

## ExerciseRx Parkinson

**What is the best exercise to improve memory, thinking and concentration?**



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1. Any form of exercise will potentially help improve global cognition.
2. Aerobic exercises, specifically, have shown better results.
3. But the best exercises are those that closely match what you want to improve.



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- **Shopping.**
- **Verbal conversations** where I have to respond quicker than comfortable. Also recalling details of events, which often do not match others' recollections.
- **Recalling words or names when having conversations.**
- **In conversation. When under stress.**
- When I feel **pressured** to make a decision or answer a question.
- **Stressful situations** where I am asked questions.
- **Complex sorting out, paying attention** (which was never a problem).
- **Paying attention.**
- When I'm trying to do several things at one time.
- **Late evening.**
- Thinking **when tired, anxious and overwhelmed.**
- **Loud and busy environments.**

**Define precisely what you want to improve**

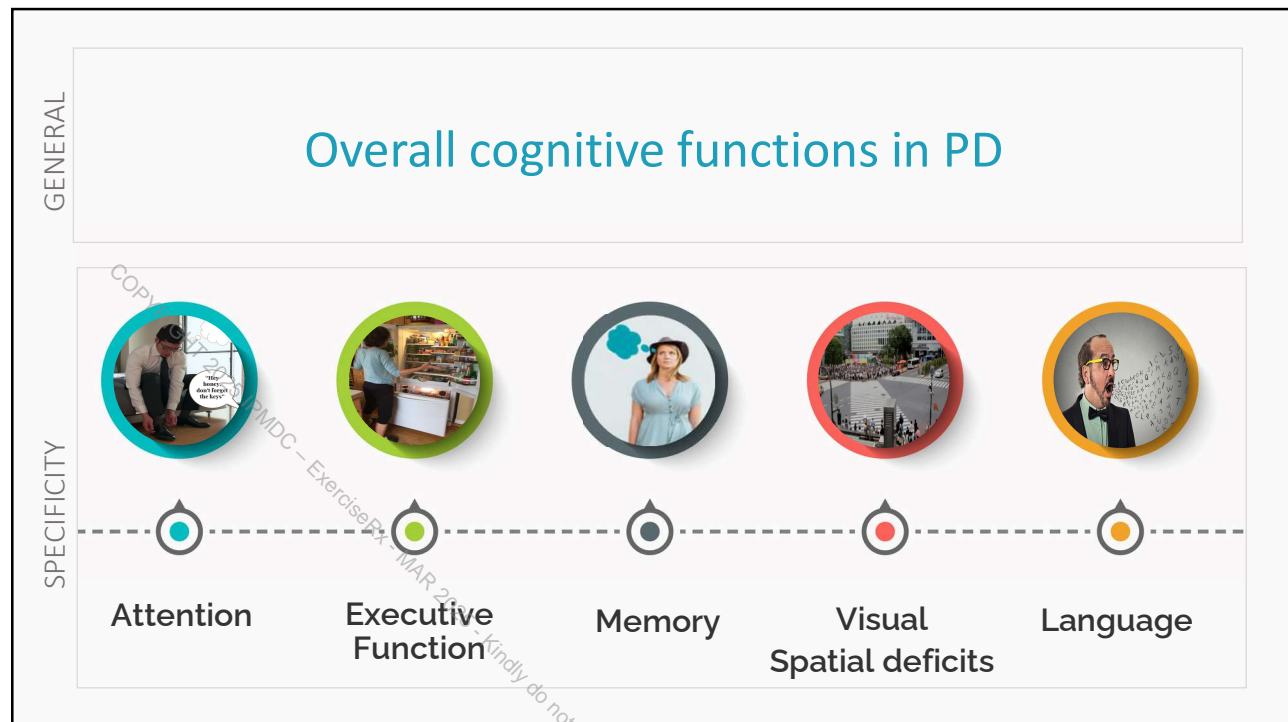
\*From patient questionnaires

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## 😊 Shopping



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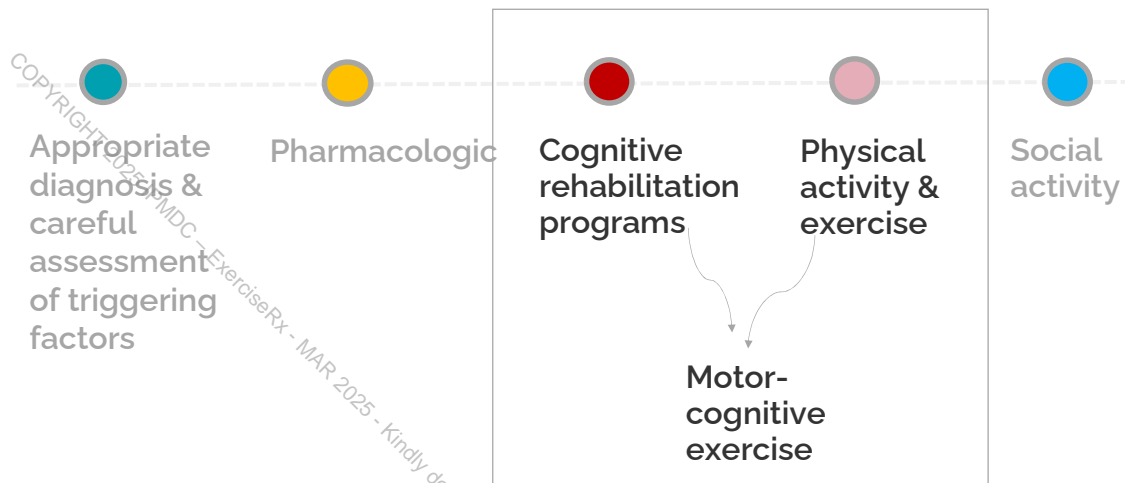


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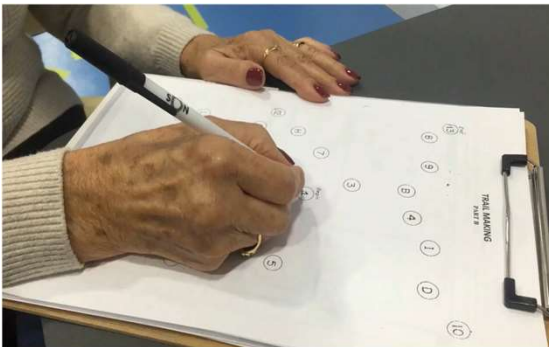


## Management of overall cognitive impairment in PD

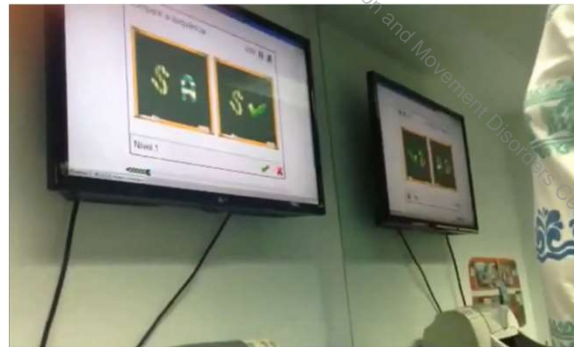


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## Examples of **cognitive rehabilitation & training**



Paper pencil exercises



Computer-based exercises

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## Examples of **physical training**

da Silva FC, et al. (2018) Effects of physical exercise programs on cognitive function in Parkinson's disease patients: A systematic review of randomized controlled trials of the last 10 years. PLoS ONE 13(2): e0193113.



### Treadmill training

Training on treadmill.  
1 session a day for 45 minutes,  
3x p/week for 4 weeks.

