

## ExerciseRx Parkinson

# What is the best exercise to improve **BALANCE** in Parkinson's?



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1. Any exercise that mimics **the specific activity/task you feel unbalanced in** will likely be the best “exercise”.
2. Yet, **when** multiple factors interplay, **multimodal exercise interventions** might be beneficial.
3. Ensure the exercises are both **effective** and **safe**.



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**Strong Evidence**

- Tai Chi (& Qigong)
- Dance
- Balance & Gait Physiotherapy programs
- Strength + Balance combined Training

**Moderate Evidence**

- Nordic Walking
- Yoga / Pilates
- Aquatic Therapy / Ai Chi

**Emerging**

- Martial Arts (e.g., Boxing, Aikido, adapted Karate)
- Trampoline / Balance Platform Training
- Climbing or Wall-Based Training
- Virtual Reality training

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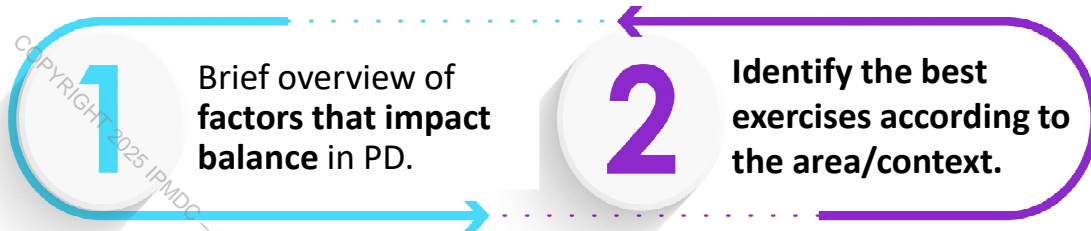


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# Today's program



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**Why do people with PD have challenges in balance?**

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## Most common deficits affecting balance in PD



