# Training Manual for PISTA Parkinson Table Tennis

# Introduction

Parkinson's is a progressive neurodegenerative movement disorder caused by a lack of dopamine production in the substantia nigra. The cardinal features of this disorder include bradykinesia, gait disturbance, rigidity, and tremor. Impairments of balance and postural stability likely contribute to the increased risk of falls and fractures found in this patient population. In response to perturbations of balance with a backward waist pull, individuals with Parkinson's demonstrate differences in weight shift, use a modified ankle joint motion before lift-off and land with weight shifted posteriorly compared with healthy age-matched controls.

The primary motor symptoms of PD, such as rigidity (stiffness) and bradykinesia (slowness of movement), along with associated changes in posture, all contribute to risk of falling. Axial rigidity, which is reduced flexibility and adaptability in the neck and trunk, results in postural instability (loss of balance), increasing a person's chances of falling. Problems with center of mass, or center of gravity, can also contribute to falls. A person's center of mass is located just below the navel and the legs form the base of support. In PD, it is not uncommon. for a person's center or middle to move away from his or her base of support. This may cause a loss of balance during daily activities such as standing up, bending down or forward, turning sharply, walking while turning the head, or talking.

Falls may also occur due to impaired postural reflexes (a complex set of movements that we make automatically to maintain balance when we stand up and walk); postural change (a

tendency to lean forward, with stooped posture and shuffling gait); and freezing (the inability to initiate movement, as though one's feet were stuck to the floor).

Another risk factor for PD-related falls stems from the problems that some people with PD have with their vision, such as double and blurry vision and changes in depth perception.

## Four Main Characteristics of The Parkinson’s Disease

1. **Bradykinesia**

Bradykinesia is defined as a generalized slowness of movement, with patients struggling in particular with starting a movement. It is seen in almost every patient with Parkinson’s disease, making its presence essential for diagnosis. It is also one of the most debilitating symptoms of PD.

## 2. Rigidity

Rigidity is defined as increased resistance to passive movement about a joint. It usually starts on one side and later spreads to the other one. It is similar to spasticity since both conditions show increased resistance to passive movement. However, rigidity is not direction dependent, that means there is the same amount of resistance both in extension and flexion of the affected limb. Also, rigidity is not velocity dependent, meaning that the tone does not change based on the speed of passive motion.

**Passive Manipulation of Limbs**

To test for the presence of rigidity, we need to passively manipulate the limbs of the patient. However, If the disease is in its early stage or the symptoms are well controlled with medications, we may not be able to see rigidity. We will need to use some activation maneuvers, that basically consist in performing repetitive movements with the limb contralateral to the one that is being tested.

**Also, there are two types of rigidity:**

- Lead-pipe rigidity: where the tone is uniformly and smoothly increased throughout the entire range of movement
- Cogwheel rigidity: where a tremor is superimposed on the hypertonia, making the movement irregular due to intermittent increase and reduction of tone

## 3. Tremor

Tremor is defined as an involuntary trembling of a body part. There are three main types of tremors:

- Resting tremor
- Action (Kinetic) tremor
- Postural tremor

All of these types of tremors can be seen in Parkinson’s disease, even though resting tremor is the more frequently observed one and also the most severe when all three tremors are present in PD.

Patients with essential tremor, instead, classically have more severe postural and kinetic tremors as compared to resting tremor.

4. **Gait & Balance Abnormalities**

Patients with Parkinson’s disease can develop an alteration of the postural reflexes that causes instability in gait and balance control. Such alterations usually develop later in the course of the illness and are a major cause of disability, especially because of the high risk for falls that derives.

# Typical Gait Pattern in Parkinson's

People with Parkinson's often experience increased gait impairments as the disease progresses and symptoms become more severe.  Impairments include;

- Hypokinesia (decreased step length with decreased speed)
- Decreased coordination
- Festination (decreased step length with increased cadence)
- Freezing of gait (the inability to produce effective steps at the initiation of gait or the complete cessation of stepping during gait)
- Difficulty with dual tasking during gait

Coupled with these gait impairments are increased risk and rate of falling. Increased probability of falls not only increases the risk of injury such as hip fracture but also affects an individual's independence and ability to interact within the community. Additionally, fear of falling has psychological consequences and can lead to self-isolation and depression.