*Picelli et al.2016*



### Tango

Adapted Tango lessons. 90-minute sessions,  
twice a week, 24 weeks

*McKee, 2013*



### Wii Fit +

14 sessions of 30 min cognitive training (10  
Wii Fit™ games vs control) combined with  
30 min of motor training (stretching,  
strengthening and axial mobility exercises)

*Pompeu et al. 2012*

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## Tai Chi, Qigong, Yoga & Dance

- This study summarizes the latest evidence that mindbody exercises including Tai Chi, Qigong, yoga, and dance improve cognitive impairment associated with PD

## Effects of mind-body exercises on cognitive impairment in people with Parkinson's disease: A mini-review

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TYPE Mini Review

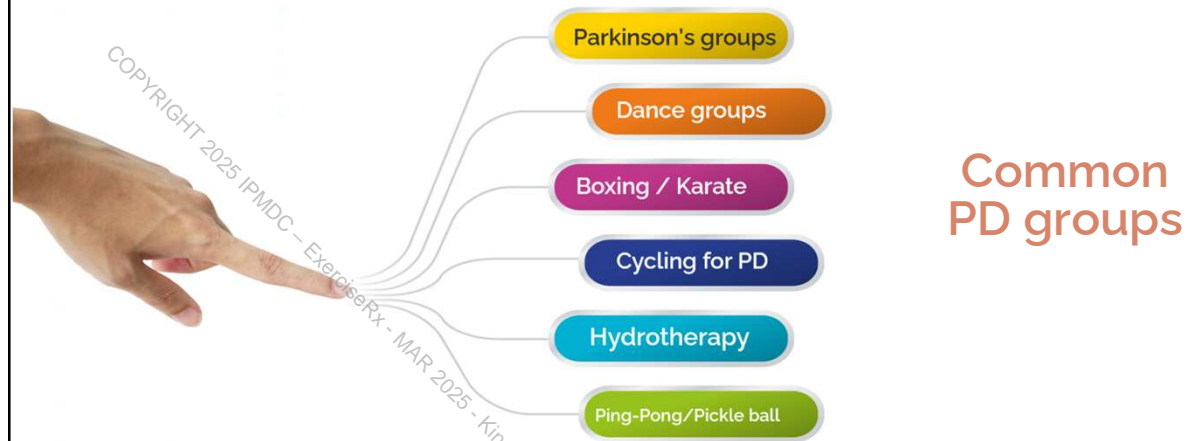
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## Examples of **cognitive-motor & dual task training**



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### Have you attempted specific treatments or exercise programs to improve your cognition?

from patient questionnaires

- Rock Steady Boxing
  - Inova Dual task online sessions
  - Up Ending Parkinson's – rock climbing
  - Strong memory courses
  - Remembering pictures after a brief view
  - No noticeable decline- not sure in exercise or slow progression is responsible
  - I don't know
  - Dual task training seems effective :)
  - Stationary bike and weights
  - I have not attempted to improve my cognition.
  - Before falling, 3 times a week to Rock, Steady, Boxing classes/Richmond, Va.
  - Speech therapy: Speak Out...speaking with intent helps clarify , slow down the process.
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# Dual task training

<https://ipmdc.org/events/>



## Inova Online & In-person

"When I am on the phone and my husband tries to talk to me, I get frustrated".

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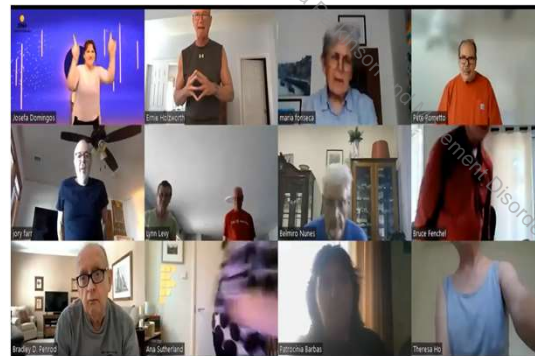


