

Rehabilitation: Role in Parkinson's Disease

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Objectives

- Describe the philosophy and goals of PM&R as a specialty practice of medicine
- Name at least two tools used in the assessment of motor symptoms, balance and gait in Parkinson's disease
- Discuss the various roles of Rehabilitation professionals involved in the care of PD patients
- Make referrals to PM&R earlier (before functional disability) and acknowledge the importance of regular exercise for patients with PD

Exercise is medicine

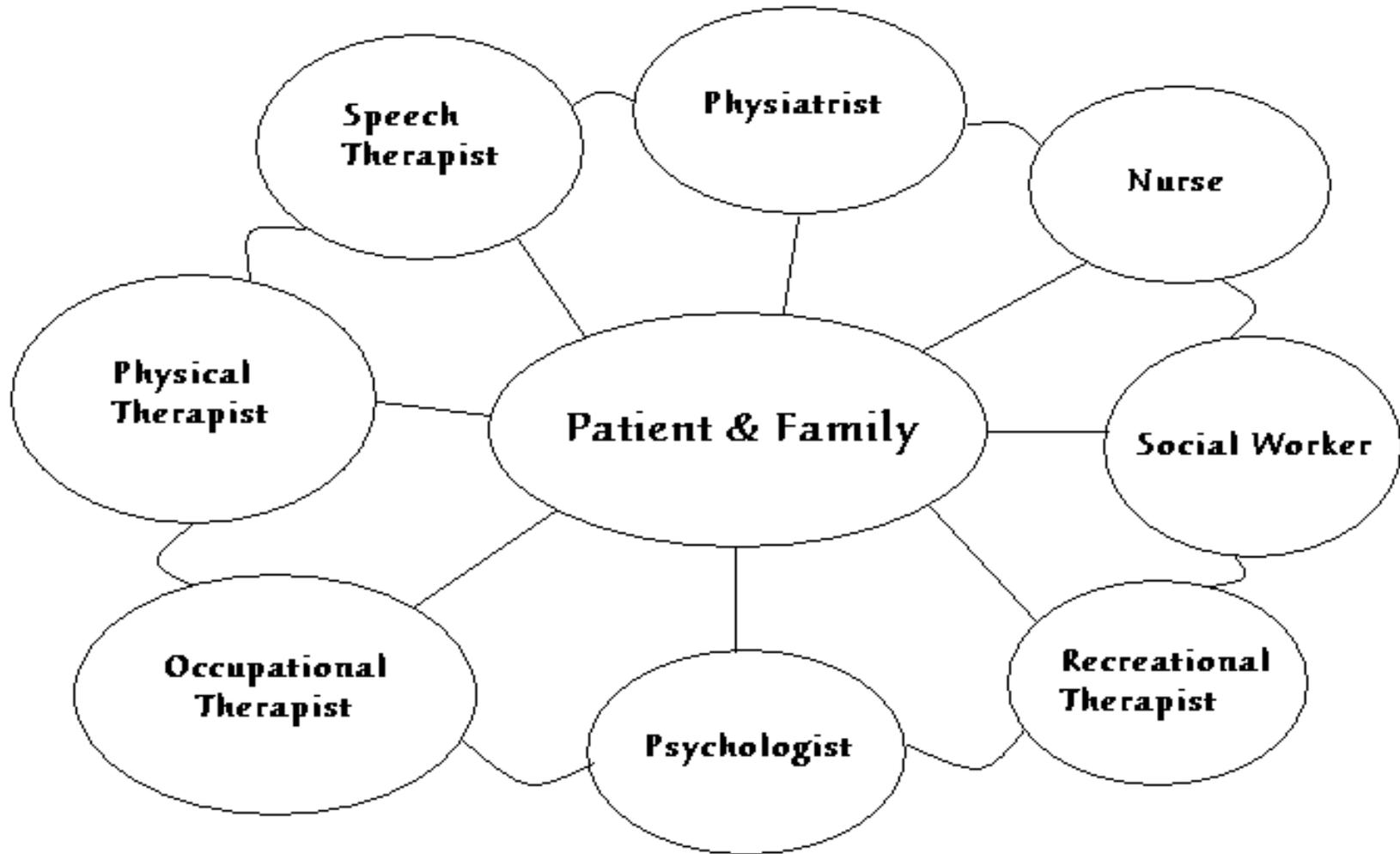
- **Exercise has been proven to**
 - **build a healthier heart, lungs, and muscles**
 - **boost metabolism**
 - **prevent diseases**
 - **reduce disability**
 - **Healthier M I N D**

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"What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?"