## Gait Kinematics

The changes in gait kinematics include changes in the excursion of the hip and ankle joint. Instead of a heel-toe progression, the patient may have a flat-footed or, with disease progression, a toe-heel sequence. The patient with Parkinson's appears to have lost the adult gait pattern and is using a more primitive pattern. The flat-footed gait decreases the ability to step over obstacles or walk on carpeted surfaces. The use of three-dimensional gait analysis has shown a decrease in plantar flexion at terminal stance. Changes are also seen in hip flexion, which may alter ankle excursion. However, qualitative aspects of the timing of joint excursion appear intact.

# Tricking your body to move when you have Parkinson's

As Parkinson’s progresses, how easily you move may fluctuate. Symptoms like stiffness and freezing can limit certain actions, especially when you’re on your feet.

**Slowness of movement and stiffness**

These Parkinson’s symptoms happen when signals in your brain affect your ability to move your body properly. So, when you go to move, your body creates a smaller and slower movement than it should.

Conditions, such as arthritis, changes to your eyesight or hearing, changes to the sensation in your feet or hands, or an old injury can also affect how easily you are able to move.

A good way of breaking slow and small movements down is to think BIG. For example, walk using a longer stride, or walk with purpose by thinking taller or straighter. Add power to your walk using your legs and arms. This will help you increase how fast you can go.

Dancing your way through one room to another can also help start and keep up the movement. The aim is always to get your brain to calculate larger size movements every time you create a movement.

**The power of imagination**

Using your imagination can help energize you to move and kickstart the areas of your brain that control movement.

For example, imagine walking to the kitchen to make a drink like a model on a catwalk. In your head, let the imaginary audience know where you’re going, and what you’re going to do.

If you enjoy football, imagine dribbling a ball to the door or do keepy-uppies with each knee. Or if tennis is your passion, imagine playing shots against a wall.

**Remember to rest**

It’s not always appropriate to push your body, especially if you experience fatigue, or if you haven’t slept well. Always make time to rest, even if it’s just for five minutes. This might be watching a TV programme, resting on your bed or practising mindfulness.

# Freezing

If you freeze, you may not be able to move forward for several seconds or minutes. You may also feel like your lower half is stuck, but the top half of your body is still able to move.

**Here are some ideas to think about:**

- If your legs won't lift off the ground when you first stand up from a chair, breathe in and draw yourself up tall. As you do this, make sure your feet are planted firmly on the floor. Sway slowly from side to side, trying to pick each foot up before you're able to bend your leg and move the other forward. You may find that whichever side your Parkinson's affects you most, will usually begin the movement.
- If the freezing happens as you're walking, tell yourself, "Big step on the heel". Then take a larger step, or look where you want to end up and imagine how many steps this should take you. Count those steps out loud as you walk. This may be especially helpful if you're going through a doorway or into another room, as the door frame or flooring change interrupts the walking signals.

# Physiotherapy Management

## Flexibility Exercises

A study by Reuter et al. (2011) demonstrated improvement in 12 m and 24 m Webster Walking tests following flexibility exercises and relaxation training. The training focused on stretching, improving balance and range of movements, thrice a week for six months. However, there was a more significant improvement in the walking group (warming up, technique training, endurance training and cooling down) and even more significant improvement in the nordic walking group. This indicates task-specific approach for better results.

## Strength Training

The systematic review by Lima et al. (2013) suggested that progressive resistance exercise can be effective and worthwhile in people with mild-to-moderate Parkinson's but carryover of benefit does not occur for all measures of physical performance. The current evidence suggests that progressive resistance training should be implemented in rehabilitation for Parkinson's, particularly when the aim is to improve walking capacity.

