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How are Allied Health Professionals involved in outpatient clinics for people with Parkinson’s Disease?

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Mary Smith
Clinical Support Librarian mary.smith30@nhs.net

SUMMARY

- European clinical practice guidelines recommend physical therapy for people with Parkinson disease (PD) soon after diagnosis to provide education, physical activity advice, and individualized interventions when needed. This article goes on to describe a physiotherapy programme at an outpatient rehab centre. [2]
- Comprehensive physiotherapy-based rehabilitation may improve stooped posture in Parkinson’s disease patients. [4]
- A randomised controlled trial which took place in an outpatient setting found that physiotherapy seems to be more effective than a generic exercise programme in patients with Hoehn Yahr stage II PD [6]
- Physical exercise in addition to standard care (SC) in patients with Parkinson’s disease (PD) is now a common practice in many care units. Physiotherapists can efficiently propose physical conditioning to patients with mild to moderate PD, but these interventions are insufficient to improve gait and participation. Notwithstanding, Strength Training is an efficient intervention for improving walking capacity [7]
- Evidences have shown that physiotherapy programs may improve the balance of individuals with Parkinson's disease. Balance training is superior to resistance training in regard to improving postural control of individuals with PD. Gold standard instruments (high in cost
and difficult to access) were used to assess balance, as well as scales with clinical applicability (low cost, easily acceptable, applicable and valid), which can guide the management of physiotherapists both in their decision-making and in clinical practice. [8]

- A systematic review found that Complementary physical therapies such as dancing, hydrotherapy and robotic gait training appear to afford therapeutic benefits, increasing mobility and quality of life, in some people living with PD. [10]

- A Randomised Controlled Trial evaluating 2 physiotherapy programmes concluded that rehabilitation combining falls prevention education with strength training or movement strategy training reduces the rate of falls in people with mild to moderately severe PD and is feasible [11]

- A trial that took place in a specialist clinic for Parkinson’s Disease found that the two-week physiotherapy programme reduced the severity of freezing in patients with Parkinson’s disease. [13]

- Patients followed an exercise program under a physiotherapist’s supervision one day a week for 12 weeks. The change of Limit Of Stability revealed that dynamic balance improved due to the exercises. Thus, our supervised exercise program provided improvement in dynamic balance of PD patients [15]

- The exercise programme under physiotherapist supervision was found to be more effective at improving activities of daily living, motor, mental, emotional functions and general health quality in patients with Parkinson’s disease compared with a self-supervised home programme. [18]

- A systematic review conducted in 2010 concluded that overall, there is very limited high level evidence available to show whether multidisciplinary out-patient programs produce effective, either short or long term, outcomes for PD and further research is needed. [19]

SEARCH RESULTS

1. Vastly Different Exercise Programs Similarly Improve Parkinsonian Symptoms: A Randomized Clinical Trial.

**Author(s):** Tollár, József; Nagy, Ferenc; Hortobágyi, Tibor

**Source:** Gerontology; 2019; vol. 65 (no. 2); p. 120-127

**Publication Date:** 2019

**Publication Type(s):** Research Support, Non-u.s. Gov't Randomized Controlled Trial Journal Article

**PubMedID:** 30368495

**Abstract:** OBJECTIVE To directly compare the effects of agility exergaming (EXE) and stationary cycling (CYC) exercise training on Parkinson’s disease (PD) patients' mobility and clinical symptoms. DESIGN Randomized clinical trial. SETTING Outpatient physiotherapy clinic in a hospital. PARTICIPANTS Seventy-four stage 2-3, nondemented PD patients were included in this study. INTERVENTION The groups were as follows: EXE (n = 25), CYC (n = 25), and a wait-listed control group (CON; n = 24). The EXE and CYC groups exercised 5×/week for 5 weeks, matched at 80% of the age-predicted maximal heart rate. MAIN OUTCOMES The primary outcome was the Movement Disorders Society Unified Parkinson's Disease Rating Scale (UPDRS-II) score. Secondary outcomes were Parkinson's Disease Questionnaire-39 (PDQ-39), the Beck Depression Inventory (BDI), the Schwab and England Activities of Daily Living (SE-ADL) scale, Euro-Quality of Life-5 Dimensions (EQ-5D) questionnaire, the Berg Balance Scale (BBS), the Balance Evaluation Systems Test (BESTest), the Tinetti Assessment Tool (TAT), the Dynamic Gait Index, the 6-min walk test (6MWT), and standing posturography. RESULTS After treatment, UPDRS-II scores improved (mean change: EXE, -4.5 points; CYC, -3.2 points). The results for the other outcomes (EXE and CYC, respectively) were: PDQ, 13 and...
17%; BDI, -2.5 and -2.1 points; 6MWT, 129.6 and 141.6 m; and EQ-5D, 12 and 9% (all p < 0.05, but there was no difference between groups). EXE vs. CYC resulted in improved SE-ADL (8.4 and 4.0 points, effect size [ES]: 0.12), BBS (8.8 and 4.2 points, ES: 0.44), and 2 measures of posturography (ES: 0.11 and 0.21) (p  0.05).CONCLUSIONTwo highly different exercise programs resulted in similar improvement of most motor and clinical symptoms in PD patients.

