455062).

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**Title: Effectiveness of aquatic therapy for the control of pain and increased functionality in people with Parkinson's disease: a randomized clinical trial.**

**Citation:** European journal of physical and rehabilitation medicine; Jun 2017

**Author(s):** Pérez de la Cruz, Sagrario



**Background:** Gait, balance disorders and pain associated with Parkinson's disease represent important therapeutic challenges, as they are related with an increased risk of falls, together with disability and physical decline.

**Aim:** To compare the effects of an aquatic Ai Chi training program on the perception of pain, the maintenance of balance and the functional independence of patients with Parkinson's disease.

**Design:** A single-blind randomized controlled trial.

**Setting:** Parkinson's associations and municipal pools.

Population: Thirty individuals from two Parkinson's associations in Spain participated in the study.

**Inclusion Criteria:** Individuals diagnosed with Parkinson's disease in stages 1 to 3 (Hoehn and Yahr Scale), older than 40 years, in the off phase (not medicated) and with a score greater or equal to 24 on the Mini-Mental State Examination Scale, without any medical contraindications and who accepted the study norms.

**Methods:** The experimental group (n=15 patients) participated in a program of Aquatic Ai Chi. The control group (n=15) received therapy on dry land. The intervention lasted 10 weeks with sessions held twice weekly. The pain VAS, Tinetti, Berg, Test Get Up and Go, Five Times Test and Unified Parkinson's Disease Rating Scale were used.

**Results:** Significant differences were found between the baseline and one-month follow up assessments in pain perception values ( $F= 26.89$ ,  $p<0.001$ ), and the Tinetti test ( $F= 21.57$ ,  $p<0.001$ ) in the experimental group compared to the control group ( $p<0.05$ ) with the exception of the FTSTS ( $p = 0.006$ ). In the control group, improvements were only seen on the VAS pain scale ( $F= 8.3$ ,  $p=0.004$ ) and these were less significant than the changes found in the experimental group. Regarding the scores obtained on the UPDRS scale in the experimental group, there were significant differences in activities of daily living and motor examination, with the exception of mentation, behavior and mood.

**Conclusions:** An aquatic Ai Chi program appears to be a valid treatment option for patients diagnosed with mild to moderate Parkinson's disease for the treatment of pain, balance and functional capacity.

**Clinical Rehabilitation Impact:** Physical exercise performed in water has positive effects on some of the necessary elements that contribute towards improved biomechanical gait patterns in our patients with Parkinson's disease.

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**Title: Can music-based movement therapy improve motor dysfunction in patients with Parkinson's disease? Systematic review and meta-analysis.**

**Citation:** Neurological sciences : official journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology; Jun 2017

**Author(s):** Zhang, Shuai; Liu, Dong; Ye, Dan; Li, Haiyu; Chen, Feng

**Abstract:** This study aimed to quantify whether there is association between music-based movement therapy and motor dysfunction in patients with Parkinson's disease, and, if so, whether music-based movement therapy can be used as first-line non-pharmacological treatment. To conduct a systematic review and meta-analysis of clinical trials that examined the effect of music-based movement therapy on patient-relevant and disease-specific outcomes. Comprehensive literature was searched of PubMed, EMBase, and the Cochrane Library from inception to November 2016. Randomized controlled trial of patients with Parkinson's disease was searched to identify trials comparing music-based movement therapy with no music care. A total of 8 studies (11 analyses, 241 subjects) were included; all of them had acceptable quality by PEDro scale score. Studies based on any type of Parkinson's disease patients were combined and subgroup

analyzed. Compared with the control group, the SMD of Berg Balance Scale score was 0.85(0.46 to 1.25), -0.60 (-0.98 to -0.22) in Parkinson Disease Questionnaire-39 summary index, -0.90s (-1.56 to -0.23) in Time Up and Go test, and -0.43 (-1.11 to 0.25) in Unified Parkinson's Disease Rating Scale Motor Subscale 3 as instrument methods for motor function. Secondary outcomes included cognitive function and quality of life. There was positive evidence to support the use of music-based movement therapy on treatment of motor function; there was neutral evidence to support the use of music for the treatment of cognitive function quality of life.