Another review by Tambosco et al. (2014) access the efficacy and the limits of aerobic training and strength training included in physical rehabilitation programs and to define practical

modalities in the management of Parkinson's. In this review, five literature reviews and 31 randomized trials were selected. The authors concluded that there is evidence that aerobic and strength training improves physical abilities of people with Parkinson's. It is emphasized that exercise training improves aerobic capacities, muscle strength, walking, posture and balance parameters. Rehabilitation programs should begin as soon as possible, last several weeks and be repeated. They should include aerobic training on a bicycle or treadmill and a muscle strengthening program.

## Balance Training

A prospective interventional cohort study by Mhatre et al. (2013) assessed the effect of exercise training by using the Nintendo Wii Fit video game and balance board system on balance and gait in adults with Parkinson's. The authors conclude that an 8-week exercise training class by using the Wii Fit balance board improved selective measures of balance and gait in adults with Parkinson's. However, no significant changes were seen in mood or confidence regarding balance.

A single-blind, randomized controlled clinical trial was conducted in China in 2013 by Gu et al to determine the effect of Parkinson's-weight bearing exercise for better balance (PD-WEBB) exercise on balance impairment and falls in people.

The authors conclude that PD-WEBB training can significantly improve the balance impairment and quality of life to prevent falls. PD-WEBB training is suitable for people with Parkinson's in China and is a reasonable, effective and sustainable training of family and community assessment model.

## Cueing Strategies

External cues can be auditory or visual. Attentional strategies are consciously concentrating on a specific aspect of gait. By using cueing and attentional strategies the defective basal ganglia are bypassed. They no longer automatically have to control the movement as it has now become a cognitive task. A systematic review evaluating the evidence for the physical interventions for Freezing of gait (FOG) and gait impairments recommends Visual Cueing and Auditory Cueing and the treadmill training as effective interventions for FOG and gait impairments in PD patients

## Treadmill Training

Literature review by Earhart and Williams (2012) focused on the research question 'Can treadmill training improve the gait of individuals with Parkinson's?'. The authors reviewed 8

randomized control trials and randomized controlled crossover trials. Based on the results of this systematic review, they concluded that treadmill training is safe and appropriate for some individuals with mild to moderate Parkinson's. These individuals must have the cognitive and physical ability to utilize the treadmill, must understand and use the necessary safety precautions, and have adequate supervision as needed. Treadmill training can be expected to result in improvements in gait speed, stride length, and walking distance.

Treadmill training does not appear to influence cadence, but this finding should not be viewed negatively. The maintenance of cadence following treadmill training, in conjunction with increased stride length, results in faster gait speed which is a positive outcome. The review does not include information to support or refute the effects of treadmill training on other aspects of gait, such as dual-task walking and decreased coordination. In addition, treadmill training may not address reduced arm swing, which is commonly seen in people with Parkinson's, as arm swing is limited during treadmill training through use of handrails. Furthermore, generalizability of treadmill training may be limited, as the studies that were reviewed excluded individuals with a history of cognitive, depressive, cardiovascular or orthopedic conditions.

# OBJECTIVES OF THE TRAINING PROTOCOL

**Ensure a Safe and Comfortable Training Environment:**

- Establish a secure and inviting training area where participants can practice Table Tennis skills without concerns for their safety.
- Regularly assess the training environment for hazards and maintain a comfortable atmosphere.

**Promote Cognitive Functioning through the Table Tennis activities**

- Develop Table Tennis training sessions that incorporate cognitive challenges, encouraging strategic thinking, focus, and quick decision-making.
- Create a stimulating and mentally engaging training curriculum that enhances cognitive abilities.

**Assist Participants with Activities of Daily Living (ADLs):**

- Provide personalized assistance to participants for their daily living activities, such as dressing, grooming, and eating.
- Integrate Table tennis Protocol techniques into daily activities to improve physical coordination and independence.

**Deliver Patient Education and Support**

- Offer comprehensive education about Table Tennis, including its rules, techniques, and physical benefits.
- Provide continuous coaching and emotional support to participants, helping them overcome challenges and celebrate progress.