Database: Medline


Author(s): Rafferty MR ; MacDonald, Jillian; Byskosh, Alexandria; et al.
Source: Physical Therapy; Dec 2019; vol. 99 (no. 12); p. 1644-1655
Publication Date: Dec 2019
Publication Type(s): Academic Journal
Available at Physical Therapy - from HighWire - Free Full Text

Abstract:Background and Purpose European clinical practice guidelines recommend physical therapy for people with Parkinson disease (PD) soon after diagnosis to provide education, physical activity advice, and individualized interventions when needed. However, therapy is frequently not used until after gait and balance problems occur. The purpose of this administrative case study is to present the application of a proactive physical therapy (PAPT) approach at 1 rehabilitation center using implementation frameworks to support the (1) implementation process, (2) determinants of implementation success, and (3) implementation evaluation. Case Description The PAPT program targeted people with PD before the onset of significant mobility dysfunction. It was initiated in 1 outpatient neurological rehabilitation center. The program used shared decision-making to promote long-term maintenance of independent exercise. The Knowledge-to-Action Framework was used by champions to plan implementation processes. Implementation barriers were addressed using the Consolidated Framework for Implementation Research. The program was evaluated using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) framework with mixed methods. Outcomes In the program's first year, 38 people were referred, 28 were evaluated, and 20 participated in the 6-month program evaluation. Following PAPT, the number of participants reporting regular participation in aerobic, strengthening, and flexibility exercise approximately doubled, while those engaging in balance activities increased from 1 to 8. They reported a median of 140 minutes of aerobic exercise per week. Implementation barriers included location, insurance coverage, and difficulty scheduling long-term follow-up visits. Participants reported physical and emotional benefits of the program. Discussion Implementation frameworks assisted with the implementation and evaluation of a PAPT delivery model that helped people with PD to increase and maintain independent exercise participation.

Database: CINAHL

3. Exercise-and strategy-based physiotherapy-delivered intervention for preventing repeat falls in people with Parkinson's: The PDSAFE RCT

Author(s): Ashburn A.; Hulbert S.; Kunkel D.; et al.
Source: Health Technology Assessment; Jul 2019; vol. 23 (no. 36); p. 1-147
Publication Date: Jul 2019
Publication Type(s): Article
Available at Health technology assessment (Winchester, England) - from Unpaywall
Abstract: Background: People with Parkinson's disease are twice as likely to experience a fall as a healthy older person, often leading to debilitating effects on confidence, activity levels and quality of life. Objective(s): To estimate the effect of a physiotherapy programme for fall prevention among people with Parkinson's disease. Design(s): A multicentre, pragmatic, investigator-masked, individually randomised controlled trial (RCT) with prespecified subgroup analyses. Setting(s): Recruitment from NHS hospitals and clinics and community and social services in eight English regions with home-based interventions. Participant(s): A total of 474 people with Parkinson’s disease (i.e. Hoehn and Yahr scale stages 1-4) were recruited: 238 were assigned to a physiotherapy programme and 236 were assigned to usual care. Random allocation was 50: 50. Intervention(s): All participants received routine care; the usual-care group received an information digital versatile disc (DVD) and a single advice session at trial completion. The intervention group had an individually tailored, progressive, home-based fall avoidance strategy training programme with balance and strengthening exercises: PDSAFE. Main Outcome Measure(s): The primary outcome was the risk of repeat falling, collected by self-report monthly diaries between 0 and 6 months after randomisation. Secondary outcomes included near-falls, falls efficacy, freezing of gait (FoG), health-related quality of life, and measurements taken using the Mini-Balance Evaluation Systems Test (Mini-BESTest), the Chair Stand Test (CST), the Geriatric Depression Scale, the Physical Activity Scale for the Elderly and the Parkinson's Disease Questionnaire. Result(s): PDSAFE is the largest RCT of falls management among people with Parkinson's disease: 541 patients were screened for eligibility. The average age was 72 years, and 266 out of 474 (56%) participants were men. Of the 474 randomised participants, 238 were randomised to the intervention group and 236 were randomised to the control group. No difference in repeat falling within 6 months of randomisation was found [PDSAFE group to control group odds ratio (OR) 1.21, 95% confidence interval (CI) 0.74 to 1.98; p = 0.447]. An analysis of secondary outcomes demonstrated better balance (Mini-BESTest: mean difference 0.95, 95% CI 0.24 to 1.67; p = 0.009), functional strength (CST: p = 0.041) and falls efficacy (Falls Efficacy Scale - International: mean difference 1.6, 95% CI -3.0 to -0.19; p = 0.026) with near-falling significantly reduced with PDSAFE (OR 0.67, 95% CI 0.53 to 0.86; p = 0.001) at 6 months. Prespecified subgroup analysis (i.e. disease severity and FoG) revealed a PDSAFE differing effect; the intervention may be of benefit for people with moderate disease but may increase falling for those in the more severe category, especially those with FoG. Limitation(s): All participants were assessed at primary outcome; only 73% were assessed at 12 months owing to restricted funding. Conclusion(s): PDSAFE was not effective in reducing repeat falling across the range of people with Parkinson's disease in the trial. Secondary analysis demonstrated that other functional tasks and self-efficacy improved and demonstrated differential patterns of intervention impact in accordance with disease severity and FoG, which supports previous secondary research findings and merits further primary evaluation. Future work: Further trials of falls prevention on targeted groups of people with Parkinson's disease are recommended. Trial registration: Current Controlled Trials ISRCTN48152791. Copyright © Queen's Printer and Controller of HMSO 2019.