## Boxing



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## Dancing



Integrating cognition into dance-based interventions

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# Technology



## Wii Fit Virtual Reality options

Cognitive training combined  
with motor training

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# Hydrogymnastics

## Dual-task aquatic exercise program

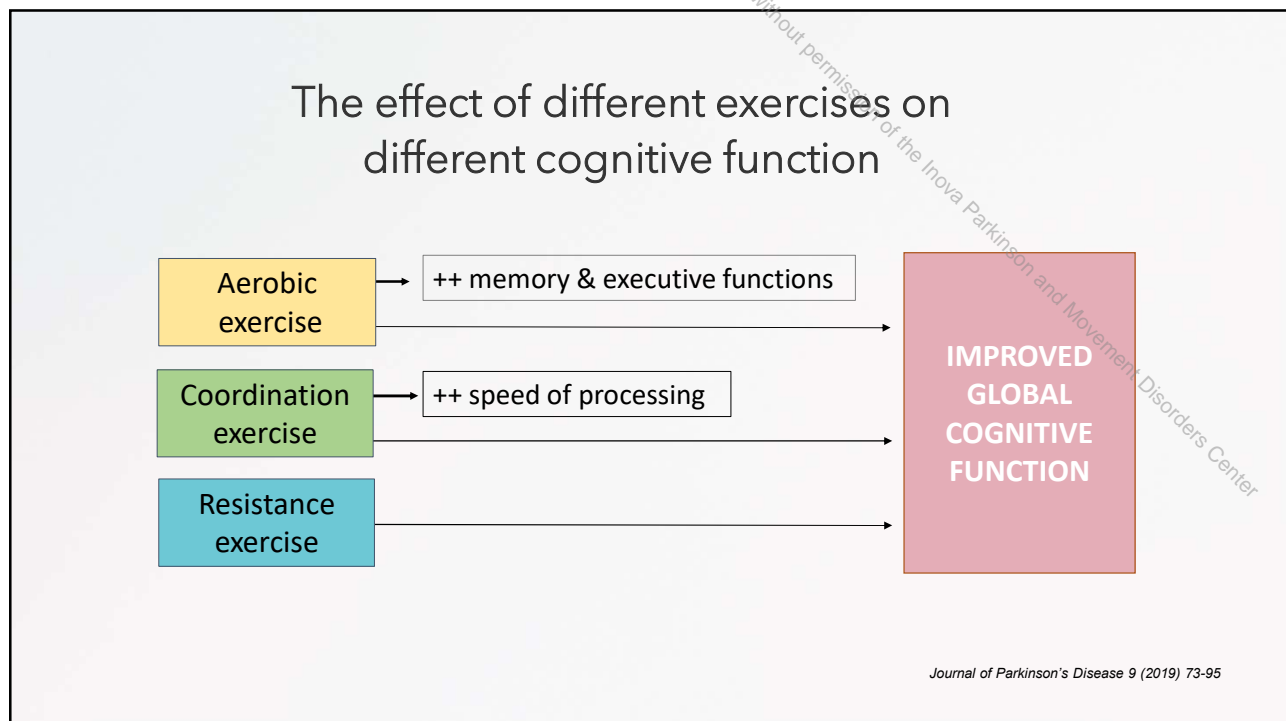
Hazamy AA, et al.. Improved cognition while  
cycling in Parkinson's disease patients and  
healthy adults. Brain Cogn. 2017 Apr;113:23-31.



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## Examples of Exercise for ATTENTION

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### Focused or Selective Attn.

(Filtering stimuli & ignoring distractions)

- Listening to a conversation in a noisy restaurant while ignoring background chatter and music.
- Reading a book while someone is watching TV nearby without getting distracted.



### Sustained Attention

(Maintaining focus over time)

- Watching a full-length movie or listening to lecture without losing focus.
- Completing a long puzzle or word search without needing frequent breaks.

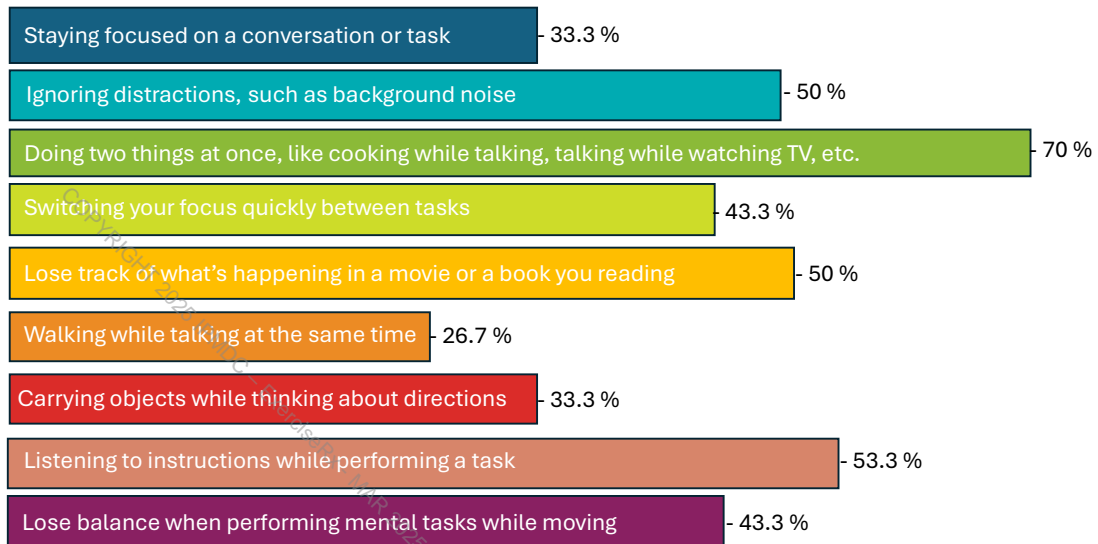


### Divided and Alternating

Attention (Multitasking & switching tasks)

- Cooking while having a conversation with someone.
- Walking and talking
- Walking on a busy street while checking directions on a phone.
- Taking notes while listening to a presenter, then switching back to listening.

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from patient questionnaires

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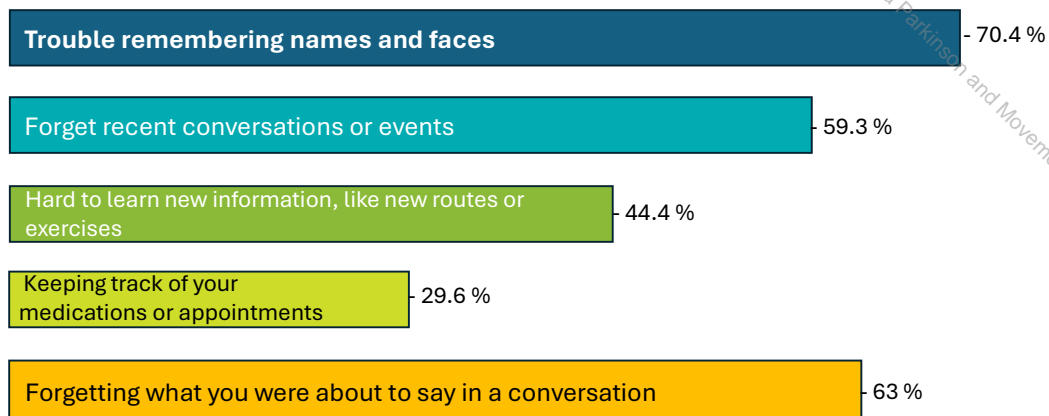


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## Examples of Exercise for EXECUTIVE FUNCTION & MEMORY

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### Cognitive difficulties related to Memory

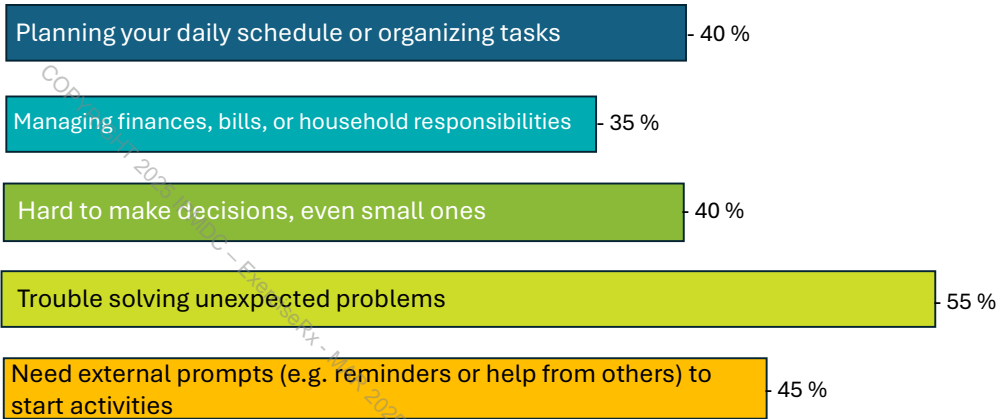


from patient questionnaires

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## Cognitive difficulties related to executive functions



from patient questionnaires

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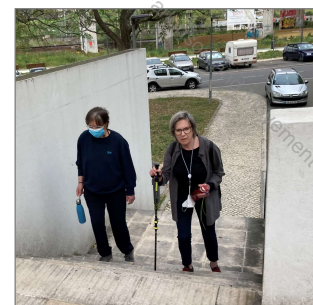
## Examples of executive function



- Planning and organization
- Judgment
- Decision-making
- Anticipation
- Sequencing



Difficulty with decision making,  
taking impulsive decisions.



Poor judgment: ignoring risks

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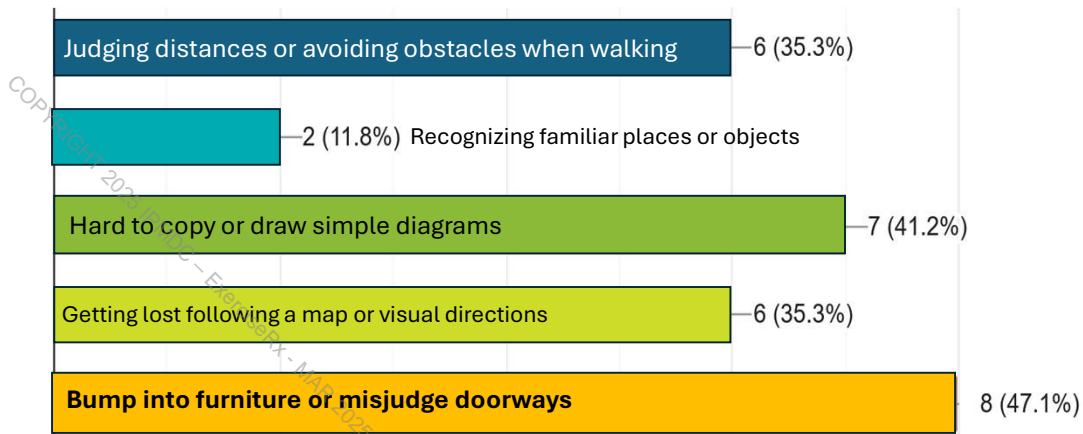
Activities related to the person's life

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## Examples of Exercise VISUO-SPATIAL

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## Cognitive difficulties related to visuo-spatial



from patient questionnaires

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## Visuospatial skills:

Ability to process visual and spatial awareness and mentally manipulate 2 and 3 dimensional objects.



