This paper is divided into two parts. The first part contains illustrations of physiotherapy interventions according to the evidence-based Clinical Practice Guidelines for Physical Therapy in Patients with Parkinson’s Disease (PD) developed by the Royal Dutch Society for Physical Therapy (KNGF) and endorsed by the Association of Physiotherapists in Parkinson’s Disease Europe. The guidelines identify six core areas of physiotherapy practice: physical capacity and prevention of inactivity; transfers; gait; posture; reaching and grasping; and balance and falls. They focus on axial symptoms, where drug response is on the whole not satisfactory. The treatment varies according to disease stage: early or maintenance phase (Hoehn and Yahr [H&Y] stages 1–2), mid- or complex phase (H&Y 3–4) and late or palliative phase (H&Y 5). In the early stage the emphasis is in prevention of inactivity, physical conditioning and maintenance of joint mobility. In the middle stage the emphasis is on transfers, balance, posture, gait and upper limb function. In the late stage the emphasis is on mobilisation with aids and prevention of chest infection, contractures and pressure sores. The guidelines recommend the use of cognitive strategies for transfers by subdividing a complex movement and concentrating on the execution of each part. The guidelines also recommend the use of visual, auditory, proprioceptive and cognitive cues to manage problems of gait, and exercises for balance. The relevant problems for each patient are identified during physiotherapy assessment, and the appropriate treatment strategy requires the creative application of the guidelines. The European Parkinson’s Disease Association collected coping strategies invented by people with Parkinson’s disease, and compiled them in a DVD, which was launched at the III International Forum on Advanced Parkinson’s Disease in Seville 2008.

Physiotherapy aims at improving activities of daily living by maximising functional ability and minimising secondary complications, based on an understanding of basal ganglia function and encouraging the person’s participation in society. The core areas of physiotherapy practice are:

- physical capacity and prevention of inactivity;
- gait;
- posture;
- transfers;
- reaching and grasping; and
- balance and falls.

The treatment is goal-orientated and is tailored to a specific patient’s needs and problems, which are identified on assessment. Both patients and carers are involved in defining treatment goals and the order in which they will be addressed. The goals should be realistic to ensure that patients adhere to their physiotherapy regimens. Getting the best out of the therapy often requires creative application of the guidelines on the part of the therapist, the patient and the carer.

Physiotherapy and Drug Treatment
Physiotherapy is an adjunct to drug treatment. The core areas focus on the axial symptoms, such as gait re-education and prevention of falls, where drug response is on the whole not satisfactory. Furthermore, when the levodopa honeymoon period starts to fade, physiotherapy can offer people the strategies to cope with drug-related complications, such as freezing and dyskinesias. There is a feedback loop as well: good joint mobility and physical conditioning will facilitate better drug effect in the patient.

Recommendations for Physiotherapy Practice
The KNGF guidelines for physical therapy in patients with PD provide the following recommendations:

- training of joint mobility and muscle power to improve physical capacity;
- exercises to improve balance;
- cueing strategies to improve gait; and
- cognitive movement strategies to improve transfer.
Quality of Life Issues

Figure 1: Disease Stages According to Hoehn and Yahr Scale

Patients without balance problems (Hoehn and Yahr [H&Y] stage 1 and 2) are referred to as early-phase patients. Patients with balance problems who do not need assistance to stand or walk (H&Y 3–4) are referred to as mid-phase patients. Late-phase patients (H&Y 5) are patients who need assistance with almost every activity.

Source: Practical guidelines for physiotherapy in Parkinson’s disease (DVD). 9

Figure 2: Aims of Treatment According to Disease Progression

Now the emphasis is on transfers, balance, posture, gait and upper limb function. Further on in PD, balance can become a real problem: people start to fall, and cognitive function may decline. The patient enters the palliative stage, corresponding to H&Y 5, with an emphasis on mobilisation with aids and prevention of chest infection, contractures and pressure sores. The patient’s carers are included throughout the physiotherapy management.

Non-motor symptoms are also taken into consideration during physiotherapy, as there is a risk that co-operation will be lower in a depressive patient, while remembering the strategies will be difficult in a patient with memory or cognitive problems. Therefore, in these situations the physiotherapist will train the carer to provide cues and ensure that the right movement is performed.