Database: EMCARE

4. The effect of comprehensive physiotherapy-baserehabilitation on stooped posture in parkinson's disease

Author(s): Kawami Y.; Shiomi Y.; Okinishi M.; et al.

Source: Journal of Physical Therapy Science; 2018; vol. 30 (no. 12)

Publication Date: 2018

Publication Types: Article

Available at Journal of Physical Therapy Science - from PubMed
Abstract:[Purpose] The effect of physiotherapy on stooped posture in Parkinson’s disease patients remains to be clarified. Therefore, the purpose of this study was to investigate whether comprehensive physiotherapy-based rehabilitation can improve stooped posture in Parkinson’s disease patients. [Participants and Methods] The participants were Parkinson’s disease patients with stooped posture. Outpatients were assigned to the control group and inpatients to the postural rehabilitation group. The outcomes measured were trunk bending angle, lumbar lordosis, and thoracic kyphosis. Each group was assessed at baseline and 1 month later. [Results] Of 22 participants identified, 20 were included, with 10 participants in the postural rehabilitation group and 10 in the control group. The age in the postural rehabilitation group was significantly greater than that in the control group, while other parameters were comparable in both groups. After the month-long intervention, the trunk bending angle and lumbar lordosis were significantly improved in the postural rehabilitation group compared to the control group. [Conclusion] The results showed improvement in stooped posture in the postural rehabilitation group as compared to the control group. These findings suggest that comprehensive physiotherapy-based rehabilitation may improve stooped posture in Parkinson’s disease patients. Copyright © 2018, Society of Physical Therapy Science (Rigaku Ryoho Kagakugakkai). All rights reserved.

Database: EM'CARE

5. Aquatic obstacle training improves freezing of gait in Parkinson’s disease patients: a randomized controlled trial.

Author(s): Zhu Z; Yin, Miaomiao; Cui, Liling; Zhang, Ying; Hou, Weijia; Li, Yaqing; Zhao, Hua

Source: Clinical Rehabilitation; Jan 2018; vol. 32 (no. 1); p. 29-36

Publication Date: Jan 2018

Publication Type(s): Academic Journal

Abstract:Objective: Our aim was to evaluate the effect of aquatic obstacle training on balance parameters in comparison with a traditional aquatic therapy in patients with Parkinson’s disease. Design: A randomized single-blind controlled trial. Setting: Outpatients in the rehabilitation department. Subjects: A total of 46 patients with Parkinson’s disease in Hoehn–Yahr stage 2–3. Interventions: Participants were randomly assigned to (1) aquatic therapy or (2) obstacle aquatic therapy. All participants undertook aquatic therapy for 30 minutes, five times per week for six weeks. Main measures: The Freezing of Gait Questionnaire, Functional Reach Test, Timed Up and Go test and Berg Balance Scale were assessed at baseline, posttreatment and at six-month follow-up. Results: Both groups of patients had improved primary outcomes after the training program. A between-group comparison of the changes revealed that obstacle aquatic therapy was significantly higher for the Freezing of Gait Questionnaire (after treatment: 8.7 ± 3.3 vs 6.2 ± 2.1, P = 0.004; posttest: 7.7 ± 3.1 vs 5.3 ± 2.0, P = 0.003) and Timed Up and Go test (after treatment: 17.1 ± 2.9 vs 13.8 ± 1.9, P < 0.001; posttest: 16.3 ± 2.8 vs 12.9 ± 1.4, P < 0.001). Conclusion: Obstacle aquatic therapy in this protocol seems to be more effective than traditional protocols for gait and balance in patients with Parkinson’s disease, and the effect lasts for six months.

Database: CINAHL

6. Physical Therapy Versus a General Exercise Programme in Patients with Hoehn Yahr Stage II Parkinson’s Disease: A Randomized Controlled Trial.

Author(s): Dipsasquale, Savina; Meroni, Roberto; Sasanelli, Francesco; et al.

Source: Journal of Parkinson's disease; 2017; vol. 7 (no. 1); p. 203-210
BACKGROUND AND OBJECTIVE: Several studies suggest that general exercise (GE) and physical therapy programmes (PT) improve the outcomes of Parkinson's disease (PD) patients; however, the available data do not allow a determination of which treatment is more effective. Our study aims to compare the effects of physiotherapy and general exercise in Parkinson's disease.

METHODS: Design and setting: Randomized controlled trial - general hospital outpatient clinic. The participants were patients with Hoehn Yahr stage II PD. Two randomized groups: one receiving PT and one receiving GE. The outcome measures were the FIM, Hamilton Rating Scale, TUG test, and UPDRS. RESULTS: FIM median scores improved by 3 points in the PT group after treatment, and the improvements were maintained at follow-up. The GE FIM median scores were unchanged after treatment and were reduced by 1 point at follow-up (p < 0.05). The TUG test time was reduced in the PT group but increased in the GE group with a 3-second difference between groups at follow-up, suggesting improved functional mobility after specific physiotherapy (p < 0.05). The UPDRS median score change from baseline was significantly different between the two groups at the end of treatment (6.5 points) and at follow-up (11 points), with a benefit for the physiotherapy group. CONCLUSIONS: Physiotherapy seems to be more effective than a generic exercise programme in patients with Hoehn Yahr stage II PD.

Database: Medline

7. Effects of twelve weeks of aerobic or strength training in addition to standard care in Parkinson's disease: A controlled study

Author(s): Demonceau M.; Maquet D.; Jidovtseff B.; et al.

Source: European Journal of Physical and Rehabilitation Medicine; Apr 2017; vol. 53 (no. 2); p. 184-200

Publication Date: Apr 2017

Publication Type(s): Article

Abstract: BACKGROUND: Physical exercise in addition to standard care (SC) in patients with Parkinson's disease (PD) is now a common practice in many care units. However, exercises can cover a wide range of interventions, and the specific effects of different interventions still deserve to be further investigated. AIM: The aim of this study was to compare the effects of 12 weeks of two different types of physical exercises with SC in patients suffering from PD. DESIGN: Pseudo-randomized controlled trial. SETTING: University laboratory for outcomes, University Hospital Centre for interventions. POPULATION: Fifty-two outpatients suffering from mild to moderate PD at baseline. METHOD(S): Participants were allocated to three groups: the strength training (ST) group performed individualized upper and lower limbs strength training, the aerobic training (AE) group performed tailored gradual aerobic cycling, and the third group received SC. The effects of the interventions on body function were assessed by measuring isokinetic concentric peak torque for knee extension and flexion, peak oxygen consumption (VO2peak) and peak work load (PWL) during an incremental maximal cycling test. Changes in mobility were evaluated from spatial-temporal gait features measured by mean of an accelerometer system and the Six-Minute Walk Distance (6MWD) Test. We used questionnaires to estimate health-related quality of life and habitual physical activity. RESULT(S): No significant changes in any outcome measures occurred in the SC group. More than 80% of the participants adequately completed the AE and the ST interventions. The ST group significantly improved all peak torque measures (P<0.01), except knee extension in the least affected side (P=0.13). This group also improved the PWL (P=0.009) and 6mwd (P=0.03). The AE group improved the VO2peak (P=0.02) and PWL (P<0.001). CONCLUSION(S): Physical fitness in
patients with PD rapidly improved in compliance with training specificities, but better fitness hardly translated into better mobility and health-related quality of life. CLINICAL REHABILITATION IMPACT: Physiotherapists can efficiently propose physical conditioning to patients with mild to moderate PD, but these interventions are insufficient to improve gait and participation. Notwithstanding, ST is an efficient intervention for improving walking capacity.Copyright © 2016 EDI ZIO NI MINERVA MEDICA.

Database: EMCARE

8. Balance versus resistance training on postural control in patients with Parkinson's disease: A randomized controlled trial

Author(s): Santos S.M.; Terra M.B.; Almeida I.A.; Da Silva R.A.; De Melo L.B.; Ferraz H.B.
Source: European Journal of Physical and Rehabilitation Medicine; Apr 2017; vol. 53 (no. 2); p. 173-183
Publication Date: Apr 2017
Publication Type(s): Article

Abstract: BACKGROUND: Evidences have shown that physiotherapy programs may improve the balance of individuals with Parkinson's disease (PD), although it is not clear which specific exercise program is better. AIM: The aim of this study was to compare the effectiveness of balance versus resistance training on postural control measures in PD patients. DESIGN: Randomized controlled trial. SETTING: The study was conducted in a physiotherapy outpatient clinic of a university hospital. POPULATION: A total of 40 PD participants were randomly divided into two groups: balance training (BT) and resistance training (RT). METHOD(S): The BT group focused on balance training, functional independence and gait while the RT group performed resistance exercises emphasizing the lower limbs and trunk, both supervised by trained physiotherapists. Therapy sessions were held twice a week (at 60 minutes), totaling 24 sessions. The primary outcome was evaluated by force platform with center of pressure sway measures in different balance conditions and the secondary outcome was evaluated by Balance Evaluation Systems Test (BESTest) scale to determine the effects of the intervention on postural control. RESULT(S): Significant improvement of postural control (pre vs. post 15.1 vs. 9.6 cm) was only reported in favor of BT group (d=1.17) for one-legged stand condition on force platform. The standardized mean difference between groups was significantly (P<0.02), with 36% of improvement for BT vs. 0.07% for RT on this condition. Significant improvement (P<0.05) was also observed in favor of BT (in mean 3.2%) for balance gains in some BESTest scores, when compared to RT group (-0.98%). CONCLUSION(S): Postural control in Parkinson's disease is improved when training by a directional and specific balance program than a resistance training program. CLINICAL REHABILITATION IMPACT: Balance training is superior to resistance training in regard to improving postural control of individuals with PD. Gold standard instruments (high in cost and difficult to access) were used to assess balance, as well as scales with clinical applicability (low cost, easily acceptable, applicable and valid), which can guide the management of physiotherapists both in their decision-making and in clinical practice.Copyright © 2016 EDI ZIO NI MINERVA MEDICA.

