An innovative exercise program for people affected by Parkinson’s disease and other movement disorders – including spouses and caregivers.
Research from the *Parkinson’s Outcomes Project* shows that people with Parkinson's who exercise a minimum of 2.5 hours a week slowed the decline in quality of life.

Exercise helps maintain brain connections and counters brain shrinkage and brain aging caused by Parkinson's disease.
About Michael Cohen

- USAW Level 5 Senior International Coach
- Head Coach Team Savannah
- 2 time Olympic Coach
- Head Strength & Conditioning coach for 2016 Paralympic Wheelchair Basketball team (Men & Women)
- Instructor, Health and Fitness, Savannah State University
History of GEM

- Founded in February 2016
- Created by 2 time Olympic head coach and Paralympic Strength and Conditioning Coach, Michael Cohen
- Partnered with the Savannah Parkinson’s Support Group
- Presented at the 2016 World Parkinson’s Congress
- Initial Scientific research completed in June by Armstrong State University
- Initial test group of 16 athletes expanded to 260 in the Savannah, Ga area alone
WHAT IS PARKINSON'S DISEASE?

Distinctive signs of the disease include tremors, stiffness, slowed body movements, and poor balance. Parkinson's was originally called a "shaking palsy," but not everyone with Parkinson's has a tremor.
While Parkinson's can be a frightening diagnosis, life expectancy is about the same as for people without the disease. For some people, symptoms evolve slowly over 20 years. Early treatment can provide years that are virtually symptom-free. About 5% to 10% of cases occur before age 50. Two advocates for research developed Parkinson's early: Boxer **Muhammad Ali** at age 42 and actor **Michael J. Fox** at age 30.
EARLY SIGNS OF PARKINSON'S

THE EARLY SIGNS OF PARKINSON'S MAY BE SUBTLE AND CAN BE CONFUSED WITH OTHER CONDITIONS.

THEY INCLUDE:

*Slight shaking of a finger, hand, leg, or lip

*Stiffness or difficulty walking

*Difficulty getting out of a chair

*Small, crowded handwriting

*Stooped posture

*A 'masked' face, frozen in a serious expression
Symptom: Tremor

Tremor is an early symptom for about 70% of people with Parkinson's. It usually starts in a finger or hand when the hand is at rest, but not when the hand is in use. It will shake rhythmically, usually four to six beats per second, or in a "pill-rolling" manner, as if rolling a pill between the thumb and index finger.
As people grow older, they naturally slow down. But if they have "bradykinesia," a sign of Parkinson's, the slow movement may impair daily life. When they want to move, the body may not respond right away, or they may suddenly stop or "freeze." The shuffling walk and "mask-like" face sometimes found in those with Parkinson's can be due to bradykinesia.
Shuffling Feet
Symptom: Impaired Balance
People with Parkinson's tend to develop a stooped posture, with drooping shoulders and their head jutted forward. Along with their other movement problems, they may have a problem with balance. This increases the risk of falling.
Symptom: Rigidity

Rigidity happens when the muscles stay stiff and don't relax. For example, the *arms may not swing when a person is walking*. There may be cramping or pain in the muscles. Most people with Parkinson's have some rigidity.
Abnormal Gait & Posture

- Asymmetrical Gait
  - Slow to start walking
  - Shortened stride
  - Stiff legged gait-rigidity comes through on one side, therefore difficult clearing swinging on one side
  - Rapid, small steps, tendency to run (festination)
  - Reduced arm swing (usually unilateral)
  - Impaired balance on turning
  - Leads with head and shoulders

- Fall forward down turned posture-Postural righting reflexes are impaired early, but falls tend not to occur until later.
Symptoms Beyond Movement

Other symptoms are common, but not everyone with Parkinson's will have all of them. They may include:

- Restless sleep or daytime fatigue
- A soft voice or slurred speech
- Difficulty swallowing
- Memory problems, confusion, or dementia
PARKINSON'S DISEASE

Incidence

- Annual incidence 0.2/1000 & prevalence of 1.5/1000.

- Prevalence rates are similar throughout the world, except lower rates in China/West Africa.

- Affects 1% of those over 55 years, 1.5% of people 70–79 years of age

- Generally occurs between 50–80 years

- Sex incidence is about equal.
Parkinson's and Exercise

Exercise may have a protective effect by helping the brain to use dopamine more effectively. It also helps improve coordination, balance, gait, and tremor. For the best effect, you should exercise consistently and as intensely as you can, preferably three to four times a week for an hour.

**Parkinson's disease** affects your ability to move, but exercise can help to keep muscles strong and improve flexibility and mobility. Exercise will not stop **Parkinson's disease** from progressing; but, it will improve your balance and it can prevent joint stiffening.
Essential tremor is a nervous system (neurological) disorder that causes involuntary and rhythmic shaking. It can affect almost any part of your body, but the trembling occurs most often in your hands — especially when you do simple tasks, such as drinking from a glass or tying shoelaces.

Sometimes confused with Parkinson's disease.

Essential tremor can occur at any age but is most common in people age 40 and older.
Essential tremor (ET) is often reported to be among the most prevalent movement disorders.

Data suggests approximately 2.2% of the US population has ET.

Triggers for essential tremor may include stress, physical exhaustion, fever and low blood sugar.
GEM is designed to introduce the athlete to the different movements involved to help the individuals deal with their current symptoms.

Athletes will be exposed to movements and exercises that will enhance and improve:

- Muscular strength
- Coordination
- Agility
- Muscular Endurance
- Flexibility
- Speed
- Voice Command
Arlene demonstrates that "Can Do" Attitude that keeps us all successful as she works with GEM Head Coach, Michael Cohen, after class. Arlene, like everyone in the class, has a movement disorder, and is working hard to overcome it, and maintain the quality of her life. She has made a lifetime commitment to keeping herself as fit and healthy as possible.
Who can attend GEM Training?

GEM training is open to professionals and lay people with a desire to help improve the quality of life of those who are afflicted by neurological and movement disorders in our communities.

They may be physical or occupational therapists, personal trainers, gym owners, support group leaders, activity directors, coaches or anyone with an affiliation with movement disorders.

Gem Certification Requirements

Must be 18 years of age at time of class attendance
Must participate in 8 hours of instruction, divided between lecture and practical training. Must pass (75% or greater) written assessment upon completion of lecture and practical instruction.
Must pay course fees prior to beginning instruction.
GEM - 3 Cardinal Rules!

1. Everybody MOVES
2. Everybody TALKS
3. Everybody has FUN
GEM - Getting Started

Patient Related
- Medical Release Forms
- Liability Waivers
- General Health Background
- Movement Assessment

Facility Related
- Open Space
- Level Floor
- Equipment
- Climate Considerations
- First Aid/AED
- Restrooms
GEM - Getting Started

What you should have before class begins

• Medical Release Forms
• Liability Waivers
• General Health Background
• Movement Assessment
• Access to water/juice/Powerade
• Access to First Aid
• Access to phone (for emergency)
• Emergency procedure guidelines
• Proper staff
• Safe Environment
First – Do No Harm

- Much like a physician, the coach’s first commandment is to do no harm.
- Every athlete wants to win and so does every coach, but not at the expense of an athlete’s health.
- Proper training should enhance one’s health and healthier athletes are far more likely to reach their potential.
Safety Action Plan Examples

Emergency Incident

Assess the scene

Safe
Deal with Problem/Concern
Call 911 if Necessary
Fill Out Appropriate Reports
Staff Briefing

Not Safe
Call 911

Safety Action Plan Examples

911 Call Example

The following is a sample of the message that is hung beside each emergency phone. This sign provides directions to the appropriate emergency entrances. It also allows untrained persons provide the appropriate information to the 911 operator.

This Phone is FOR EMERGENCY USE ONLY

1. DIAL “911”
2. Read the following message:
   “AN EMERGENCY EXISTS AT THE SAMPLE GYM, INSERT ADDRESS. PLEASE COME AT ONCE TO THE GYMS (Insert location of gym’s most easily accessible door). IF POSSIBLE, SOMEONE WILL MEET YOU THERE AND DIRECT YOU TO THE INJURED PARTY.”
   “THERE HAS APPARENTLY BEEN A ____ INJURY.”
3. REMAIN ON THE PHONE WITH THE DISPATCHER UNTIL EMERGENCY PERSONNEL ARRIVE ON THE SCENE.

DO NOT HANG UP
First Aid Basics

- Infections are common with this population. Make sure open wounds are covered.
- Use hand sanitizer for boxing gloves.
- Make sure that the coach has access to juice or sports drink (warning signs of a sugar imbalance can be mistaken for the warning signs of a heart attack).
- Do NOT move anyone who has fallen and feels numbness or tingling in extremities.
- Use of athletic tape on the thumb and knuckles helps in boxing.
- Always have chairs available for accommodations to exercises.
- ICE is nice.
LIABILITY WAIVER

GEM! Exercise Program
Registration/Accident Liability Release/Waiver Form

Please print

Name of Participant (First and Last):__________________________

Street Address:__________________________________________

City, State, Zip:__________________________________________

Home Phone:___________________ CellPhone:_________________

Email (please print clearly to sign up for future notification of events and activities)

Emergency Contact Name:_________________________________

Phone:______________________________

Participant and/or Parent/guardian/Agent/Representative signature at the bottom of this page constitutes agreement with this waiver.