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**Title: Swallowing in Parkinson's disease: clinical issues and management.**

**Citation:** Neurodegenerative disease management; Jun 2017

**Author(s):** Miller, Nick

**Abstract:** Changes to swallowing affect most people with Parkinson's disease (PD). Changes may not initially exercise a decisive impact, but can later pose significant threats to nutritional, hydration and respiratory health and psychosocial quality of life. This review, from a largely clinical viewpoint, outlines the nature of changes in PD and considers the issue of how many people are affected and in what ways. It outlines main approaches to assessment and management, with an emphasis on aspects relevant to PD. Dysphagia contributes to drooling in PD. The review therefore also touches on the nature and management of this condition that has its own set of health and psychosocial quality-of-life issues.

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**Title: Falling Direction can Predict the Mechanism of Recurrent Falls in Advanced Parkinson's Disease.**

**Citation:** Scientific reports; Jun 2017; vol. 7 (no. 1); p. 3921

**Author(s):** Youn, Jinyoung; Okuma, Yasuyuki; Hwang, Minho; Kim, Dongyeop; Cho, Jin Whan

**Abstract:** Falls are a common and disabling symptom in patients with Parkinson's disease (PD). For prevention, it is important to understand the pathophysiology of falls in PD patients, but the predictors for the possible mechanisms underlying such falls have not been clearly elucidated. In this prospective observational study, we investigated the implications of falling direction to predict the mechanisms of recurrent falls in PD patients. We enrolled 62 recurrent fallers with PD and divided them into two groups according to the main falling directions: 45 PD fallers who fell forward (forward fallers), and 17 PD fallers who fell in the other directions (non-forward fallers). Although there was no difference in demographic data, parkinsonism, or frontal lobe function, forward fallers showed more severe falls and tended to fall during walking or turning, while non-forward fallers usually fell during sitting/standing or turning. Additionally, forward fallers revealed higher score on a freezing of gait (FOG) questionnaire. Logistic regression analysis demonstrated that FOG was associated with falling forward, while balance impairment, akinetic-rigid subtype, and neuropsychiatric symptoms were associated with falling into the other directions. Our results indicate that FOG and balance impairment are two major mechanisms for recurrent falling in PD patients, and falling direction is an important predictor for these mechanisms.

**Title: Preclinical and Potential Applications of Common Western Herbal Supplements as Complementary Treatment in Parkinson's Disease.**

**Citation:** Journal of dietary supplements; Jul 2017; vol. 14 (no. 4); p. 453-466

**Author(s):** Morgan, Luke A; Grundmann, Oliver

**Abstract:** Parkinson's disease (PD) is a neurological disorder with a complex pathological etiology, which is not fully understood. Progression of PD may be the result of a buildup of iron in the substantia nigra, microglia-mediated neuroinflammation, dysfunctional mitochondria, or abnormal protein handling. Dopamine is the main neurotransmitter affected, but as the disease progresses, a decrease in all the brain's biogenic amines occurs. Current medication used in the treatment of PD aims to prevent the breakdown of dopamine or increase dopaminergic neurotransmission in the central nervous system. The complementary use of green tea (*Camellia sinensis*), red wine (*Vitis vinifera*), arctic root (*Rhodiola rosea*), and dwarf periwinkle (*Vinca minor*) may have a greater therapeutic effect than current pharmaceutical drugs, such as monoamine oxidase inhibitors or dopamine agonists alone. The bioactive components of these plants have been shown to have neuroprotective, antioxidant, anti-proteinopathies, neural-vasodilation, anti-inflammatory, and iron chelating potential. They may treat the disease at the cellular level by decreasing microglia activation, attenuating damage from radical oxygen species, supporting correct protein folding, chelating iron, increasing the substantia nigra blood flow, and promoting dopaminergic cell growth. Although these alternative medicines appear to have potential, further human clinical trials need to be conducted to determine whether they could have a greater therapeutic effect than conventional medicines alone.