Database: EMCARE

9. Perceptive rehabilitation and trunk posture alignment in patients with Parkinson disease: A single blind randomized controlled trial

Author(s): Morrone M.; Miccinilli S.; Bravi M.; et al.
Source: European Journal of Physical and Rehabilitation Medicine; Dec 2016; vol. 52 (no. 6); p. 799-809
BACKGROUND: Recent studies aimed to evaluate the potential effects of perceptive rehabilitation in Parkinson Disease reporting promising preliminary results for postural balance and pain symptoms. To date, no randomized controlled trial was carried out to compare the effects of perceptive rehabilitation and conventional treatment in patients with Parkinson Disease. AIM: To evaluate whether a perceptive rehabilitation treatment could be more effective than a conventional physical therapy program in improving postural control and gait pattern in patients with Parkinson Disease. DESIGN: Single blind, randomized controlled trial. SETTING: Department of Physical and Rehabilitation Medicine of a University Hospital. POPULATION: Twenty outpatients affected by idiopathic Parkinson Disease at Hoehn and Yahr stage <=3. METHOD(S): Recruited patients were divided into two groups: the first one underwent individual treatment with Surfaces for Perceptive Rehabilitation (Su-Per), consisting of rigid wood surfaces supporting deformable latex cones of various dimensions, and the second one received conventional group physical therapy treatment. Each patient underwent a training program consisting of ten, 45-minute sessions, three days a week for 4 consecutive weeks. Each subject was evaluated before treatment, immediately after treatment and at one month of follow-up, by an optoelectronic stereophotogrammetric system for gait and posture analysis, and by a computerized platform for stabilometric assessment. RESULT(S): Kyphosis angle decreased after ten sessions of perceptive rehabilitation, thus showing a substantial difference with respect to the control group. No significant differences were found as for gait parameters (cadence, gait speed and stride length) within Su-Per group and between groups. Parameters of static and dynamic evaluation on stabilometric platform failed to demonstrate any statistically relevant difference both within-groups and between-groups. CONCLUSION(S): Perceptive training may help patients affected by Parkinson Disease into restoring a correct midline perception and, in turn, to improve postural control. CLINICAL REHABILITATION IMPACT: Perceptive surfaces represent an alternative to conventional rehabilitation of postural disorders in Parkinson Disease. Further studies are needed to determine if the association of perceptive treatment and active motor training would be useful in improving also gait dexterity.

10. Complementary physical therapies for movement disorders in Parkinson's disease: A systematic review

Author(s): Alves Da Rocha P.; Morris M.E.; McClelland J.

Source: European Journal of Physical and Rehabilitation Medicine; Dec 2015; vol. 51 (no. 6); p. 693-704

Publication Date: Dec 2015

Publication Type(s): Article

Abstract: Background. The growth and popularity of complementary physical therapies for Parkinson's disease (PD) attempt to fill the gap left by conventional exercises, which does not always directly target wellbeing, enjoyment and social participation. Aim. To evaluate the effects of complementary physical therapies on motor performance, quality of life and falls in people living with PD. Design. Systematic review with meta-analysis. Population. Outpatients- adults diagnosed with idiopathic PD, male or female, modified Hoehn and Yahr scale I-IV, any duration of PD, any duration of physical treatment or exercise. Methods. Randomized controlled trials, non-randomized controlled trials and case series studies were identified by systematic searching of health and rehabilitation electronic databases. A standardized form was used to extract key data from studies by two independent researchers. Results. 1210 participants from 20 randomized controlled trials, two non-randomized controlled trials and 13 case series studies were included. Most studies had
moderately strong methodological quality. Dancing, water exercises and robotic gait training were an effective adjunct to medical management for some people living with PD. Virtual reality training, mental practice, aerobic training, boxing and Nordic walking training had a small amount of evidence supporting their use in PD. Conclusion. On balance, alternative physical therapies are worthy of consideration when selecting treatment options for people with this common chronic disease.

Clinical Rehabilitation Impact. Complementary physical therapies such as dancing, hydrotherapy and robotic gait training appear to afford therapeutic benefits, increasing mobility and quality of life, in some people living with PD.