- I choose, for my own personal benefit, to freely and voluntarily participate in the GEM! (Get Excited and MOVE!) exercise program, located at Paul Anderson/Howard Cohen Weightlifting Center in Savannah, GA, sponsored by Team Savannah and Savannah Parkinson Support Group, to use its facilities, exercise equipment, and machinery. In consideration, for myself, and my heirs and assigns, do hereby waive, release and forever discharge Savannah Parkinson Support Group, their officers, agents, employers, representatives, investors and executors from any injuries and any damages resulting from my participation in the GEM! Program, or resulting from my use of exercise equipment or machinery in the GEM program. I also hereby release SPSG, GEM! Coordinators, and any others acting upon Savannah Parkinson Support Group's behalf from any responsibility or liability, now or in the future, for any injury or damage to myself (including any injury caused by the negligent act or omission of SPSG, GEM! Coordinators, or any others acting on behalf of SPSG), or in any way, arising out of or connected with my participation in any activities of Savannah Parkinson Support or GEM!.

- I understand and am aware that strength, flexibility and aerobic exercise, including the use of exercise equipment, can be a potentially hazardous activity, involving the risk of a variety of injuries (including death). I willingly accept any risks associated with this and other strenuous and/or repeated exercise and understand that I must take full responsibility for my own health and safety while participating in this program. I am voluntarily participating in these activities, using equipment and machinery with knowledge of the dangers involved. I hereby agree to expressly assume and accept all risk of injury associated with the GEM! Exercise program or any related activity sponsored by Savannah Parkinson Support Group. In the event of injury, I agree to abide by the rules and procedures set by Team Savannah, and will be responsible for all medical expenses, incurred by myself or SPSG, in connection therewith.

- I acknowledge that I have either had a physical examination recently, discussed participation in GEM! with my physician, and have been given his/her permission to participate in physical activity and/or use exercise equipment as directed in the GEM! Program; OR I have decided to participate in physical activity and use exercise equipment without the approval of my physician, and do hereby assume all responsibility for such participation. I affirm that I have read and understand this form, in its entirety, and that I understand the nature of the exercise in which I will participate. I know that there may be risks associated with fitness programs, and willingly accept those possibilities.

Therefore, intending to be bound, and a condition of being allowed to participate in GEM!, I or my representative have freely signed this waiver on the date indicated.

Participant Signature:__________________________ Date:__________________________

Guardian/Representative (if under 18):__________________________

Signature (required if under 18):__________________________ Date of Birth:__________________________

Or Participant unable to sign

Witness:___________________________________________________ Date:__________________________
Your patient, ______________________, wishes to start GEM!, a group exercise program developed for people with Parkinson disease and their caregivers. As a participant in this program, your patient will be instructed in proper exercise techniques, working one on one, and as a member of the GEM! Team.

Are there any medical factors in your patient’s history or any medications that are currently being taken which would affect exercise programming or the patient’s ability to participate in a non-medically supervised program?

Please Circle: YES      NO

If yes, please list and explain:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Please identify any recommendations or restrictions that are appropriate for your patient in this exercise program:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

My patient, ______________________, has my approval to begin an exercise program developed especially for people with Parkinson disease and their caregivers with the recommendations or restrictions stated above.

Physician Name______________________________
Work Phone______________________________
Physician Signature______________________________
Assessments

The 30-Second Chair Stand Test

Purpose: To test leg strength and endurance

Equipment:
- A chair with a straight back without arm rests (seat 17” high)
- A stopwatch

Instructions to the patient:
1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and keep your arms against your chest.
5. On “Go,” rise to a full standing position and then sit back down again.
6. Repeat this for 30 seconds.

On “Go,” begin timing.

If the patient must use his/her arms to stand, stop the test.
Record “0” for the number and score.

Count the number of times the patient comes to a full standing position in 30 seconds.
If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.
Record the number of times the patient stands in 30 seconds.

Number: ________ Score ________ See next page.

A below average score indicates a high risk for falls.
Assessments

The 4-Stage Balance Test

Purpose: To assess static balance

Equipment: A stopwatch

Directions: There are four progressively more challenging positions. Patients should not use an assistive device (cane or walker) and keep their eyes open.