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**Title: Evaluation of the Parkinson's KinetiGraph in monitoring and managing Parkinson's disease.**

**Citation:** Expert review of medical devices; Jul 2017

**Author(s):** Farzanehfar, Parisa; Horne, Malcolm

**Abstract:** While objective measurement is routine in clinical care of most conditions, this has not been the case for Parkinson's Disease. Recent innovations make objective measurement in Parkinson's Disease possible and its utility and how this should be assessed is discussed here. Areas covered: Whilst therapies are effective in Parkinson's Disease, symptoms fluctuate in relation to treatment over the course of the day. Objective measurement makes it possible to assess symptom control, whether treatment is required and whether it achieved control. Objective measurement makes it possible to consider targets for therapeutic control and to begin an assessment of the value of improved control. Evidence for the effect of improved measurement on outcomes is only beginning to emerge. As symptom severity relates to quality of life and costs, reducing clinical scores and fluctuations through objective measurement is in the interest of both the patient and the health system. Expert commentary: In broad terms objective measurement should be used to identify patients whose symptoms lie outside the target range and then to assess whether therapy was effective in bringing them into control. While this is relevant to all stages of Parkinson's Disease specific clinical situations where this had greatest impact are discussed.

**Title: Parkinson disease and musculoskeletal pain: an 8-year population-based cohort study.**

**Citation:** Pain; Jul 2017; vol. 158 (no. 7); p. 1234-1240

**Author(s):** Lien, Wei-Hung; Lien, Wei-Chih; Kuan, Ta-Shen; Wu, Shang-Te; Chen, Yi-Ting; Chiu, Ching-Ju

**Abstract:** The aim of this study was to evaluate the incidence and clinical features of musculoskeletal pain (MSP) in patients with Parkinson disease (PD) compared with a control group without the disease. The retrospective cohort study used a subset of the Taiwan National Health Insurance Research Database (NHIRD) comprising information on 1 million beneficiaries randomly sampled from the entire population of Taiwan. A total of 490 patients aged 50 and above with newly diagnosed Parkinson disease were identified during a period from 2000 to 2005. Among them, 199 developed MSP after PD. The control group consisted of 1960 participants without PD over the study period randomly selected by matching PD cases according to the date of PD incidence, age, and sex. The study groups were then followed to the end of 2007. Musculoskeletal pain was the end point. The incidence rate ratios of MSP were higher in the PD group than in the control group, representing an adjusted hazard ratio of 1.31 (95% confidence interval 1.09 to 1.58). PD was associated with a significantly elevated risk of MSP in all sex and age stratifications, with the highest hazard ratio noted for middle-aged male patients with PD, followed by older male patients with PD. This study showed that the PD may significantly increase the risk of developing MSP. The risk of developing MSP seems to be greatest for middle-aged male patients with PD. Clinicians should be more alert for MSP in patients with PD, and early intervention should be considered.

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**Title: Non-motor features of Parkinson disease.**

**Citation:** Nature reviews. Neuroscience; Jul 2017; vol. 18 (no. 7); p. 435-450

**Author(s):** Schapira, Anthony H V; Chaudhuri, K Ray; Jenner, Peter

**Abstract:** Many of the motor symptoms of Parkinson disease (PD) can be preceded, sometimes for several years, by non-motor symptoms that include hyposmia, sleep disorders, depression and constipation. These non-motor features appear across the spectrum of patients with PD, including individuals with genetic causes of PD. The neuroanatomical and neuropharmacological bases of non-motor abnormalities in PD remain largely undefined. Here, we discuss recent advances that have helped to establish the presence, severity and effect on the quality of life of non-motor symptoms in PD, and the neuroanatomical and neuropharmacological mechanisms involved. We also discuss the potential for the non-motor features to define a prodrome that may enable the early diagnosis of PD.

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**Title: Factors associated with life satisfaction in Parkinson's disease.**

**Citation:** Acta neurologica Scandinavica; Jul 2017; vol. 136 (no. 1); p. 64-71

**Author(s):** Rosqvist, K; Hagell, P; Odin, P; Ekström, H; Iwarsson, S; Nilsson, M H

**Objectives:** To identify factors associated with life satisfaction (LS) in people with Parkinson's disease (PD), including a specific focus on those with late-stage PD.

**Material and Methods:** The study included 251 persons with PD (median age 70 years; PD duration 8 years). Analyses involved the total sample and a subsample with late-stage PD, that is Hoehn and Yahr stages IV and V (n=62). LS was assessed with item 1 of the Life Satisfaction Questionnaire (LiSat-11). Simple logistic regression analyses were performed for both the total sample and for the subsample with late-stage PD. For the total sample, a multivariable logistic regression analysis was also performed.