**Database:** EMCARE

11. A Randomized Controlled Trial to Reduce Falls in People with Parkinson's Disease

**Author(s):** Morris M.E.; Menz H.B.; Huxham F.E.; et al.

**Source:** Neurorehabilitation and Neural Repair; Sep 2015; vol. 29 (no. 8); p. 777-785

**Publication Date:** Sep 2015

**Publication Type(s):** Article

**Abstract:** Background. Falls are common and disabling in people with Parkinson's disease (PD). There is a need to quantify the effects of movement rehabilitation on falls in PD. Objective. To evaluate 2 physical therapy interventions in reducing falls in PD. Methods. We randomized 210 people with PD to 3 groups: progressive resistance strength training coupled with falls prevention education, movement strategy training combined with falls prevention education, and life-skills information (control). All received 8 weeks of outpatient therapy once per week and a structured home program. The primary end point was the falls rate, recorded prospectively over a 12 month period, starting from the completion of the intervention. Secondary outcomes were walking speed, disability, and quality of life. Results. A total of 1547 falls were reported for the trial. The falls rate was higher in the control group compared with the groups that received strength training or strategy training. There were 193 falls for the progressive resistance strength training group, 441 for the movement strategy group and 913 for the control group. The strength training group had 84.9% fewer falls than controls (incidence rate ratio [IRR] = 0.151, 95% CI 0.071-0.322, P <.001). The movement strategy training group had 61.5% fewer falls than controls (IRR = 0.385, 95% CI 0.184-0.808, P =.012). Disability scores improved in the intervention groups following therapy while deteriorating in the control group. Conclusions. Rehabilitation combining falls prevention education with strength training or movement strategy training reduces the rate of falls in people with mild to moderately severe PD and is feasible.

**Database:** EMCARE


**Author(s):** Cancela JM ; Ayan, Carlos; Nascimento, Carla Manuela Crispim; Seijo-Martínez, Manuel

**Source:** Topics in Geriatric Rehabilitation; Apr 2015; vol. 31 (no. 2); p. 152-158

**Publication Date:** Apr 2015

**Publication Type(s):** Academic Journal

**Abstract:** Objective: This study aimed to analyze and compare the role of a water-based exercise program versus a combination of water and callisthenic exercises on postural control, functional independence, and freezing of gait (FOG) in patients with mild to moderate Parkinson disease. Methods: Twenty-five community-dwelling participants with idiopathic Parkinson disease were recruited. Of these, 9 participants took part in a water-based program of physical exercises and the
other 16 participants took part in a combined program that consisted of callisthenic exercises plus an aquatic exercise session. Both programs were 16 weeks in duration. The clinical evaluation assessed the festination by means of the FOG score test; postural control was verified by means of the balance test of the short physical performance battery, and the Spanish validated version of the Unified Parkinson's Disease Rating Scale part 2 was used to assess functional independence. Participants were evaluated before and after 16 weeks of both proposed programs. Results: The results showed improvement in FOG for both groups, although a significant main effect was observed only in the patients who performed the callisthenic exercise plus an aquatic exercise program. Postural control did not show significant improvements after both proposed physical exercise programs as soon as functional autonomy. Our preliminary results suggest that training sessions with the combination of water plus callisthenic exercises may be a useful physical rehabilitation strategy for individuals with mild to moderate Parkinson disease who have FOG.

**Database:** CINAHL

13. Randomized cross-over trial to investigate the efficacy of a two-week physiotherapy programme with repetitive exercises of cueing to reduce the severity of freezing of gait in patients with Parkinson's disease.

**Author(s):** Fietzek, Urban M; Schroeteler, Frauke E; Ziegler, Kerstin; et al.

**Source:** Clinical rehabilitation; Sep 2014; vol. 28 (no. 9); p. 902-911

**Publication Date:** Sep 2014

**Publication Type(s):** Research Support, Non-u.s. Gov't Randomized Controlled Trial Journal Article

**PubMedID:** 24691217

Available at [Clinical rehabilitation](#) - from ProQuest (Health Research Premium) - NHS Version

**Abstract:** OBJECTIVE To investigate the efficacy of a two-week programme of repetitive exercise with cueing and movement strategies upon freezing of gait in people with Parkinson's disease. DESIGN Randomized cross-over trial. SETTING Specialist clinic for Parkinson's disease. SUBJECTS A total of 22 patients with Parkinson's disease and freezing while other symptoms had favorably responded to dopaminergic treatment. INTERVENTION Patients were randomized into a four-week cross-over trial, and received either treatment (Group 1) or no treatment (Group 2) during Period 1, and switched during Period 2. Treatment consisted of a two-week programme during which the patients exercised cueing, and movement strategies together with a physiotherapist. MAIN MEASURE The primary outcome measure was a freezing score assessed from blinded and random ratings of video recordings. The secondary outcome measure was a patient-reported freezing questionnaire. Mean differences between the treatment periods (treatment arms) were evaluated for treatment (period) effects. Sums of treatment periods were evaluated for carry-over effects. RESULTS The programme led to a significant treatment effect in the freezing score of 3.0 improvement (95% confidence interval 0.9-5.0; p < 0.01). No carry-over or period effects were detected. The questionnaire revealed a period effect, so groups were compared after Period 1, where a significant difference was found (15.0 vs. 11.7; p < 0.05). CONCLUSIONS: The two-week physiotherapy programme reduced the severity of freezing in patients with Parkinson's disease.

**Database:** Medline

14. *Wii Fit Balance Board Playing Improves Balance and Gait in Parkinson Disease*

**Author(s):** Mhatre P.V.; Vilares I.; Stibbs S.M.; et al.

**Source:** PM and R; 2013; vol. 5 (no. 9); p. 769-770

**Publication Date:** 2013
**Publication Type(s):** Article

**Available at PM & R: the journal of injury, function, and rehabilitation** - from Unpaywall

**Abstract:**

Objective: To assess the effect of exercise training by using the Nintendo Wii Fit video game and balance board system on balance and gait in adults with Parkinson disease (PD).