- Describe and demonstrate each position. Stand next to the patient, hold his/her arm and help them assume the correct foot position.
- When the patient is steady, let go, but remain ready to catch the patient if he/she should lose their balance.
- If the patient can hold a position for 10 seconds without moving his/her feet or needing support, go on to the next position.
- If not, stop the test.

Instructions to the patient: I'm going to show you four positions.

Try to stand in each position for 10 seconds. You can hold your arms out or move your body to help keep your balance but don't move your feet. Hold this position until I tell you to stop.

For each stage, say “Ready, begin” and begin timing. After 10 seconds, say “Stop.”

See next page for detailed patient instructions and illustrations of the four positions.

Instructions to the patient:

1. Stand with your feet side by side. Time: ________ seconds

2. Place the instep of one foot so it is touching the big toe of the other foot. Time: ________ seconds

3. Place one foot in front of the other, heel touching toe. Time: ________ seconds

4. Stand on one foot. Time: ________ seconds

An older adult who cannot hold the tandem stance for at least 10 seconds is at increased risk of falling.

Notes:
Assessments

The Timed Up and Go (TUG) Test

**Purpose:** To assess mobility

**Equipment:** A stopwatch

**Directions:** Patients wear their regular footwear and can use a walking aid if needed. Begin by having the patient sit back in a standard armchair and identify a line 3 meters or 10 feet away on the floor.

**Instructions to the patient:**

When I say “Go,” I want you to:

1. Stand up from the chair
2. Walk to the line on the floor at your normal pace
3. Turn
4. Walk back to the chair at your normal pace
5. Sit down again

On the word “Go” begin timing.

Stop timing after patient has sat back down and record.

**Time:** __________ seconds

An older adult who takes ≥12 seconds to complete the TUG is at high risk for falling.

Observe the patient's postural stability, gait, stride length, and sway.

**Circle all that apply:** Slow tentative pace ■ Loss of balance ■ Short strides ■ Little or no arm swing ■ Steadying self on walls ■ Shuffling ■ En bloc turning ■ Not using assistive device properly
Equipment

- Boxing gloves
- Light weight Dumbbells
- Medicine Balls
- Hand Sanitizer
- Boxing bags
- Target Pads
- Agility Ladders
- Floor Mats
- Agility Dots
GEM STRETCH ROUTINES
WARM UP EXAMPLES

- Overhead Tricep Extension (L & R)
- Cross body Shoulder Stretch (L & R)
- Four Way Neck Stretch
- Lateral Side Stretch (L & R)
- Arm Rotation (L & R together)
- Backward Arm Rotation
- The Back Stroke (L & R together)
- The Breast Stroke (L & R together)
- Trunk Rotation
- The Hula Hoop
- Forward Leg Stretch-Mid-Thigh
- Forward Leg Stretch-Knee
- Forward Leg Stretch-Mid-Calf
- Forward Leg Stretch-Ankle
Warm Up Examples

- Ankle
- Quad
- Shoulder
- Wrist
- Back
- Neck
- Thighs

Cross body Shoulder Stretch
KETTLE BELLS OR DUMBELLS
DUMBBELLS

Shoulder Press (R & L)
Standing Single Arm Press (R & L)
Two Hand Press (together)
Tricep kickback (knees bent)
Dumbbell Curl
Cross Over Curl (R & L)
Front Raise (together)
Lateral Raise (together)
Bent Over Row (together)
Dumbbell Shrug (I Don’t Know) (together)
Dumbbell Rows
Chopping Wood (together)
Dumbbell Squat
Dumbbell Twist
Dumbbell Side Bend
Dumbbell Lateral
Dumbbell Lawnmower
Dumbbell Boxing
Dumbbell Jabs
Dumbbell Hooks
Dumbbell Uppercuts
Dumbbell Breast Stroke
Kettle Bells

Shoulder Press (R & L)
Standing Single Arm Press (R & L)
Two Hand Press (together) (R & L)
Tricep kickback (knees bent) (R & L)
Kettlebell Curl (R & L)
Cross Over Curl (R & L)
Kettlebell Swing (R & L)
Front Raise
Lateral Raise
Bent Over Row
Kettlebell Rows
Chopping Wood
Kettlebell Squat
Kettlebell Twist
Kettlebell Side Bend
Kettlebell Lateral
Kettlebell Lawnmower
Two Hand Pull-Up
One Hand Press (R & L))
Golf Swing (R & L)
Single Arm Swing (R & L)
Figure 8
Bar Related Activities are taught Top to Bottom
Bar Work - Example Exercises