Judging distances



Perceive multiple objects in a visual field



Visuospatial working memory and planning during walking

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## Exercise Examples

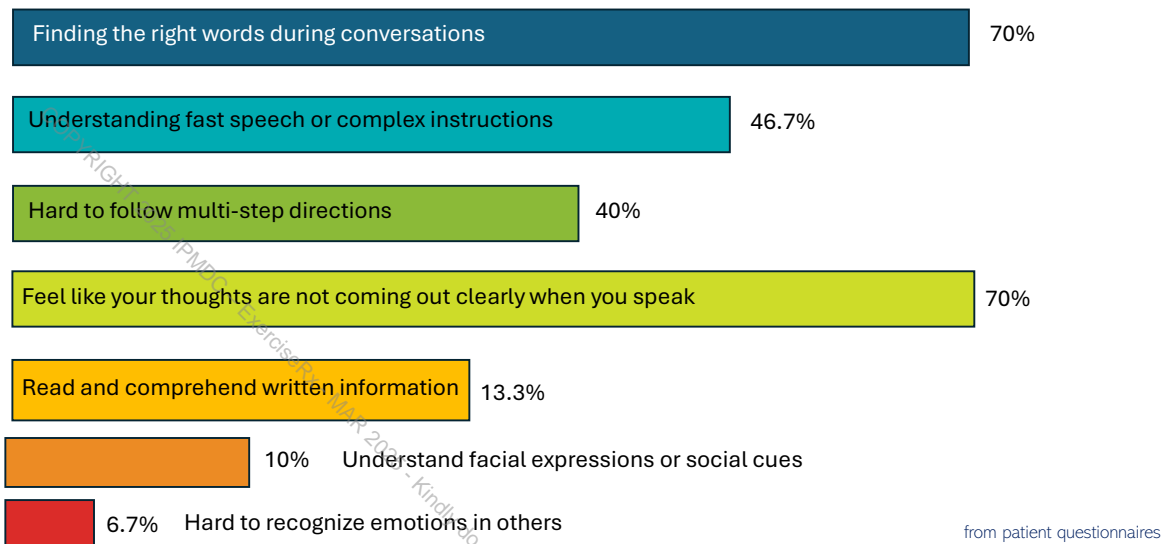


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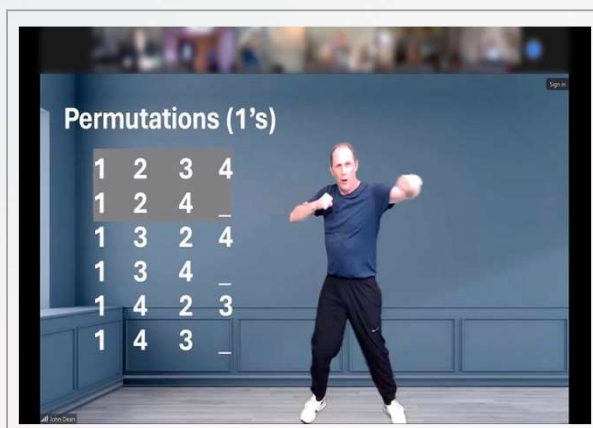
## Examples of Exercise for COMMUNICATION & SOCIAL COGNITION

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## Cognitive difficulties related to communication



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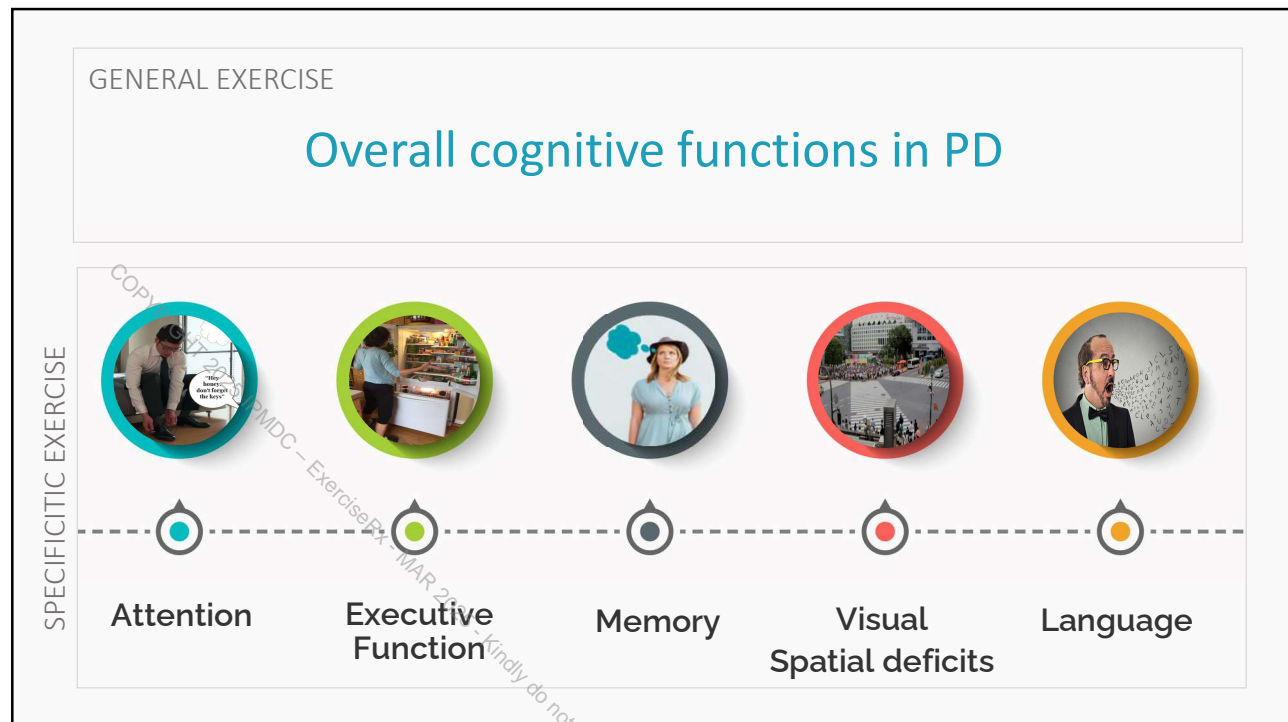