Design(s): A prospective interventional cohort study.

Setting(s): An outpatient group exercise class.

Participant(s): Ten subjects with PD, Hoehn and Yahr stages 2.5 or 3, with a mean age of 67.1 years; 4 men, 6 women.

Intervention(s): The subjects participated in supervised group exercise sessions 3 times per week for 8 weeks by practicing 3 different Wii balance board games (marble tracking, skiing, and bubble rafting) adjusted for their individualized function level. The subjects trained for 10 minutes per game, a total of 30 minutes training per session.

Main Outcome Measurements:
- Pre- and postexercise training, a physical therapist evaluated subjects' function by using the Berg Balance Scale, Dynamic Gait Index, and Sharpened Romberg with eyes open and closed.
- Postural sway was assessed at rest and with tracking tasks by using the Wii balance board.

Result(s): Balance as measured by the Berg Balance Scale improved significantly, with an increase of 3.3 points (P=.016). The Dynamic Gait Index improved as well (mean increase, 2.8; P=.004), as did postural sway measured with the balance board (decreased variance in stance with eyes open by 31%; P=.049). Although the Sharpened Romberg with eyes closed increased by 6.85 points and with eyes opened by 3.3 points, improvements neared significance only for eyes closed (P=.07 versus P=.188).

Conclusion(s): An 8-week exercise training class by using the Wii Fit balance board improved selective measures of balance and gait in adults with PD. However, no significant changes were seen in mood or confidence regarding balance. © 2013 American Academy of Physical Medicine and Rehabilitation.

**Database:** EMCARE

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15. The effect of supervised exercises on static and dynamic balance in Parkinson's disease patients

**Author(s):** Kara B.; Genc A.; Colakoglu B.D.; Cakmur R.

**Source:** NeuroRehabilitation; 2012; vol. 30 (no. 4); p. 351-357

**Publication Date:** 2012

**Publication Type(s):** Article

**Abstract:**

Background/Aim: The aim of the this study was to examine the effects of supervised exercises on measures of static and dynamic balance Parkinson's disease (PD) patients.

Material(s) and Method(s): The study used a before-after study design. Seventeen PD patients with mild and moderate levels of disability were enrolled in the study. Patients followed an exercise program under a physiotherapist's supervision one day a week for 12 weeks. The standard Balance Master protocol was used before and after exercise to assess static and dynamic balance.

Result(s): A statistically significant difference was observed in the unilateral balance test, one of the static balance assessments performed while standing on the left or right leg with eyes closed (p < 0.05). With respect to dynamic balance, a statistically significant difference in the maximum excursion of limits of stability (LOS), one of the balance tests used in the supervised exercise programs for patient with Parkinson’s disease, between measurements taken before and after exercises was also detected (p < 0.05).

Conclusion(s): The change of LOS revealed that dynamic balance improved due to the exercises. Thus, our supervised exercise program provided improvement in dynamic balance of PD patients. © 2012 -IOS Press and the authors.

**Database:** EMCARE
16. Exercise for people in early- or mid-stage parkinson disease: A 16-month randomized controlled trial

**Author(s):** Schenkman M.; Hall D.A.; Baron A.E.; Mettler P.; Kohrt W.M.; Schwartz R.S.

**Source:** Physical Therapy; Nov 2012; vol. 92 (no. 11); p. 1395-1410

**Publication Date:** Nov 2012

**Publication Type(s):** Article

Available at Physical Therapy - from HighWire - Free Full Text

Available at Physical Therapy - from ProQuest (Health Research Premium) - NHS Version

Available at Physical Therapy - from Unpaywall

**Abstract:** Background. Exercise confers short-term benefits for individuals with Parkinson disease (PD). Objective. The purpose of the study was to compare short- and long-term responses among 2 supervised exercise programs and a home-based control exercise program. Design. The 16-month randomized controlled exercise intervention investigated 3 exercise approaches: flexibility/balance/function exercise (FBF), supervised aerobic exercise (AE), and home-based exercise (control). Setting. This study was conducted in outpatient clinics. Patients. The participants were 121 individuals with PD (Hoehn & Yahr stages 1-3). Interventions. The FBF program (individualized spinal and extremity flexibility exercises followed by group balance/functional training) was supervised by a physical therapist. The AE program (using a treadmill, bike, or elliptical trainer) was supervised by an exercise trainer. Supervision was provided 3 days per week for 4 months, and then monthly (16 months total). The control group participants exercised at home using the National Parkinson Foundation Fitness Counts program, with 1 supervised, clinic-based group session per month. Measurements. Outcomes, obtained by blinded assessors, were determined at 4, 10, and 16 months. The primary outcome measures were overall physical function (Continuous Scale-Physical Functional Performance [CS-PFP]), balance (Functional Reach Test [FRT]), and walking economy (oxygen uptake [mL/kg/min]). Secondary outcome measures were symptom severity (Unified Parkinson's Disease Rating Scale [UPDRS] activities of daily living [ADL] and motor subscales) and quality of life (39-item Parkinson's Disease Quality of Life Scale [PDQ-39]). Results. Of the 121 participants, 86.8%, 82.6%, and 79.3% completed 4, 10, and 16 months, respectively, of the intervention. At 4 months, improvement in CS-PFP scores was greater in the FBF group than in the control group (mean difference=4.3, 95% confidence interval [CI]=1.2 to 7.3) and the AE group (mean difference=3.1, 95% CI=0.0 to 6.2). Balance was not different among groups at any time point. Walking economy improved in the AE group compared with the FBF group at 4 months (mean difference=-1.2, 95% CI=-1.9 to -0.5), 10 months (mean difference =-1.2, 95% CI=-1.9 to -0.5), and 16 months (mean difference=-1.7, 95% CI=-2.5 to -1.0). The only secondary outcome that showed significant differences was UPDRS ADL subscale scores: the FBF group performed better than the control group at 4 months (mean difference=-1.47, 95% CI=-2.79 to -0.15) and 16 months (mean difference=-1.95, 95% CI=-3.84 to -0.08). Limitations. Absence of a non-exercise control group was a limitation of the study. Conclusions. Findings demonstrated overall functional benefits at 4 months in the FBF group and improved walking economy (up to 16 months) in the AE group. © 2012 American Physical Therapy Association.