- Single Arm Punch (R & L)
  - Twist
- Forward Raise
- 2 Hand Press
- Upright Row
- Inverted Wrist Curl
- Underhand Curl
- Underhanded Wrist Curl
- One Arm Lateral (R & L)
  - Clean Grip-Power Position-Power Clean
  - Clean Grip-Mid-Thigh-Power Clean
  - Clean Grip-Knee-Power Clean
  - Clean Grip-Below Knee-Power Clean
- Wide Grip-Power Position-Snatch
- Wide Grip-Mid-Thigh-Snatch
- Wide Grip-Knee-Snatch
- 2 Hand Squat
  - Back Squat
  - Toe Raise
- Knee Extension (R & L)
  - Twist
  - Bent Over Twist
BOXING Exercises

- Right Stomp
- Left Stomp
- Left Jab
- Right Jab
- Bag Work
- Shadow boxing
- Targeting
- Moving Target
SHADOW BOXING

Basic Boxing Moves

Jabs
Hooks
Uppercuts

https://www.facebook.com/GEM4MOVEMENTDISORDERS/videos/440557126119441/
SHADOW BOXING

Advanced Boxing Moves

Pivot
Reverse
Forward
Back
Slide (R&L)
Stomp (R & L)
BAG WORK & TARGETING

10 & 10
Jabs
Hooks
Uppercuts

Make contact with the *crown* of the glove
BAG WORK

ADVANCED MOVES

Jab Patterns
Hook Patterns
Uppercut Patterns
Combination Patterns
Blocking
Tracking
Burnout
Glove work

Combination Glove work

https://www.facebook.com/pg/GEM4MOVEMENTDISORDERS/videos/?ref=page_internal
MEDICINE BALLS

Bounce Single Pass
Elongated Bounce Pass
Right Hand Single Bounce
Left Hand Single Bounce
Behind the Back
Squat Push
Around the World
Under Legs
Agility Ladder

1 Foot In Each
Start behind the ladder facing down it. Lead with either foot stepping 1 foot per square.

2 Feet In Each
Start behind the ladder facing down it. Step with either foot into the first square, followed by the second foot into the same square. Repeat the drill leading with the other foot.

1 In Lateral
Start by facing to the side with one foot in and one foot out. Lead with the foot that is in the ladder and step into the next square. Follow with the trail leg by placing that foot into the first square. Repeat the exercise leading with the other foot.

2 In Lateral
Start by facing to the side with both feet outside the ladder. Step into the first square with the closest foot, followed by the second foot. Repeat the exercise leading with the other foot.
Walk Through
Speed Walk
Side Shuffle
Side Shuffle/Turn Around
3-1
4-2
In & Out
Needle
Zig-Zag
Duck

Medicine Ball Combinations
Ball Walk
Forward Step-3 Way Bounce
Triple Step Progression

https://www.facebook.com/pg/GEM4MOVEMENTDISORDERS/videos/?ref=page_internal
COMMON PROBLEMS WITH AGILITY LADDER

- Not picking up feet
- Walking too fast
- Not following numbered instructions
- Taking too small of steps
- Freezing
- Balance concerns
AGILITY LADDER – SOLUTIONS

- Not picking up feet
- Walking too fast
- Not following numbered instructions
- Taking too small of steps
- Freezing
- Balance concerns
- Walking with hands in pockets or next to the legs

- Use “step over” command
- Slow rhythm
- Count out loud
- Use “Big Step” command
- Use “take a step back” command
- Use spotters
- Hands MUST swing as they walk
Agility Ladder - Spotting

Coaches should be positioned at various spots along the ladder.
Agility Ladder - Spotting
Accommodations for agility ladder

Use a cane or walking aid
Use a spotter or assisted walk
Use both
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<thead>
<tr>
<th>Eyes Down</th>
<th>Eyes Up</th>
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COOL DOWN - BREAK OUT

Break Out addresses Vocal deficiencies
OTHER Safety Techniques

Stand behind high fall risk athletes.

Stand behind to support the athlete or leave the athlete in a chair.
Creating a Safe Training Environment

Have the training area open and wheelchair accessible.

Remove any objects that could cause a fall.
How to Address Falls

1. ABC of first aid (Airway, Breathing, Circulation)

2. Make sure the athlete is not in pain

3. Use recovery methods to help the athlete stand
It's important to have a well-balanced diet, with calcium and vitamin D for bone strength. Although protein can interfere with levodopa, you can avoid the problem by taking the medicine about a half-hour before mealtime. If you have nausea, take your medicine with crackers or ginger ale. Eating a high-fiber diet with lots of fluids can prevent constipation.

Never discuss diet with an athlete without a consultation with his or her physician.