Speech online classes covering communication & cognition

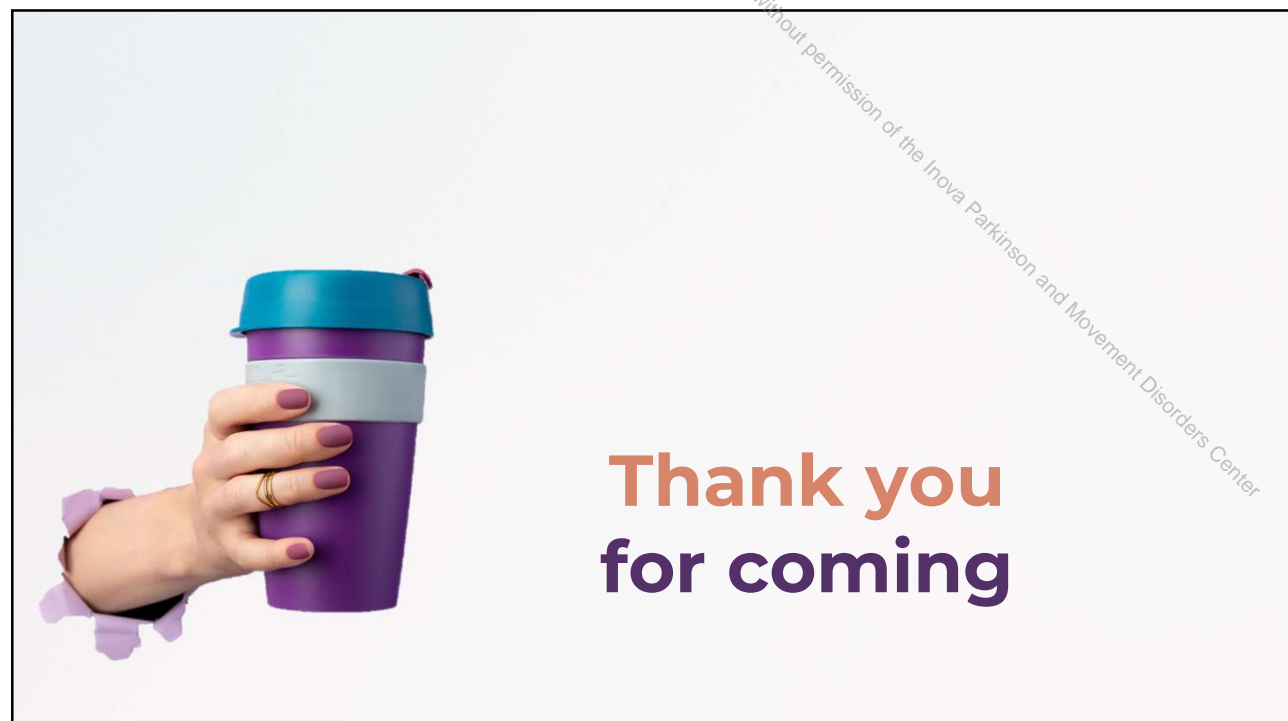


In-person Communication classes

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