**Implement Medical Management and Monitoring:**

- Collaborate closely with healthcare professionals to assess participants' health status and address any medical needs.
- Monitor and administer necessary medical treatments, medications, or therapies, ensuring participant safety during Table Tennis training.

**Provide Caregiver Relief Through TT Protocol Sessions:**

- Organize regular Table Tennis Protocol training sessions that offer respite to caregivers, allowing them to take a break while knowing their loved ones are engaged in meaningful activities.
- Establish a flexible training schedule to accommodate caregivers' needs and provide them with the opportunity to recharge.

# REQUIREMENTS FOR TABLE TENNIS TRAINING PROTOCOL

1. **Qualified Instructors:**
   - Instructors should be trained in the use of PISTA devices and integrate them effectively into the training sessions.

2. **Dedicated Training Space:**
   - A well-equipped and designated training area with sufficient table tennis tables, nets, and playing surfaces.

- Adequate lighting and ventilation to ensure a comfortable environment for training.

3. **Training Curriculum:**
   - Development of specialized training modules that leverage data for performance analysis and improvement.
   - Integration of data to provide real-time feedback on technique and gameplay.

4. **Individualized Coaching:**
   - Utilization of data to tailor coaching and feedback to the specific needs and skill levels of each participant.
   - Regular analysis of data to assess individual progress.

5. **Regular Practice Sessions:**
   - Scheduled practice sessions that accommodate participants' availability and skill levels.
   - A mix of individual and group training sessions for varied learning experiences.

6. **Medical Support and Monitoring:**
   - Availability of trained medical personnel or access to emergency medical services during training sessions.
   - Monitoring of participants' health and physical conditions to prevent overexertion or health issues during training.

7. **Record Keeping and Data Analysis:**
   - Comprehensive data storage and analysis systems to track participant improvements over time.
   - Integration of data analysis results into individualized training plans.

8. **Caregiver Involvement:**
   - Involvement of caregivers in PISTA data review sessions, helping them understand and support participants' progress.

9. **Evaluation and Feedback:**
   - Regular evaluation and feedback sessions to gather input from participants and caregivers for continuous program improvement.

# PISTA Ping Pong Guidelines

## 1. Ping Pong without PISTA Device (One Group)

**Warm-Up:** Start with a gentle warm-up to prepare their bodies. Simple arm stretches and wrist rotations are excellent.

**Basic Rules:** Depending on the cognitive abilities of the patients, introduce basic Ping Pong rules. Explain that the goal is to hit the ball over the net and into the opponent's side of the table.

**Ping Pong Movements:**

- **Forehand Stroke:** Teach them how to use a forehand stroke, swinging the paddle forward when hitting the ball. Encourage them to keep their eye on the ball.
- **Backhand Stroke:** Similarly, show them the backhand stroke, where the paddle swings backward when hitting the ball.
- **Serving:** Depending on their abilities, introduce serving techniques. For simplicity, you can have them practice a gentle underhand serve.

**Routines:** Create routines that include different Ping Pong movements. Here are some examples:

- **Ping Pong Volley:** Patients stand on opposite sides of the table and take turns hitting the ball back and forth, practicing their forehand and backhand strokes.
- **Ping Pong Target Practice:** Set up targets on the table, like plastic cups, and have patients aim to hit the ball into the cups. This adds an element of fun and precision.
- **Ping Pong Relay:** Patients can form teams and take turns hitting the ball over the net, trying to keep a rally going. This encourages teamwork and social interaction.
- **Ping Pong and Memory:** Use colored Ping Pong balls and ask patients to call out the color of the ball they hit or the direction they want to hit (left, right, center) to engage their cognitive skills.
- **Cool Down:** After the Ping Pong session, engage in a cool-down period with gentle stretches to prevent muscle soreness.

**Adjust as Needed:** Be flexible and adapt the routine to each individual's abilities. Some may need more assistance, while others may be more independent.

## 2. Ping Pong with PISTA Device (One Group)

**Warm-Up:** Start with a gentle warm-up, including stretches and wrist rotations, to prepare the participants.

**Basic Rules:** Explain the basic rules of Ping Pong as mentioned earlier.

**Ping Pong Movements:** Teach participants the Ping Pong movements, including forehand and backhand strokes.

**PISTA Device Integration:**

- **Auditory Cues (Beeps):** Program the PISTA device to emit beeping sounds through the headphones. These beeps can serve as cues for when to hit the ball or indicate the start of a rally.
- **Tactile Feedback (Vibration Capsules):** Attach vibration capsules to the participants' wrists or clothing. Configure the PISTA device to trigger vibrations when they successfully make contact with the ball.

**Routines with PISTA:**

- **Ping Pong Volley with PISTA:** Participants stand on opposite sides of the table, and the PISTA device provides auditory cues (beeps) for when to hit the ball. Simultaneously, vibrations from the capsules reinforce successful hits, providing a multisensory experience.
- **Ping Pong Target Practice with PISTA:** Set up targets on the table, like plastic cups. The PISTA device can beep to guide participants' timing, and vibrations can indicate accurate hits on the target.

**Cool Down:** After the Ping Pong session, engage in a cool-down period with gentle stretches.

**Social Interaction:** Encourage conversation and social interaction during breaks.

**Scoring with PISTA:** The PISTA device can also be programmed to provide different types of beeps or varying vibration intensities to indicate different levels of success. For example, a higher-pitched beep or stronger vibration could signify a particularly good hit.

## 3. No Table Tennis (one group)

The following guidelines outline a specialized PISTA training program for Parkinson's patients, excluding the use of table tennis. This program is designed to improve mobility, cognitive functions, and emotional well-being. It focuses on the utilization of the PISTA device, which combines auditory stimulation with vibrations.

**Preparation:**

- **Assessment and Personalization:** Start with a thorough assessment of each patient's condition, including mobility, cognitive abilities, and emotional state. Tailor the PISTA program to their specific needs and goals.
- **Consultation:** Consult with licensed PISTA coach experienced in PISTA training to ensure that the program aligns with the patient's overall treatment plan.

**Training Routine:**

- **Regular Schedule:** Establish a consistent training routine, incorporating PISTA sessions into the patient's daily activities.
- **Device Setup:** Ensure that the PISTA device is set up correctly, with both earphones and vibration capsules properly connected. Adjust settings according to the patient's preferences.
- **Daily Session:** Incorporate PISTA sessions as part of the daily routine. These sessions should be scheduled for a duration that suits the patient's stamina and preference.

**Physical Mobility:**

- **Gait and Movement:** During PISTA sessions, integrate walking or seated mobility exercises. The combination of auditory stimulation and vibrations can enhance coordination and mobility.
- **Stretching:** Include gentle stretching exercises to improve flexibility and reduce muscle stiffness. These exercises can help patients feel more comfortable in their daily activities.

**Cognitive Stimulation:**

- **Memory and Cognitive Exercises:** Engage in PISTA programs designed to enhance cognitive functions. These exercises can include memory games, problem-solving tasks, and activities to boost attention and focus.
- **Mindfulness and Relaxation:** Integrate meditation and mindfulness programs to encourage mental relaxation and emotional well-being.

**Emotional Well-being:**

- **Stress Reduction:** Utilize PISTA's relaxation programs to help patients manage stress and anxiety. Regular practice can contribute to improved emotional well-being.
- **Motivation and Positivity:** Leverage PISTA to promote a positive outlook. Encourage patients to set personal goals and use the device's motivational programs to stay inspired.
- **PISTA Modalities:** Use of different modalities such as P15, P5 and Entry Points

**Monitoring and Progress:**

- **Data Collection:** Track the patient's progress by recording changes in mobility, cognitive abilities, and emotional state.
- **Regular Assessments:** Conduct regular assessments with the help of a PISTA coach to evaluate the effectiveness of the PISTA program.
- **Feedback and Adjustments:** Based on assessments and patient feedback, make necessary adjustments to the program, such as changing exercises, durations, or settings.

**Caregiver Involvement:**

- **Training and Supervision:** Caregivers should be trained on PISTA device usage to assist patients. They can help set up the device and guide patients through exercises.
- **Motivational Support:** Caregivers play a crucial role in providing motivation and emotional support, encouraging patients to adhere to their training regimen.

## 4. Ping Pong with PISTA Device – Home use (One Group)

The following guidelines are designed for Parkinson's patients who want to combine table tennis and PISTA device training for use at home. This program aims to enhance mobility, cognitive function, and emotional well-being. Table tennis and the PISTA device will be integrated to provide a comprehensive training experience.

**Preparation:**

- **Assessment and Personalization:** Start with a thorough assessment of each patient's condition, including mobility, cognitive abilities, and emotional state. Tailor the PISTA program to their specific needs and goals.
- **Consultation:** Consult with licensed PISTA coach experienced in PISTA training to ensure that the program aligns with the patient's overall treatment plan.

**Training Routine:**

- **Regular Schedule:** Establish a consistent training routine, incorporating table tennis and PISTA sessions into the patient's daily activities at home.
- **Device Setup:** Ensure that the PISTA device is set up correctly, with both earphones and vibration capsules properly connected. Adjust settings according to the patient's preferences.
- **Table Tennis Equipment:** Provide access to a table tennis setup, including a table, paddles, and balls. Ensure the area is safe for playing.

**Physical Mobility and Table Tennis:**

- **Table Tennis Sessions:** Incorporate regular table tennis sessions as part of the training program. Table tennis is an excellent way to improve hand-eye coordination, reflexes, and overall mobility.
- **Exercise Variety:** Include table tennis drills and practice exercises that mimic the demands of the game. Patients can work on their forehand and backhand strokes, footwork, and rallying skills.
- **Combining PISTA:** For table tennis sessions, use the PISTA device's sound and vibration to improve focus and coordination during the game. Adjust the PISTA settings for optimal enhancement.

**Monitoring and Progress:**

- **Data Collection:** Track the patient's progress by recording changes in mobility, cognitive abilities, and emotional state.
- **Regular Assessments:** Conduct regular assessments with the help of a PISTA Coach to evaluate the effectiveness of the combined program.
- **Feedback and Adjustments:** Based on assessments and patient feedback, make necessary adjustments to the program, such as changing exercises, durations, or settings.

**Caregiver Involvement:**

- **Training and Supervision:** Caregivers should be trained on both the PISTA device and basic table tennis rules and techniques. They can assist patients in setting up the PISTA device and ensure that table tennis sessions are conducted safely.
- **Motivational Support:** Caregivers play a crucial role in providing motivation and emotional support, encouraging patients to adhere to their training regimen.

# TABLE TENNIS TRAINING SESSIONS ROUTINE AND INSTRUCTIONS

**Notes:**

- Throughout the training session, participants should try to replicate the movements from the videos, with eyes closed if possible.
- Ensure that all key points from the text are incorporated into the training.
- Focus on maintaining good posture and balance during the walking forward test.
- Regularly review and compare the filmed sessions to track progress.
- Adapt the training plan as needed based on test results and performance feedback.
- Duration is 2 weeks

## 1. Warm-Up (5 minutes):

Ensuring that the trainees have an effective warm-up before each table tennis training session is essential for their safety, performance, and overall development. Here are some instructions and guidelines to help you lead your trainees through a productive 5-minute warm-up routine:

**a. Importance of Warm-Up:**

Emphasize the significance of the warm-up to prevent injuries and enhance performance.

**b. Clear Communication:**

Clearly explain each warm-up exercise and demonstrate proper technique.

**c. Progressive Intensity:**

Begin with low-intensity activities, gradually increasing to moderate intensity in the final minute.

**d. Mental Preparation:**

Encourage trainees to visualize their game and set goals during the warm-up.

## 2. First Session (1 hour):

**a. Filming Players Walking Forward and Analyzing Posture**

- Begin by explaining the importance of posture in table tennis.
- Film each trainee as they walk forward. Focus on their posture, balance, and body alignment.
- Provide immediate feedback on posture, highlighting areas for improvement.

**b. Footwork Training**

- Gather trainees to watch instructional videos featuring Coach Xu Gang and Pista Trainer.
- Pay attention to the footwork techniques demonstrated in the videos.
- Encourage trainees to take mental notes and ask questions for clarification.

**c. Basic Training Exercises**

- Transition to practical training exercises based on the video demonstrations.
- Start with basic footwork drills, ensuring that trainees implement the techniques they observed.
- Emphasize proper form and coordination.

**d. Filming the Training Session**

- Pause briefly to film a segment of the training session in progress.
- Explain that this footage will be used for later analysis to track progress.

**e. Repeat Walking Forward Test and Evaluate Balance**

- Have trainees repeat the walking forward test.
- Assess whether there have been any improvements in posture and balance.
- Provide specific feedback and suggestions for further enhancement.

**f. Conduct the Sit-Down-Stand-Up Test**

- Initiate the sit-down-stand-up test to evaluate lower body strength, balance, and agility.
- Observe trainees' performance and note any challenges or improvements.

**g. Recap and Closing**

- Summarize the key takeaways from the session, focusing on posture, footwork, and balance.
- Encourage trainees to practice what they've learned between sessions.
- Highlight the importance of consistency in training.

## 3. Break (15 minutes):

Rest and rehydrate.

## 4. Second Session (30 minutes):

### a. Continue Working on Footwork and Posture

- Begin with a brief recap of the importance of footwork and posture in table tennis.
- Conduct footwork drills to reinforce the techniques learned in the first session.
- Emphasize proper posture, balance, and quick movement.

### b. Play with the Coach in Returning the Ball

- Engage in practice rallies with the trainees, acting as their opponent.
- Focus on returning balls with different spins, speeds, and angles to challenge the trainees' footwork and stroke techniques.
- Provide immediate feedback on their shot placement and footwork.

### c. Filming the End of the Session

- Pause briefly to film a segment of the training session's closing phase.
- Explain that this footage will be used for further analysis and feedback.

### d. Recap and Closing

- Summarize the key points covered in the session, highlighting improvements in footwork and posture.
- Encourage trainees to continue practicing and refining their skills.
- Discuss any specific areas for further improvement or focus in the next session.

## 5. Post-Training Session Analysis

### a. Review the Recorded Training Session:

- Start by reviewing the video footage of the entire training session. Pay close attention to each trainee's performance, posture, footwork, and overall technique.

### b. Assess Progress and Areas for Improvement:

- Evaluate each trainee's progress compared to previous sessions and goals set.
- Identify specific areas where trainees have shown improvement and areas that require further development.
- Take note of any consistent patterns or challenges among the trainees.

**c. Individual Assessment:**

- Provide individualized feedback for each trainee based on their performance during the session.
- Highlight strengths and areas requiring improvement.
- Address any concerns or questions raised by the trainees during the session.

**d. Set Goals for Future Training Sessions:**

- Based on your analysis, establish specific training goals for the next session.
- Prioritize areas that require additional attention and set objectives to work on those aspects.

**e. Adjust Training Plans:**

- Modify training plans, drills, or exercises to better address the identified areas of improvement.
- Ensure that future sessions are tailored to meet the evolving needs of the trainees.

**f. Communicate with Trainees:**

- During the next training session, share the results of the analysis with the trainees.
- Encourage open discussion and feedback regarding their performance and training experiences.

**g. Document the Analysis:**

- Maintain a record of your analysis, including individual progress notes and collective observations.
- Use this documentation as a reference point for tracking trainee development over time.

# 6. Test

The objective of this test is to measure the progress and improvements made by our trainees over the course of the training program. We will focus on key areas, including posture, footwork, ball control, and overall performance.

**Test Components:**

- **Posture Assessment:** Evaluate each trainee's posture, body positioning, and balance during play. