

# European Physiotherapy Guideline for Parkinson's Disease

Developed with twenty European professional associations

Information for clinicians



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This Guideline is endorsed by the Association for Physiotherapists in Parkinson's Disease Europe (APPDE), the European Parkinson's Disease Association (EPDA) and the European Region of the World Confederation for Physical Therapy (ER-WCPT).



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Available for downloading at [www.parkinsonnet.info/euguideline](http://www.parkinsonnet.info/euguideline) are

- Guideline
- Guideline information for people with Parkinson's
- Guideline information for clinicians (this document)
- Development and scientific justification

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The European Physiotherapy Guideline for Parkinson's disease supports physiotherapists in taking decisions towards patient-centred, evidence-informed practice. It also offers people with Parkinson's disease (pwp) information and tools to manage their movement-related health to focus on goals that are important to them. Here we provide a short overview of the Guideline for clinicians to support optimal referral of pwp to physiotherapy, feasible expectations and good communication.

### **A joint collaboration of 19 European countries**

ParkinsonNet, a non profit foundation at the Radboudumc university medical centre aiming to improve Parkinson's care, and the Royal Dutch Society for Physical Therapy (KNGF) initiated the development of this first European Physiotherapy Guideline for Parkinson's disease. The Guideline Development Group (GDG) represents professional physiotherapy associations from 19 European countries. Pwp were involved in the Guideline development from the outset and have contributed throughout the process. The Guideline is endorsed by the Association for Physiotherapists in Parkinson's Disease Europe (APPDE), the European Parkinson's Disease Association (EPDA) and the European Region of the World Confederation for Physical Therapy (ER-WCPT).

### **Methods of development: GRADE**

The starting point for this Guideline were the 2004 evidence-based KNGF Guideline for Parkinson's disease<sup>1</sup> and a pan-European physiotherapy survey to gain insight in current physiotherapy care and barriers and facilitators towards optimal care. To draft recommendations, Grades of Recommendation Assessment, Development and Evaluation (GRADE) were used. Therefore, the levels and description of the recommendations differ from those reported in the Guidelines published by the KNGF, the European Federation of Neurological Societies (EFNS), the Movement Disorders Society (MDS) and the U.K. National Institute for Health and Clinical Excellence (NICE)<sup>2-6</sup>. GRADE is endorsed by many organisations and journals, including the Cochrane Collaboration, the World Health Organization, NICE and the British Medical Journal. Using GRADE, recommendations are based on:

- Critical outcomes: those with a mean GDG-rated score for importance of 6.5 or above (full scale 1 to 10)
- Quality of the evidence: taking into account risk of bias (such as regarding randomisation, blinding, drop-outs) and imprecision (such as few patients included)
- Size of the effects: a meta-analysis was carried out
- Benefits and burdens: taking into account the generalisability of the effects, undesirable effects of the intervention and values and preferences of patients and therapists

Literature up and to December 2012 was searched for, selected and appraised. Finally, 70 controlled clinical trials were used<sup>7-76</sup>.

This Guideline provides GRADE-based recommendations for each physiotherapy core area: balance, gait, transfers and physical capacity. Based on the outcome of the meta-analyses, recommendations are either for or against using a specific type of physiotherapy intervention to target a specific problem. The strength of this recommendation can be strong or weak, based on the quality of the evidence and the balance between benefits and burden. The risk and burden of physiotherapy is generally very low. Please note that 'against' means that benefits probably do not outweigh risks and burdens. Most commonly, effects showed a positive trend, but the (wide) confidence interval of the effect included 0. 'Against' does not mean that the specific intervention has negative effects on that outcome.

In addition to the GRADE-based recommendations, the Guideline provides GDG advice which is based on scientific evidence and expert opinion. These aim to reduce the barriers inhibiting optimal physiotherapy care identified through the pan-European physiotherapy survey (response n=3,405)<sup>77,78</sup>, meetings with Parkinson-expert physiotherapists and results of focus groups with pwp. They concern the physiotherapist's Parkinson-specific knowledge and skills, timely referral, patient-centeredness, collaboration and communication.

### When and why to refer for physiotherapy?

The American Academy of Neurology recommends clinicians discuss the potential of physiotherapy with pwp at least annually.<sup>79</sup> To support appropriate referral, the GDG has drafted criteria for referral (Table 1). These are in line with the GRADE-based recommendations for interventions. Referral may be based on one or more of the following criteria: H&Y Stage; presenting impairments and activity limitations; hospital or nursing home admission.

**Table 1 Referral criteria for pwp to physiotherapy**

Based on*	Description
Stage: Early	<p>Soon after the diagnosis of Parkinson's disease for:</p> <ul style="list-style-type: none"> <li>• self-management advice, education and coaching, including support to stay physical active</li> <li>• if required, tailored intervention to prevent limitations in functional mobility through motor learning, to reduce fear of falling and to improve physical capacity</li> </ul>
Specific impairments or limitations in activities	<p>Presence of:</p> <ul style="list-style-type: none"> <li>• Reduced physical capacity</li> <li>• Functional mobility limitations regarding:                             <ul style="list-style-type: none"> <li>- transfers, such as rising from a chair or rolling over in bed</li> <li>- gait, including freezing</li> <li>- balance, including falls</li> <li>- manual activities</li> </ul> </li> <li>• Pain, non-related to medication</li> </ul>
Context: hospital or nursing home	<p>If admitted to a hospital for any cause, or to a nursing home, aiming to educate and, if necessary, train pwp and health professionals to improve physical capacity or limitations in functional mobility, or to support prevention of falls (e.g. using walking aids) and pressure sores</p>

\*In addition, specifically trained physiotherapists in the United Kingdom, have a qualification in non-medical prescribing. They have the ability to prescribe, as well as supply and administer medicines to individually named patients.<sup>80</sup> The terms by which this process occurs are legislated and monitored under strict guidance

### Stage-based: early referral

Early referral is desired because difficulties in daily activities can be present even in the early stages of Parkinson's disease. At Hoehn & Yahr 1-2, the total scores on the Unified Parkinson's Disease Rating Scale (UPDRS) may already be below 20.<sup>81,82</sup> This is particularly the case in pwp with the PIGD-type.<sup>83</sup> Physiotherapy can improve activity limitations.

Early referral is also important to support pwp to maintain sufficient physical activity levels and thus prevent secondary complications. Exercise has multiple physiological, psychological and physical benefits and may even result in neurprotection<sup>84</sup>. During a one-off consultation, a physiotherapist can evaluate the needs for advice and education, coaching towards self-management or supervised training. On [www.parkinsonnet.info/euguideline](http://www.parkinsonnet.info/euguideline), Information for people with Parkinson's can be downloaded, supporting pwp in their self-management.

### **Problem-based: impairments and activity limitations**

During the course of the condition, the number of impairments in functions, activity limitations and restrictions in participation will increase. There is consistent data supporting physiotherapy referral and use in Parkinson's disease for transfers and mobility problems, gait disturbances, balance, falls and freezing.

### **Context-based: hospital or nursing home admission**

The lack of Parkinson-expertise of health professionals may enhance the risk for adverse events during hospital and nursing home stay<sup>86-91</sup>. Problem areas include adverse events related to medication (e.g. wrong timing, withdrawal, or use of contra-indicated drugs), swallowing and immobilisation, including falls and pressure sores<sup>86-94</sup>. Therefore, the GDG recommends to consult a physiotherapist when pwp are admitted to hospital.<sup>87</sup> Physiotherapy will provide education and, if required, exercise to support prevention of falls, pressure sores and a decrease of physical capacity. Next to pwp, physiotherapy targets health professionals involved in hospital care, such as nurses.

### **To which physiotherapist to refer?**

Parkinson's disease is complex and evidence on physiotherapy-specific interventions for pwp is constantly increasing. Moreover, in some European countries physiotherapists are first-contact practitioners not requiring a medical referral. Therefore, it is critical that physiotherapists are fully-informed regarding the evidence<sup>95</sup>. Whilst there is no golden standard for 'Parkinson's-expertise', this phenomenon is associated with the number of pwp treated annually. Physiotherapists with a annual treatment volume of seven report higher self-perceived expertise than those treating less than four pwp annually.<sup>96</sup> However, results of a survey in which 3,405 physiotherapists throughout Europe participated showed that on average most physiotherapists treat as few as four pwp annually. This treatment volume is unlikely to be sufficient to gain and maintain Parkinson's-expertise. The median needed treatment number to gain and retain sufficient expertise reported was 10, with 50% of the answers ranging from 6 to 20. Often, this number will be hard to reach. Most physiotherapists reported limited Parkinson's-expertise; had not received Parkinson-training; were unaware of the KNGF Guideline (freely available in Dutch and English since 2004); and did not use measurement tools. The GDG has agreed upon preferred characteristics of physiotherapists to refer pwp to (Table 2).

**Table 2 Preferred characteristics of physiotherapists to refer pwp to**

- Providing evidence-based, patient-centred care (such as using this Guideline for decision-support)
- Received general postgraduate education on Parkinson's disease or movement disorders
- A higher than average patient volume (average is four pwp annually)
- Familiarity with Parkinson's-specific referral criteria to other health care providers
- Closely collaborating with other health care providers with Parkinson's-expertise
- Receiving continuous, up-to-date Parkinson's-related education from (inter)nationally recognised experts

### **What information is helpful to the physiotherapist upon referral?**

Specific information provided upon referral will support the physiotherapist and pwp in setting realistic treatment goals and selecting the most appropriate intervention. Moreover, it minimises requests from the pwp for information already available, thus reducing patient and carer burden (Table 3).

**Table 3 Information supportive upon referral****Essential**

- Reason for referral
- Diagnosis, distinguishing Parkinson's disease from atypical parkinsonisms
- Year of diagnosis and disease stage: provide a Hoehn & Yahr classification?
- Motor complications, such as on and off state predictability, dyskinesias and dystonia: provide MDS-UPDRS item scores?
- Mental complications, such as executive dysfunction (concentration, holding and using information, decision-making, planning, shifting attention), anxiety, apathy, depression, hallucinations and impulse control disorders (which can also be related to exercising)
- Other health complications influencing physiotherapy options, such as heart failure, osteoporosis, COPD, arthritis and diabetes
- Current medical treatment, including neurosurgery and non-Parkinson's medication, with possible adverse events influencing physiotherapy options

**Helpful**

- Other interventions already trialled for the problems referred for, and results thereof
- Other current interventions, such as by a speech and language therapist or a psychologist
- Expected outcome of physiotherapy intervention
- Preferences regarding communication

**What to expect from physiotherapy?**

Physiotherapy assessment may take one hour (two sessions), depending on the complexity of pwp specific problems, slowness in movement, information processing speed and limitations in prioritising problems. Whenever possible, physiotherapists will provide pwp with the Pre-assessment Information Form to fill in before their first visit (Appendix 2, Information for people with Parkinson's). This gives insight in the pwp' main problems, levels of physical activity, fall risk and freezing. During history taking and physical examination, standardised measurement tools are used to gain systematic insight into current problems and to decide whether physiotherapy intervention is indicated. If so, the physiotherapist and pwp will collaboratively decide upon challenging and feasible treatment goals and select appropriate interventions: advice, education, exercise and training of compensatory strategies (cues and strategies for complex motor sequences). The preferred intervention will depend on the patient specific treatment goals and preferences (Table 4).

'Conventional physiotherapy' includes all physiotherapist-supervised active exercise interventions targeting gait, balance, transfers and physical capacity, or a combination thereof. There will be a focus on large amplitude functional-task exercises, positive feedback and a progressive increase of intensity and complexity. Whenever possible, pwp will be supported towards non-supervised exercising, including joining Parkinson's specific or general exercise, dance or Tai Chi groups. In early stages (Hoehn and Yahr 2 and 3), physiotherapy may aim for motor learning. In case of gait limitations, the physiotherapist may explore with the pwp the to them optimal type and frequency of cueing and train how to use this. When using strategies for complex motor sequences, the physiotherapist will teach the pwp why and how to break down a complex task in simple components and carry the components out with attention. The duration of a treatment period, as well as the frequency of the visits will depend on the individual goals and treatment plan. Details to the intervention are described Chapter 6 of the Guideline, available for download at [www.parkinsonnet.info/euguideline](http://www.parkinsonnet.info/euguideline).

Upon completion of a treatment period, or during in case of prolonged treatment, the physiotherapist will communicate with the referring clinician about the treatment goal, plan and (expected) effect, and support this information with data collected with the measurement tools. As Parkinson's disease is progressive, goals can be towards improvement, maintenance of a status quo or towards reduced speed of deterioration. If compensatory strategies are used, such as cueing to reduce freezing of gait, the underlying problem is not taken away. Patients learn to circumvent the issue, and hence will never solve the problem 100%. Physiotherapists support pwp in their self-management. They discuss and agree with the pwp upon time and means of ongoing contact, depending on the pwp individual circumstances and needs, varying from one to twelve months.

**Table 4 GRADE-based recommendations for physiotherapy interventions with a positive effect for pwP**

Level	Meaning
Strong for	Positive effect and 0 outside confidence interval of effect; Evidence quality moderate/high
Weak for	Positive effect and 0 outside effect confidence interval; Quality of evidence low or moderate/high but only small effect or very large confidence interval
Weak against	Positive effect, but 0 inside confidence interval of effect

  

Core area	ICF level	Outcome	Types of interventions						
			Conventional physiotherapy	Treadmill	Massage	Cueing	Strategies for CMS	Dance: tango	Tai Chi
Balance	Balance capacity	No of falls	Weak against						Strong for
		BBS	Strong for	Weak for					Strong for
		FR	Strong for			Weak against			Strong for
		DGI				Strong for			
		Mini-BESTest						Strong for	
Balance & Gait	Capacity of functional mobility	FES / ABC	Weak against			Weak against			
		Timed turn	Weak against						
Gait	Walking capacity	Speed	Strong for	Strong for		Strong for	Weak against	Weak against	Strong for
		Stride length	Weak against	Strong for		Weak against	Strong for	Weak against	Strong for
		Step length	Weak against			Strong for	Weak against		
		Cadence	Weak against	Weak against		Weak against	Weak against		
		Distance	Weak against	Strong for				Weak against	Strong for
		Walking performance	FOG-Q	Weak against			Strong for		Weak against
Gait, Balance & Transfers	Capacity of functional mobility	TUG	Strong for			Weak against		Strong for	Strong for
		PAS				Strong for			
Transfers	Capacity of functional mobility	Sit-to-stand				Strong for			
		PAS – Chair				Strong for			
Physical Capacity	Muscle functions	Strength	Strong for	Weak against					Strong for
	Walking capacity	Walk distance	Weak against	Strong for				Weak against	Strong for
Other	Movement functions	UPDRS III	Strong for	Weak against		Strong for	Weak against	Weak against	Strong for
		P&G Score*				Strong for			
		PDQ-39	Weak against			Weak against		Weak against	
		EQ-5D	Weak against						
	Quality of life	PDQL	Weak against**						
		Patient-based treatment effect	CGI			Strong for			
			PSI-PD					Strong for	

\*UPDRS III items 15 & 29–30 only; \*\* for combined PDQ-39, EQ-5D and PDQL-scores: weak against

Outcomes: ABC, Activities Balance Confidence Scale; BBS, Berg Balance Scale; CGI, Clinical Global Impression; DGI, Dynamic Gait Index; EQ-5D, EuroQol 5-D; FOG-Q, Freezing of Gait Questionnaire; FES, Falls Efficacy Scale; FR, Functional Reach; PAS, Parkinson Activity Scale; PDQ-39, Parkinson's Disease Quality of Life Questionnaire 39; PDQL, Parkinson Disease Quality of Life Questionnaire; PSI-PD, Patient Specific Index for Parkinson's disease; TUG, Timed Up and Go; UPDRS, Unified Parkinson's disease Rating Scale

**Conventional physiotherapy:** all physiotherapist-supervised active exercise interventions targeting gait, balance, transfers or physical capacity, or a combination thereof

**Strategies for CMS (complex movement sequences):** formerly called cognitive movement strategies

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