### Rigidity

causes biomechanical impairments that mechanically affect postural control



### Bradykinesia

impairs postural responses and anticipatory postural adjustments



### Impaired kinesthesia

affects sensory integration

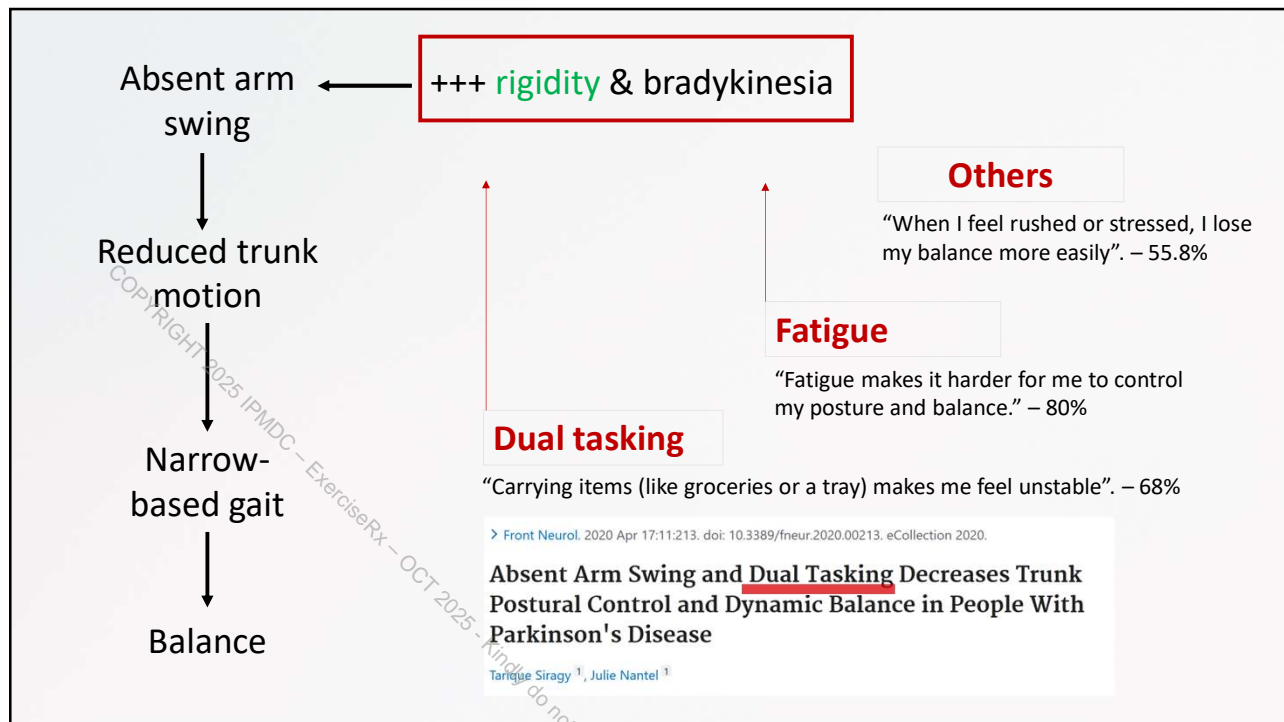


### Less automaticity of gait and balance

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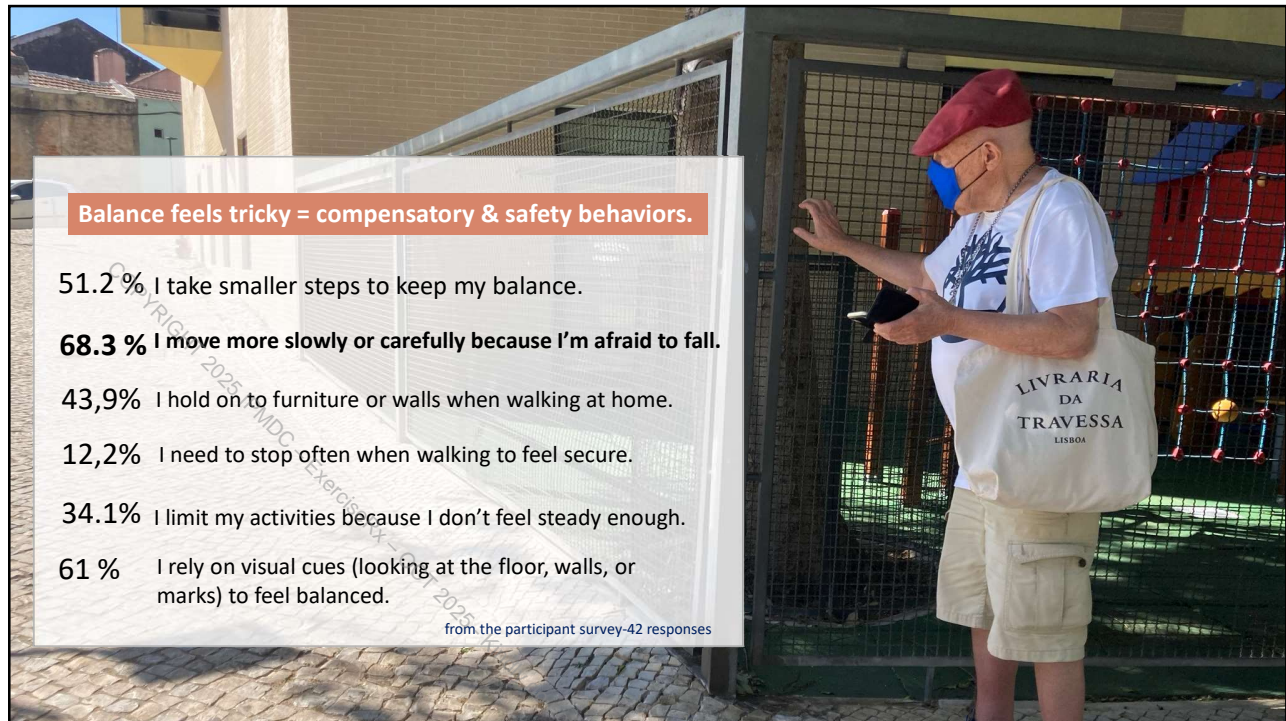
from the participant survey-42 responses

### What makes your balance worse?

<p><b>Symptoms:</b>            Fatigue (4)            Tired, PD, sitting too long            Tiredness            When I get hot and tired            Tiredness and low blood pressure            Fatigue            Low blood pressure (3)            Poor sleep, and stress            Knee joints, back pain &amp; foot issues.</p> <p><b>Environment</b>            Mess around house, difficulty of terrain            Stairs (3), wrong shoes.            Crowded areas such as Metro Platforms            Being in crowds or unfamiliar situations            Uneven surfaces            Narrow spaces</p>	<p><b>Dual tasking:</b>            Lack of concentration on the task at hand            Being distracted            Doing 2/3 things at once</p> <p><b>Changing positions:</b>            Sitting to standing            Turning (5)            Moving too quickly            Initially standing</p>	<p><b>Others:</b>            1994 diagnosis of ataxia.            vestibular issues, dizziness            Tired after physical exercise;            end of the day            Some medicines            When off &amp; shaky</p> <p><b>Do not know</b>            Doesn't seem to have a pattern            Unknown            Doesn't seem to have a pattern            Not. Sure</p>
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**Balance feels tricky = compensatory & safety behaviors.**

- 51.2 % I take smaller steps to keep my balance.
- 68.3 % I move more slowly or carefully because I'm afraid to fall.**
- 43,9% I hold on to furniture or walls when walking at home.
- 12,2% I need to stop often when walking to feel secure.
- 34.1% I limit my activities because I don't feel steady enough.
- 61 % I rely on visual cues (looking at the floor, walls, or marks) to feel balanced.

from the participant survey-42 responses

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## Today's program

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Brief overview of  
factors that impact  
balance in PD.

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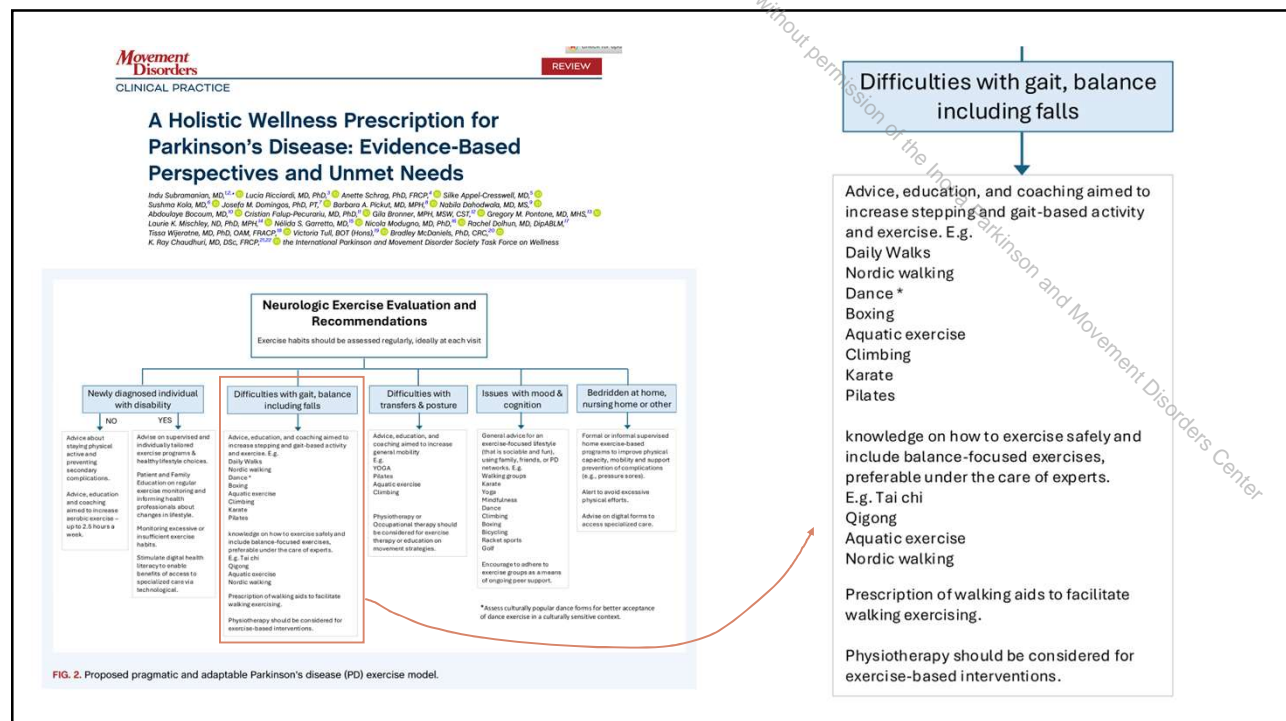
Identify the best  
exercises according to  
the area/context.

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# General referral approaches

## Prevention & Intervention strategies

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# Specific GUIDELINE recommendations for balance

International Movement Disorder Society  
European Federation of Neurology  
European Physiotherapy Guideline for Parkinson

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## Treadmill Training

MDS – Level II ; EFNS/ MDS – Level II

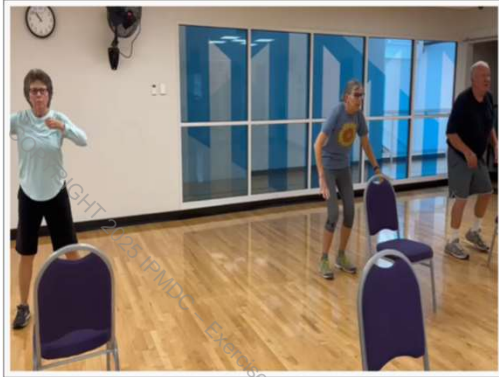


## Balance training

NICE – Level II

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### Physical activity and exercise

MDS - Level II ; EFNS/ MDS - Level II



### Tai Chi or Qigong

EFNS/ MDS - Level II

Beneficial effects on balance and gait measures, and Unified Parkinson Disease Rating Scale Scores.

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## More Recent Reviews

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Parkinsonism and Related Disorders 133 (2025) 107310

Contents lists available at ScienceDirect

**Parkinsonism and Related Disorders**

journal homepage: [www.elsevier.com/locate/parkrdis](http://www.elsevier.com/locate/parkrdis)

Review article

**Balance exercise interventions in Parkinson's disease: A systematic mapping review of components, progression, and intensity**

Andreas Wallin<sup>a,\*</sup>, Erika Franzén<sup>a,b</sup>, Jakob Studsgaard<sup>c</sup>, Mikkel Baltzer Hansen<sup>d</sup>, Sverker Johansson<sup>a,b</sup>, John Kodal Brincks<sup>e</sup>

<sup>a</sup> Department of Neurobiology, Care Sciences and Society, Division of Physiotherapy, Karolinska Institutet, Huddinge, Sweden

<sup>b</sup> Women's Health and Allied Health Professionals Theme, Medical Unit Allied Health Professionals, Karolinska University Hospital, Stockholm, Sweden

<sup>c</sup> Research Centre for Activity and Prevention, Research Group for Balance and Falls, VISA University College, Denmark

<sup>d</sup> Høstmark Neurorehabilitering and Research Centre, Denmark

A systematic review analyzed **126 balance-focused exercise interventions** from 114 studies, involving **5,335 people with Parkinson's** (average age 67.5 years, PD duration ~6.8 years)

**Multi-modal** (targeting multiple balance components)

**Sensory-motor integrated**

**Exergaming** (technology-based balance training)

**Task-oriented**

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## Multi-modal Interventions

Multitask Balance Training | 2019

- Multi-component exercise programs
- Combined aerobic and resistance training
- Strength + balance + flexibility training
- Physiotherapy packages targeting posture, gait, and strength together
- Pilates combined with gait training

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## Multi-modal Interventions



**Yoga** with additional strength or mobility exercises



**Nordic walking** combined with functional training

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## Multi-modal Interventions



**Dance programs** integrating aerobic and coordination tasks

Optimal dose and type of exercise improve the overall balance in adults with Parkinson's disease: a systematic review and Bayesian network meta-analysis

Xianjin Fan<sup>1</sup> · Yuan Yuan<sup>2</sup> · Ying Bai<sup>2</sup> · Chen Cheng<sup>3</sup> · Junyu Wang<sup>4</sup> · Tao Wang<sup>5</sup> · Yong Yang<sup>1</sup> · Ko-Chia Chen<sup>6</sup>

*Neurol Sci* (2025)

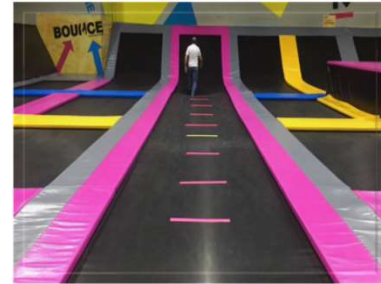
Notably, **dance** emerges as the foremost and superior intervention that significantly enhances **balance** in PD.