Illustrations of Strategies

Early or Maintenance Phase

**Aim – Prevention of Inactivity**

Training of joint mobility and muscle power to improve physical capacity: Patients with PD tend to move progressively less. Inactivity will cause secondary complications, such as decreased aerobic capacity, joint mobility and muscle strength. An exercise programme that addresses the specific needs of the patient is recommended. The programme can be performed individually or in a group. Treadmill walking is a good alternative to basic cardiovascular training. Other alternatives are Nordic walking, or simply a good walk outdoors or a bicycle ride.

**Aim – Prevention of Falls**

Exercises to improve balance: Training to prevent falls is advised from the moment of diagnosis. One of the very earliest strategies taught by physiotherapists is to know how to get up from the floor. This sequence of movements not only trains balance, but also is an effective exercise to maintain general joint mobility.

Mid- or Complex Phase

**Aim – Preservation or Stimulation of Transfers, Gait, Posture, Balance and Upper Limb Function**

Cognitive movement strategies to improve transfers: There are many activities that the average person performs automatically that actually involve the execution of long and complex movement sequences, such as getting up from a chair. When a person with PD tries to get up from a chair without concentrating on the task, he or she often falls backwards. One strategy is to cut the long sequence of movements into small components: for example, hands on the chair arms, shift left, shift right, one, two, three and up.

Cueing strategies to improve gait: As disease progresses and medication is not as effective, some people present freezing of gait. One common problem is to freeze when trying to go through a doorway. It is possible to overcome this problem with a simple visual cue, such as a line on the floor. This cue attracts attention to the task, and the person can step over it (see Figure 3). Another strategy to overcome freezing of gait is the use of auditory cues, such as a metronome, that can be adjusted to the person’s walking rhythm.

The two characteristic problems of PD — automaticity dysfunction and difficulty with performing complex and long sequences of movement — are addressed by the last two recommendations.

The aims of rehabilitation follow disease progression, and are divided into different stages (see Figures 1 and 2). 6, 8 The early stage, which corresponds to Hoehn and Yahr (H&Y) stages 1–2, is focused on maintenance, with the emphasis on prevention of inactivity, physical conditioning and joint mobility, given considerations such as age at onset of PD and co-morbidities. As disease progresses and medication loses some effectiveness, the patient enters the mid-phase (H&Y 3–4).

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Posture, balance and upper limb function: Cuing and cognitive movement strategies are creatively used by physiotherapy to design exercises to improve posture, such as straightening the back and maintaining posture by looking at a target at eye level, or training functional arm movements, such as drinking from a cup by dividing the complex sequence into different steps and practicing each step separately. Balance training could include stepping on the spot while lifting the knees up high, following the sound of a metronome.

Late (Palliative) Phase

Aim – Prevention of Complications

Dyskinesias: One of the complications in the late stage of PD is severe unpredictable fluctuations and dyskinesias. Relaxation techniques, which include breathing exercises and correct posture, are effective in some patients. They have only a short-term effect of about five to 10 minutes, but despite this allow patients to enjoy a few minutes of rest or a nap, making a difference to their overall quality of life.

Walking aids: Stimulating mobility as much as possible is a goal of physiotherapy. Walking is encouraged, sometimes with the help of walking aids. Not every walking aid is appropriate and some are potentially dangerous if given to the wrong person. Sometimes using a walking aid at certain periods of the day under close supervision could maintain a certain level of mobility, with all of the attendant benefits.

Coping Strategies Developed by People with Parkinson’s Disease

The EPDA has launched a CD-ROM that involves the patients themselves. Many people with PD and their carers have discovered and developed their own strategies to overcome the personal obstacles they face in their daily lives. Professionals sometimes observe and report on these strategies with a certain admiration. The EPDA has taken this a step further and published a catalogue of these strategies, which is available free of charge (see Figure 4).

The aim of the Coping Strategies CD-ROM is to enable people with PD to learn from each other and to take an active part in the management of their own condition. It also helps people with PD and their carers to realise they are not alone and their problems are not unique. These strategies are therefore given to the community so they can be used in everyday practice and perhaps even inspire future research.

