Impact of Therapy, Exercise and Nutrition: Case Studies

Physical and Occupational Therapy Interventions

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How can therapy help manage Parkinson’s disease?

• Using large amplitude movements at high intensity to increase dopamine output and counteract Parkinson’s symptoms of bradykinesia, rigidity, and tremor.

• There are programs specifically designed using these principles. Instructed by a certified PT or OT.
  • LSVT BIG
  • Parkinson’s Wellness Recovery (PWR!)
What can Physical Therapy do?

Physical therapy provides services to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan. This includes providing services in circumstances where movement and function are threatened by ageing, injury, pain, diseases, disorders, conditions or environmental factors. Functional movement is central to what it means to be healthy.

(World Confederation for Physical Therapy, 2015)
**Goals of physical therapy:**

Promote quality of life and independence by encouraging activity and maximizing functional mobility

Promote safety and fall prevention

Improve movement for daily activities by recalibrating the body through large amplitude exercises

Improve walking by incorporating large movement patterns and using internal and external cues
What can Occupational Therapy do?

Dressing: pulling on/off clothes, buttoning, zippers, reaching feet/shoes

Fine motor: hand writing, opening containers, typing

Mobility for Self Cares: getting in/out of bed, on/off of toilet, movements for bathing, cooking, and laundry.
Occupational Therapy Goals:

Increase independence with daily self cares through use of restorative or compensatory strategies.

Provide caregiver education

Educate on high amplitude movements to increase ability to complete daily tasks.

Improve coordination and strength for dressing, bathing, cooking, leisure activities, and work related tasks.
Case Study

- 52 year old male diagnosed in May, 2019

- PMH/Comorbidities: h/o severe left ankle sprain 15 years ago with repeat injury fall 2018, h/o frequent right knee dislocations with subsequent osteoarthritis

- Medication: Ropinirole 1mg, 3 times daily at breakfast, lunch, and dinner.

- Symptoms: right hand bradykinesia, decreased fine motor coordination, intermittent tremor, right knee pain, decreased right knee motion, shuffling quality of gait, absent right arm swing during gait, impaired balance

- Hobbies: Bowling during the winter, bike riding with kids
Case Study

Physical Therapy
• Tendency to shuffle feet
• Difficulty on stairs
• Stiff after sitting
• Lose balance easily
• Slowness on the right side

• Patient Goals: “Walk normally again; more fluid”.

Occupational Therapy
• Difficulty with shaving, donning/buttoning a shirt, putting on compression socks, and typing at work.
• Increased time to get ready in the morning

• Patient Goals: "I'd like to improve my writing, typing, and daily living tasks. I'd like to see improvement without increasing medications".
LSVT BIG Exercise 1: Floor to Ceiling
LSVT BIG Exercise 2: Side to Side
LSVT BIG Exercise 3: Forward Step and Reach
LSVT BIG Exercise 4: Sideways Step and Reach
LSVT BIG Exercise 5: Backward Step and Reach
LSVT BIG Exercise 6: Forward Rock and Reach
LSVT BIG Exercise 7: Sideways Rock and Reach
LSVT BIG Sit to Stand
Walking before Intervention
Gait interventions

Internal cues: self talk
  Step BIG, step long
  Step right, step left

External cues: visual or auditory stimuli
  Tape/laser light
  Metronome, music, counting, humming

When freezing occurs: Stop, Shift weight, Step BIG
BIG Walking after Intervention
Parkinson’s Wellness Recovery: PWR! Seated Rock
PWR! Seated Up
PWR! Seated Twist
PWR! All 4’s Up
PWR! All 4’s Twist
PWR! All 4’s Rock
Finger Flicks
Putting on a Shirt: Before PWR! Exercises

- Total Time: 1 minute 14 seconds
Putting on a shirt: After PWR! Exercises

- Total Time: 44 seconds!
- Uses “big effort” and “big movement” principles learned in exercises.
When to get a referral for PT and OT?

• A new diagnosis of Parkinson’s to learn appropriate exercises in order to maintain function and mobility

• Decreased mobility

• Increased difficulty with daily activities
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Speech and Nutrition Therapy Interventions

Victoria Czerwinski, M.S. CCC-SLP
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Speech-Language Pathologist

- Speech-language pathologists (SLPs) diagnose and treat disorders related to speech, language, cognition, voice and swallowing.

- Related to Parkinson’s Disease, SLPs primarily see patients for voice and swallowing.
Medical Nutrition Therapist

- Diagnose and manage nutritional issues related to a specific disease or medical condition
- Provide nutrition counseling and education to improve health and quality of life
Mr. C

• 46 year old male
  – Lives at home with his wife and daughter
• Attended the Parkinson’s Disease Multidisciplinary Clinic in July 2019
• Diagnosed with Parkinson’s disease in 2018
  – Hand tremors
  – Leg tremors
  – Swallowing difficulties
• Current medications for PD
  – Carbidopa-levodopa 1 tab, 3 times per day (wearing off after 4-5 hours)
  – Rotigotine patch
In PD Clinic

**Voice Evaluation**
- Completed a Voice Handicap Index
- Maximum phonation time averaged 4.6 seconds
  - Normal ≥ 15 seconds
- Mild dysphonia (voice disorder) characterized by reduced intensity and monotone quality
- Recommended the LSVT Voice Program

**Swallow Evaluation**
- Completed the EAT-10
- Underwent a clinical swallow evaluation
- Mild-moderate dysphagia (swallowing impairment) suspected
- Recommended further/formal assessment
LSVT Voice Program

• Trains people to use their voice at a more normal loudness level at home, work, or in the community
• Key to the treatment is helping people "recalibrate" their voice so they know how loud or soft they sound to others and can feel comfortable speaking at a normal loudness level
• Consists of sixteen sessions across four weeks targeting both structured tasks, 'trigger' tasks, and conversation
LSVT Structured Tasks

Sustained phonation
  – Holding out the ‘ah’ sound as long and as loud as possible

Pitch glides up
  – Singing up the scale at the same loud volume you used in the previous task

Pitch glides down
  – Singing down the scale at the same loud volume you used in the previous task

Additional ‘trigger’ tasks and conversation targeted in therapy
Mr. C’s Swallowing Issues

• Reports it takes extra effort to swallow
• Also feels that food, liquids, and meds ‘get stuck’ in his throat
• Endorses two choking events in the past that have required the Heimlich Maneuver to clear material
• States that sometimes he has to chew up toast and place pill in food in order to swallow pills
In PD Clinic

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Further/Formal Assessment of Swallow

- Modified Barium Swallow (MBS)
  - Trial different textures and consistencies as an x-ray is taken
- Fiberoptic Endoscopic Evaluation of Swallow (FEES)
  - Trial different textures and consistencies while you have a camera in your nose
MBS vs. FEES
Formal Assessment Can Tell Us..

• If there are deficits in various stages of swallowing
• If we need to modify the diet
  – Change food and/or liquid consistencies
• If we need to implement various strategies
  – Chin tuck, breath hold, double swallow
• If we need to initiate an exercise program
Basic Swallowing Exercises

• Masako Maneuver
  1. Stick your tongue out
  2. Lightly hold it in place with your teeth
  3. Swallow as you keep your tongue between your teeth

• Hard/Effortful Swallow
  1. Imagine swallowing a hard boiled egg/cotton ball
  2. Can keep your tongue in your mouth

• Supraglottic Swallow
  1. Take in a deep breath, hold it
  2. Swallow as you are holding your breath
  3. Cough immediately following swallow
Mr. C’s Nutrition Issues

- 10 lb weight gain over the last 6-8 months
- Nausea
- Taste changes
- Smell changes
Mr. C’s Typical Intake

**Breakfast:** 2 slices toast with peanut butter

**Morning snack:** avocado with crackers

**Lunch:** Mexican meal from restaurant

**Afternoon snack:** trail mix

**Dinner:** chicken with vegetables and salad

**Evening snack:** cheese sticks

**Beverages:** 48 oz water, 3 cans Diet Coke, 2 glasses iced tea, 1 bottle Vitamin Water Zero
Mr. C’s Nutrition Recommendations

• Well-balanced healthy diet (Mediterranean Diet approach)
  – Eat a variety of fresh fruits and vegetables
    • Eat the rainbow!
  – Choose whole grains
    • Whole wheat bread, buns, tortillas
    • Brown rice
    • Oats
    • Barley
  – Protein from seafood, beans, lentils, nuts and nut butters, etc.
  – Focus on heart-healthy fats
    • Avocados
    • Olive oil
  – Avoid foods and beverages with added sugar, sodium, saturated fats and trans fats
Mr. C’s Nutrition Recommendations

- Reduce portion sizes at meals and snacks
- Take carbidopa-levodopa with a small amount of fruit, crackers or toast to help nausea side effect
- Reduce diet soda intake and replace with water
- Encourage physical activity
Other Nutrition Considerations

- Unintentional weight loss can be common
- Appetite can be reduced
- Constipation is common
- Cooking meals and feeding yourself can be difficult
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Importance of Multidisciplinary Approach

Utilize your therapists to help with symptom management, improve quality of life and preserve independence throughout your Parkinson’s disease journey!