PM&R Team Members

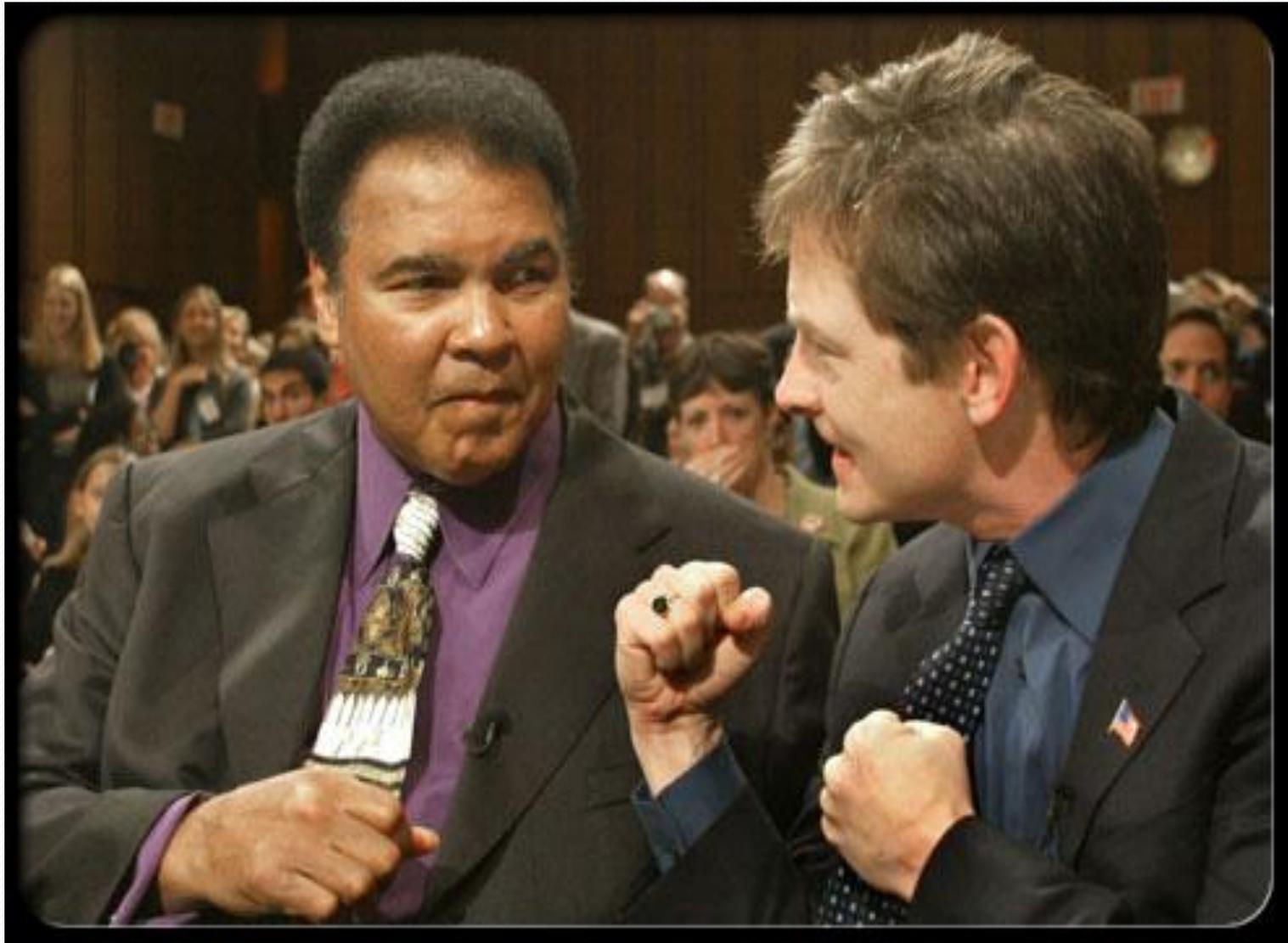


PM&R consultations:

- **Recovery from injury**
- **Maximizing function**
- **Preventing long term health hazards**

PM&R physician: Adding Quality to Life

- Match resources to patient needs
- Maximize patient's function, self-sufficiency
- Balance quality and cost of care
- Team players-work well with PCP

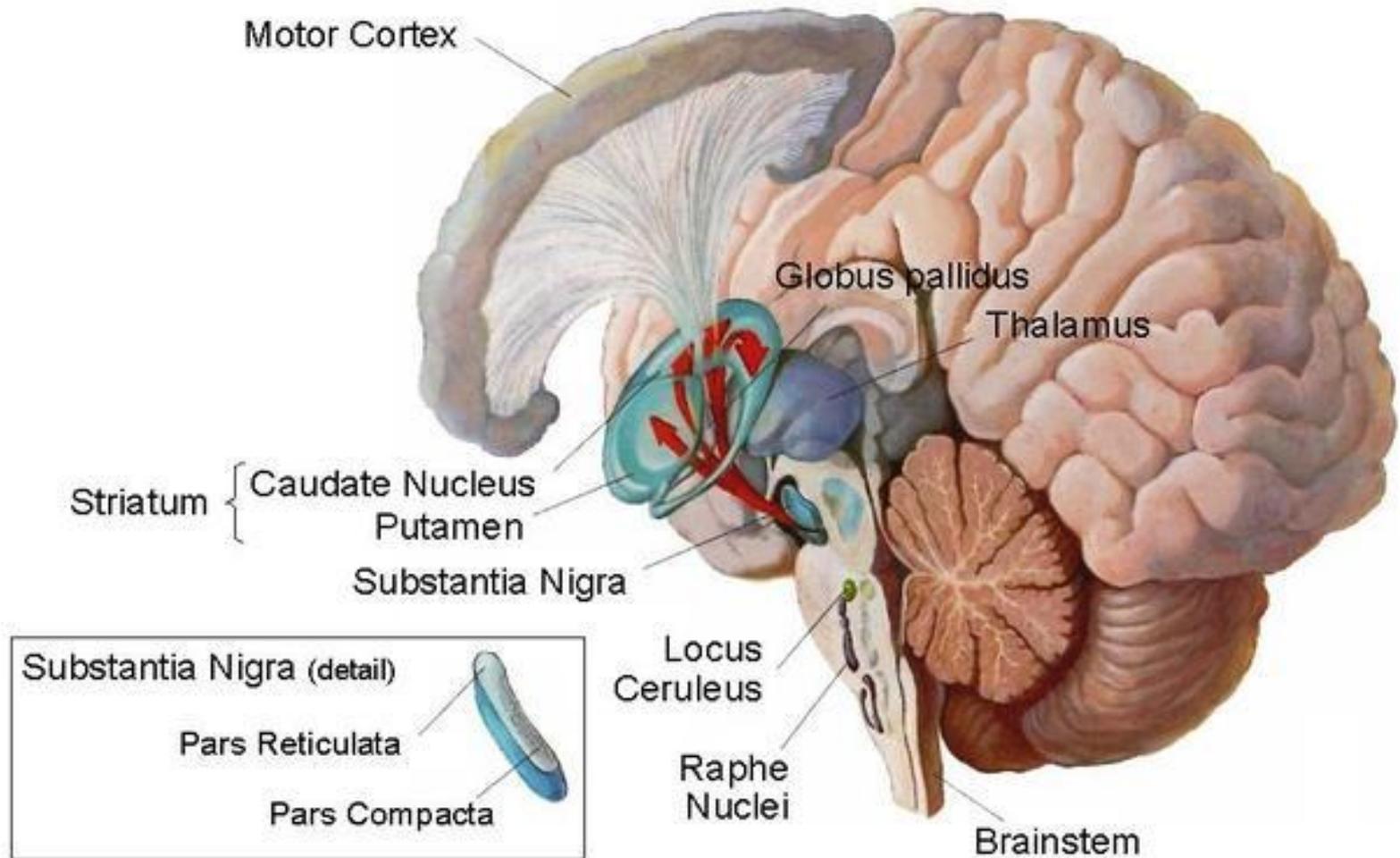


Parkinson's disease

- PD is a progressive neurodegenerative disorders characterized by:
- A. Tremor
- B. Rigidity
- C. Akinesia
- D. Postural Instability



Brain Regions Affected by Parkinson's Disease



Parkinson's disease

Secondary manifestations:

- **Depression**
- **Dementia**
- **Dysphasia**
- **Sialorrhea**
- **Urinary problems**

Secondary manifestations

2nd Motor Symptoms

- **Freezing**
- **Micrographia**
- **Mask-like expression**
- **Stooped posture**
- **Slurred speech**
- **Sexual dysfunction**
- **Cramping**
- **Drooling**
- **Akathisia**

Non Motor Symptoms

- **Loss of sense of smell**
- **Constipation**
- **REM behavior d/o**
- **Mood d/o**
- **Orthostatic hypotension**

Management of PD

- Pharmacological.
- Non-pharmacological
 - Education
 - Support services
 - Rehabilitation
 - Nutrition



Education

- **Proper understanding and education help to manage the disease well.**

PM&R Involvement

- **A through physical examination.**
- **Special attention should be paid to the musculoskeletal system.**
- **Evaluation of gait and balance.**
- **Evaluation of pain.**
- **Set up the appropriate goal.**

EXERCISE

- **New research suggests that exercise may even provide neuroprotection – slowing the progression of Parkinson’s in the brain by safeguarding vulnerable nerve cells from damage and degeneration.**