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## Sensory-Motor integrated interventions

(Combine balance tasks with sensory input manipulation or dual-task conditions)

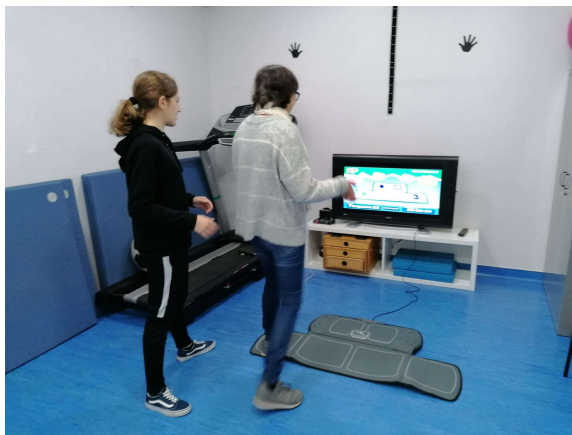
- Tai Chi & Qigong
- Balance training on **unstable surfaces**
- Sensory cue-integrated physiotherapy (visual, auditory, somatosensory cues)
- **Dual-task balance training** with cognitive challenges
- **Aquatic training** (using water's sensory feedback)
- **Virtual reality** balance training emphasizing sensory feedback



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## Exergaming Interventions

(Technology-based interactive exercises with real-time feedback)



- Nintendo Wii Fit balance games
- Xbox Kinect movement-tracking balance exercises
- Custom VR-based balance games
- Balance board with integrated sensors and visual feedback
- Tablet or computer-based stepping games
- Dance-based gaming (e.g., Dance Dance Revolution style)
- Gamified treadmill walking with visual cueing

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## Task-Oriented Interventions

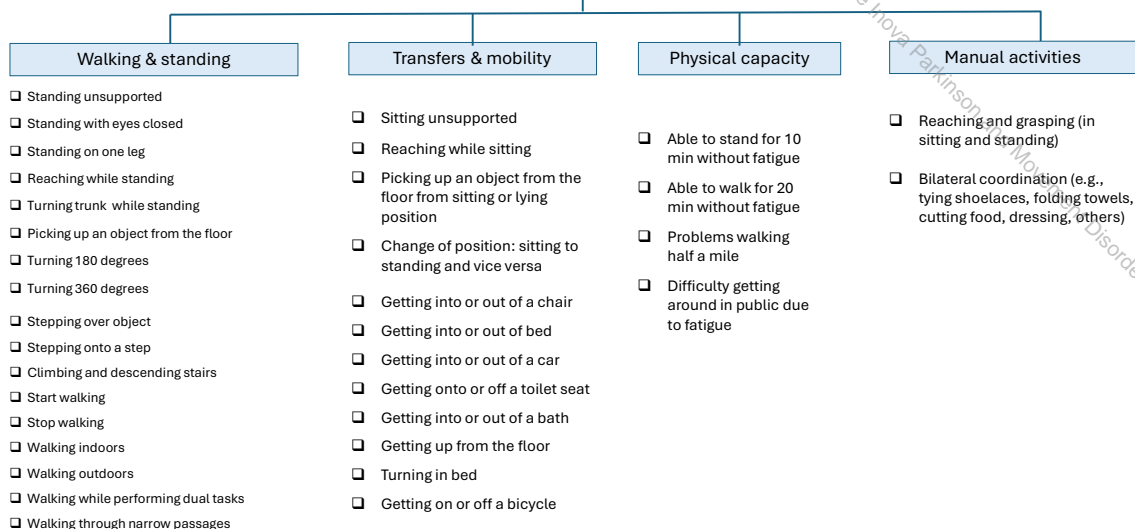
(Focused on functional activities and real-life movement patterns)

- Task-specific **gait** training
- **Obstacle negotiation** training
- **Sit-to-stand** practice
- **Step** training (forward, backward, sideways)
- **Turning** practice under various conditions
- Repeated functional **reach** tasks
- Floor transfer training



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### BALANCE DIFFICULTIES with...



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# Walking, standing & turning

“I lose balance when turning quickly or changing direction”. – **68%**

“I lose balance when bending or picking something off the floor”. – **63%**

from the participant survey-42 responses

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## Walking & Standing



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## Turning



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## Transfers

“I feel unsteady when standing up from a chair or bed”. - 51% of 42 pwps

from the participant survey-42 responses

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## Getting in out chair, bed...



Exercise in-out of bed with or without a handrail



Exercise in-out of chair

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## Take-home messages



**Any exercise that mimics "the" activity you aim to improve your balance will likely be the best "exercise".**



**When multiple factors interplay, multi modal interventions will benefit most.**



**Falls are a concern, especially in balance exercises. So ensure you get a good balance between effective exercises and safety.**

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