Methods

These strategies were collected at EPDA physiotherapy workshops in Argentina, Ireland, Japan, Luxembourg, Slovenia and South Africa. Participants were encouraged to share their problems and solutions, and were video-recorded with their consent. The footage captures spontaneous moments with no post-event editing. The DVD is presented in English, but not all subjects have English as their first language. There are a total of 44 clips categorised into eight chapters:

- coping with tremor;
- help with walking;
- managing stiffness;
- dancing and Parkinson’s;
- ways to get up;
- improving posture;
- dealing with cramps and involuntary movements (dyskinesias); and
- facilitating swallowing.

Examples

Help with Walking

Sheila has problems with her medication and tends to freeze, especially on surfaces on an incline:

“I have great difficulty walking up an incline, such as a ramp or hill. As soon as the ground goes up, my steps become smaller and I am scared of falling. But one day when I was out shopping I came across a ramp that had stripes across the slope at regular intervals. I found that if I concentrated on those stripes as I took each step, I could walk up the incline without any problem.” (See Figure 5.)

Alternatives to Walking

Pavel is a very determined man who has a problem with freezing, especially when he goes to work. He is very sound cognitively, and has discovered that a push scooter can help. He is delighted because he can move fast and turn easily and enjoy the freedom of movement, despite being blocked from walking normally:

“My medication is not effective all day long. I have periods when I am ‘off’ and during these times I cannot walk as easily as before. My steps become very small and slow and this makes life difficult, especially if it happens on my way to work as it makes me late. But I have discovered that when I’m having an ‘off’ time, I can mobilise with a scooter. It gets me to my destination quickly – I can even turn very effectively, and it’s fun! Some of my friends have found
Quality of Life Issues

Running to Reduce Stiffness
Birger realised that running helps him to reduce stiffness. So, when he feels stiff he goes for a run. He was never a strong runner, but there is a lot of power inside him to go for little runs and improve himself:

“Most of the time my physiotherapy is very beneficial and my medication is effective. But occasionally I feel stiff and cannot always move as freely as I’d like. By chance I discovered that running loosens me up. I may not be the best runner in the world, but it gives me a feeling of wellbeing and freedom of movement.”

Tremor
Tremor is very difficult for professionals and therapists to deal with, but patients have to live with it. Ken saw one of his PD friends improve his tremor by throwing a ball, but for him this was embarrassing; he felt he could not go bouncing balls everywhere, although other people have no problem with this. Therefore, he developed an alternative:

“Although catching a ball, like Branko, is effective at controlling my shaky hands, it can be embarrassing. You can’t play with a ball everywhere. In some situations, it’s just not appropriate. Instead, when my hands begin to tremble I flick my fingers – it’s something I can do more discreetly. I stretch my fingers as straight as possible, making the flicking movement as big as I can. I repeat this several times, concentrating on the flicking and stretching the fingers, until the shaking stops. When the shaking returns, I simply repeat a few more flicks.”

Getting Up from a Bus Seat
Juana has developed an efficient way to get up from a bus seat:

“I sometimes struggle standing up from a seated position when I’m on the bus; I feel like I am glued to the chair. Often the seats themselves are low which makes standing up even harder, and of course the bus may be moving, which also exacerbates the problem. So, I place my feet apart to provide a broad base of support; I clasp my hands together, between my knees, and lean forward. Then, by breaking the long sequence of standing up into small movements, I concentrate on each stage in turn while counting. I can then successfully get up – and not miss my stop!” (See Figure 7.)

This CD-ROM of coping strategies is also available on the website of the EPDA. and it forms part of an ongoing EPDA project called Coping Strategies – Tips & Tricks developed by people with Parkinson’s, their carers and healthcare professionals.

Summary
Many people with PD have their own ways to overcome daily problems. Important elements of an effective coping strategy are usefulness, safety and creativity, and the ability to use simple everyday objects and movements to overcome difficult moments. These strategies are all based on physical capabilities, but there are similar interventions for other areas, for example improving speech, facilitating cooking or making medication more effective. Overall, there is great potential for fun and useful strategies that enhance balance, concentration and co-ordination. Such tricks complement the professional physiotherapy regimen and help patients cope better with their condition. These are incredibly cost-effective strategies.

2. Association of Physiotherapists in Parkinson’s Disease Europe (APPDE): www.appde.eu
3. www.epda.eu.com/CopingStrategies
4. www.fysionet.nl/index.html?idossier_id=81&dossiers=1
10. Common mobility problems and how to address them (video). Available at: www.appde.eu/EN/resources.asp