Basics of Rehabilitation

- Physical therapy (PT)
- Occupational therapy (OT)
- Recreational therapy (RT) and
- Speech and language therapy (SLT)
 - One should work with these disciplines closely to overcome limitations and eventually ***attain their functional goals.***

Rehabilitation of PD

- **Key management of PD other than medications is rehabilitation.**
- **Three main areas:**
 - **Flexibility**
 - **Strength**
 - **Cardio respiratory endurance**

Flexibility

- **Effective and maximize the flexibility has 3 components:**
 - **Must achieve current available ROM.**
 - **Optimal frequency of stretching.**
 - **Holding time for stretching must be determined.**

Flexibility exercises help stretch muscles, protect against injury and allow the maximum range of motion for joints



Strength training

- **Strength training is a vital part of a balanced exercise routine that includes aerobic activity and flexibility exercises.**



Benefits of Strength training

- **Builds muscles**
- **Burns fat**
- **Increases endurance, bone density & testosterone**
- **Teaches self-control, responsibility**

Be Consistent!!!



consistency = awareness

Cardiovascular exercise

- **Promote improved capacity of the cardiovascular system. They must be administered at least twice weekly.**
- **The contraction of major muscle groups must be repeated often enough to elevate the heart rate to a target level determined during testing.**



What Frequency?

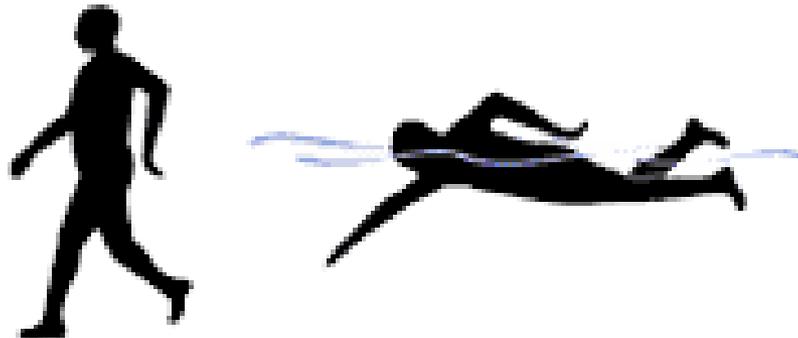
- **ACSM guidelines recommend that adults should stretch minimum of 2-3 days per week and ideally 5-7 days a week focusing on the areas of reduced ROM.**
- **There is no specific guidelines for PD patients.**

Rational for Rehabilitation for PD

- **Experts in the treatment of PD recommend rehab services as an addition to medical therapy.**
- **It makes sense that these services can prevent complications and either maintain or assist with function.**

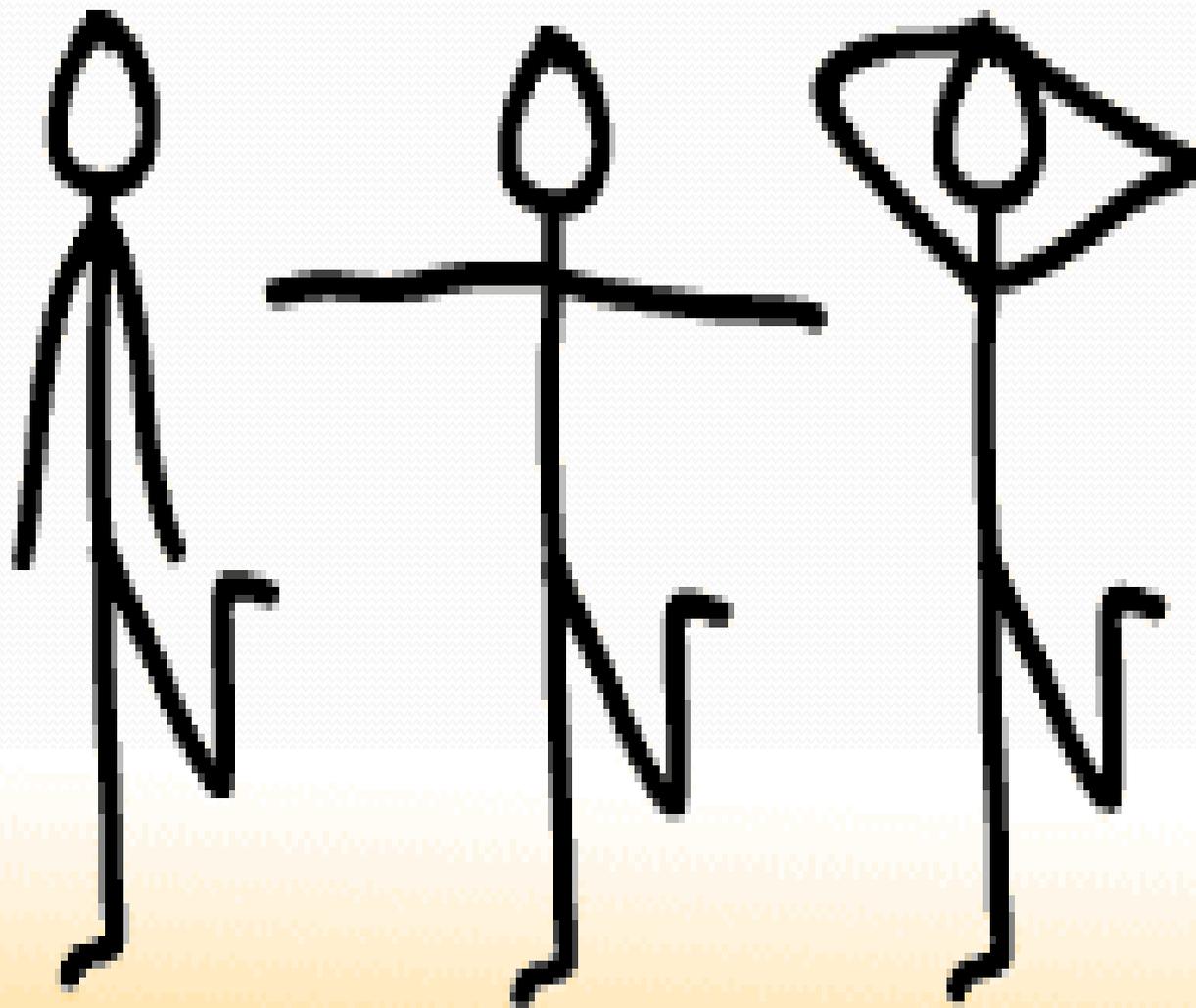
Rehabilitation

- PD patients often state that they “feel” or “function better” with a program of regular exercise.
- There are not very many studies done on Parkinson’s disease patients and regular exercise.



Assessment Tools

- **Unified Parkinson's Disease Rating Scale (UPDRS) is the most commonly used scale in the clinical study of Parkinson's Disease.**
- **UPDRS is a rating scale used to follow the longitudinal course of Parkinson's disease.**



Balance

- **Postural instability is one the grave symptoms of PD.**
- **Poor balance causes someone to falling, injury and wheel chair bound.**
- **As a PM&R specialist we have to be cognizant about this problem.**

Balance tests

- **Berg balance scale (BBS)**
- **Timed up and go (TUG)**
- **Ten meter walking test.**
- **Computerized dynamic posturography.**

BBS

- **The Berg Balance Scale**
 - a widely used clinical test of a person's static and dynamic balance abilities.
 - named after Katherine Berg, one of the developers.
 - For functional balance tests, the BBS is generally considered to be the gold standard.

BBS interpretation of the result is:

- **0–20 wheelchair bound**
- **21–40 walking with assistance**
- **41–56 independent**

Computerized Dynamic Posturography(CDP)

- **Unique assessment technique objectively quantify and differentiate among the wide variety of possible sensory, motor, and central adaptive impairments to balance control.**
- **Complementary to clinical tests designed to localize and categorize pathological mechanisms of balance disorders.**
- **Cannot diagnose pathology or site-of-lesion.**

CDP Protocols

- **Sensory Organization Test (SOT)**
- **Motor Control Test (MCT)**
- **Adaptation Test (ADT)**

HAVE FUN

- **Have fun. If you don't enjoy it, you won't stick with it.**
- **Do something you like. Dance, yoga, tai chi, cycling and strength exercises have all been shown to help with physical and cognitive symptoms of Parkinson's.**

EXERCISE

- **Research shows that people stick with exercise when there is encouragement and an expectation to show up.**
- **Also exercising with a group most of the time has good success rate.**

Rehabilitation Programs

- **The programs evaluated in PD patient studies ranged from home-based, to OP PT or OT, or both, or speech therapy, to comprehensive inpatient programs.**
- **Results suggest benefits which includes exercise programs that focuses on improving ROM, endurance, balance, and gait.**

Advantage of therapy

- **One study noted that repetitive exercises directed at improving ROM, balance, fine motor dexterity, gait, and endurance 1 hour 3 times per week for 4 weeks significantly improved the ADL's and motor functions but not tremor.**

Comella et al, Neurology 1994.

Rehabilitation

- It has been found that improvements in gait, tremor, motor coordination, and grip strength in an exercise program regardless of the place.
- Such a program could be more easily continued in a group format at a community gymnasium or other facility in a more cost-effective fashion, with the additional benefit of increasing socialization.

Speech and swallowing

- Therapy focused on voice and respiratory control, loudness, pitch variation, and control of rate of speech.
- Specific type of speech therapy might be important in terms of benefit and carryover.
- Study reported that intensive speech therapy 3 ½ to 4 hours per day of 2 weeks produced a positive effect.

Lee Silverman Voice Treatment: LSVT

- **Intensive program of voice exercise**
- **Targets voice intensity, quality and variation- precisely the areas of difficulty for persons with PD.**
- **Series of voicing exercises taught to be aware of sensory feedback from the voice and self monitor voicing patterns and voice.**

Lee Silverman Voice Treatment: LSVT

- **Increased self-awareness allows for correction of errors and for faster progress toward the target.**
- **This program teaches the patient to “think LOUD”, and to focus their efforts on increasing voice volume.**
- **LSVT regimen 4 training sessions /week/1 month.**
- **Total of 16 sessions.**

LSVT[®] Foundation

- **LSVT[®] founder:**

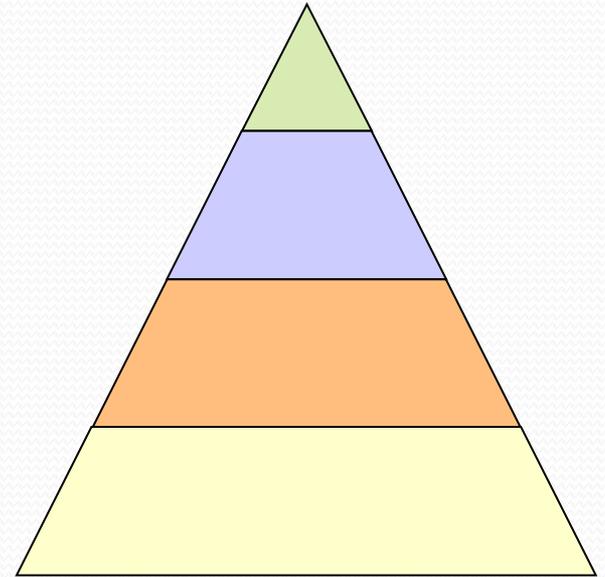
- Lorraine Olson Ramig, Ph.D., CCC–SLP
- Professor, University of Colorado–Boulder



- Research Associate, Wilbur James Gould
- Voice Research Center, Denver, Colorado

Speech Production Tasks

- Hierarchy activities:
 - *Week 1: words*
 - *Week 2: Phrases*
 - *Week 3: Reading aloud*
 - *Week 4: Conversation*



Why is the LSVT® Program Successful?

- **“Loudness” functions as a single motor organizing theme which enhances overall speech**
- **Intensive mode of administration is essential to maintain optimum treatment results**
- **By incorporating sensory awareness training, the patient feels more comfortable using their new louder voice**

Future Rehabilitation

- **Due to changes in healthcare delivery it is unlikely that most PD patients will receive inpatient rehab.**
- **Continuation of exercise program on a basis of 2 to 3 times a week can be necessary to optimize and maintain gains realized in formal therapy sessions.**

Summary

- **67 y/o male, PD >7.5yrs, well controlled.**
- **C/C: Freezing, dizziness mostly when stands up from sitting position.**
- **No orthostasis.**
- **Fear of falling, last fall 3 weeks with no real injury.**
- **Bilateral knee pain with ambulation for 3 years.**
- **Not on any home exercise program.**

What do I do

- **Quick sensory test.**
- **Manual muscle testing.**
- **Musculoskeletal examination.**
- **Berg Balance Scale.**
- **Gait evaluation.**

My Guidelines

- **Medication adjustments.**
- **Wait for 15-20 sec before step forward to walk after getting up from sitting position.**
- **Move the feet as if dragging it on the floor. This will allow the feet to loosen up and easy to start stepping forward.**
- **If needed use the straight cane for additional support.**
- **Strengthening exercise for quadriceps and gluteus muscles.**
- **Discuss healthy living, f/u 4 weeks.**

Drooling

- Drooling for 6 months mostly at night. Tried atropine drops did not help.
- Consider Botox injections in the both parotid and sub-mandibular salivary glands.
- 15 to 20 U per site to start.
- F/U injections 6-8 months.

How to Locate a PM&R Physician

- **Primary care physician**
- **Local medical society**
- **AAPMR**

EDUCATION IS



MY MEDICATION

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References

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- 2- Armistead-Jehle P, Cifu DX, Wetzel R, Carne W, Klanchar LA: **Health literacy among patients diagnosed with movement disorders: a pilot study.** *PM&R 2012;2(1):43-47*
- 3- **Qutubuddin AA**, Cifu DX, Pegg P, Brown R, McNamee S, Carne W: *Validating the Berg Balance Scale for individuals with Parkinson's disease: A key to rehabilitation evaluation.* *Arch Phys Med Rehabil 2005;86(4):789-792.*

Thanks for listening!
Questions?