**Database:** EMCARE


**Author(s):** Smania N.; Corato, Elisabetta; Tinazzi, Michele; et al.
Background. Postural instability (PI) is a disabling sign of Parkinson’s disease (PD) not easily amenable to treatment with medication. Objective. To evaluate the effects of balance training on PI in patients with PD. Methods. A total of 64 patients with PI were randomly assigned to the experimental group (n = 33) for balance training or to the control group (n = 31) for general physical exercises. Each patient received 21 treatment sessions of 50 minutes each. Patients were evaluated by a blinded rater before and after treatment as well as 1 month posttreatment using the Berg Balance Scale (BBS), Activities-Specific Balance Confidence Scale (ABC), postural transfer test, self-destabilization of the center of foot pressure test, number of falls, Unified Parkinson’s Disease Rating Scale (UPDRS), modified Hoehn and Yahr (H&Y) Staging Scale, and Geriatric Depression Scale (GDS). Results. At the end of treatment, the experimental group showed significant improvements in all outcome measures, except for the UPDRS and the H&Y scale. Improvement was maintained at the 1-month follow-up in all outcome measures except for the GDS. No significant changes in performance were observed in the control group. Conclusions. A program of balance training can improve PI in patients with PD.

Database: CINAHL


Author(s): Dereli E.E.; Yaliman A.

Source: Clinical Rehabilitation; Apr 2010; vol. 24 (no. 4); p. 352-362

Abstract: Objectives: To compare the effects of a physiotherapist-supervised exercise programme in an exercise unit and self-supervised home exercise programme on quality of life in patients with Parkinson’s disease. Design(s): Assessor-blinded, quasi-randomized trial (alternate allocation). Setting(s): An outpatient exercise unit; home settings. Participant(s): Thirty patients with idiopathic Parkinson’s disease, Hoehn & Yahr I-II, stable medication use. Intervention(s): Patients were included in the physiotherapist-supervised or home group. The exercise programme was performed for 10 weeks, three times/week either under the supervision of a physiotherapist or at home without supervision. Main Outcome Measure(s): Parkinson’s Disease Quality of Life Questionnaire (PDQLQ), Nottingham Health Profile (NHP), Unified Parkinson’s Disease Rating Scale (UPDRS), Beck Depression Inventory (BDI). Result(s): Patients in the supervised physiotherapy group improved more than the home exercise group in Parkinson’s Disease Quality of Life Questionnaire (total score, Parkinson’s symptoms, emotional function), Nottingham Health Profile total, Unified Parkinson’s Disease Rating Scale (all domains) and Beck Depression Inventory scores. Conclusion(s): The exercise programme under physiotherapist supervision was found to be more effective at improving activities of daily living, motor, mental, emotional functions and general health quality in patients with Parkinson’s disease compared with a self-supervised home programme. © 2010 The Author(s).

Database: EMCARE
19. Does attendance at a multidisciplinary outpatient rehabilitation program for people with Parkinson’s disease produce quantitative short term or long term improvements? A systematic review.

Author(s): Johnston M


Abstract: A systematic review was conducted of the evidence for the effectiveness of the outcomes from treatment by multidisciplinary outpatient rehabilitation programs which were provided by more than one allied health or nursing discipline for people diagnosed with Parkinson's disease (PD). The search yielded only 4 studies ranging from poor to good quality, on the outcomes of multidisciplinary rehabilitation. There were no available random controlled trials on short term outcomes although some limited evidence from lower quality studies suggested significant short term gains are achieved in gait speed and step length. No consistent evidence is available for other outcome measures. From the available evidence for longer term outcomes over a period of 4-6 months post intervention the improvements in outcome measures for gait are not significant. The results of this systematic review suggest that there is limited evidence to suggest short term gains in outcomes for people with PD attending multidisciplinary programs but over a 4-6 month period these gains are no longer significant. Overall, there is very limited high level evidence available to show whether multidisciplinary out-patient programs produce effective, either short or long term, outcomes for PD and further research is needed.

Database: PubMed

Databases and Search Terms

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[Cochrane, NICE Evidence and Pubmed were also searched]
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