**Results:** In the total sample, 12 of the 20 independent variables were significantly associated with LS: need of help with ADL; walking difficulties; number of non-motor symptoms (NMS); fatigue; depressive symptoms; general self-efficacy; motor symptoms; pain; PD severity; freezing episodes; gender (woman); and fluctuations. When controlling for age and gender in the multivariable logistic regression model, depressive symptoms were negatively associated with high LS and general self-efficacy was positively associated with high LS. In late-stage PD, simple logistic regression analyses (controlling for age and gender) identified the following factors as associated with LS: number of NMS, general self-efficacy, walking difficulties and fatigue.

**Conclusions:** This study provides new knowledge on factors associated with LS in a PD sample, including those with late-stage PD. As the ultimate goal for PD care should be improvement in LS, the results have direct clinical implication.

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**Title: Clinical balance scales indicate worse postural control in people with Parkinson's disease who exhibit freezing of gait compared to those who do not: A meta-analysis.**

**Citation:** Gait & posture; Jul 2017; vol. 56; p. 134-140

**Author(s):** Bekkers, Esther M J; Dijkstra, Bauke W; Dockx, Kim; Heremans, Elke; Verschueren, Sabine M P; Nieuwboer, Alice

**Abstract:** Postural instability and freezing of gait (FOG) are key features of Parkinson's disease (PD) that are closely related to falls. Uncovering the postural control differences between individuals with and without FOG contributes to our understanding of the relationship between these phenomena. The objective of this meta-analysis was to investigate whether postural control deficits, as detected by clinical balance scales, were more apparent in FOG+ compared to FOG-. Furthermore, we aimed to identify whether different scales were equally sensitive to detect postural control deficits and whether medication affected postural control differentially in each subgroup. Relevant articles were identified via five electronic databases. We performed a meta-analysis on nine studies which reported clinical balance scale scores in 249 freezers and 321 non-freezers. Methodological analysis showed that in 5/9 studies disease duration differed between subgroups. Despite this drawback, postural control was found to be significantly worse in FOG+ compared to FOG-. All included clinical balance scales were found to be sufficiently sensitive to detect the postural control differences. Levodopa did not differentially affect postural control ( $p=0.21$ ), as in both medication states FOG+ had worse postural stability than FOG-. However, this finding warrants a cautious interpretation given the limitations of the studies included. From subscore analysis, we found that reactive and dynamic postural control were the most affected postural control systems in FOG+. We conclude that our findings provide important evidence for pronounced postural instability in individuals with FOG, which can be easily picked up with clinical evaluation tools. Posturographic measures in well-matched subgroups are needed to highlight the exact nature of these deficits.

**Title: Motor and non-motor symptoms in old-age onset Parkinson's disease patients.**

**Citation:** Journal of neural transmission (Vienna, Austria : 1996); Jul 2017; vol. 124 (no. 7); p. 863-867

**Author(s):** Mendonça, Marcelo D; Lampreia, Tania; Miguel, Rita; Caetano, André; Barbosa, Raquel; Bugalho, Paulo

**Abstract:** Advancing age is a well-known risk factor for Parkinson's disease (PD). With population ageing it is expected that the total number of patients with PD onset at old age increases. Information on the motor but particularly on non-motor phenotype of this late-onset population is lacking. We recruited 24 patients with PD onset at or over 75 years. Each patient was matched with 1 control patient with PD onset between the ages of 40 and 65 and matched for disease duration. Both groups were assessed with the UPDRS, the Non-motor symptoms scale (NMSS) and other scales to assess non-motor symptoms. Groups were compared with conditional logistic regression analysis. Old-age onset PD was, on average, 80 years at the time of PD onset while middle-age onset were 59. Disease duration was approximately 5 years in both groups. While no difference was observed in the total UPDRS-III scores, old-age onset PD was associated with higher axial symptoms (7.42 vs. 4.63,  $p = 0.011$ ) and a higher frequency of dementia (7/24 vs. 0/24,  $p = 0.009$ ). While no difference in the total number of non-motor symptoms was observed (6.79 vs. 6.22,  $p = 0.310$ ), old-age onset patients had a higher prevalence of gastrointestinal symptoms (20/24 vs. 12/24,  $p = 0.037$ ). For the same disease duration, older age onset is associated with worse axial motor dysfunction and dementia in PD patients. Beside gastrointestinal symptoms, non-motor symptoms are not associated with age.

**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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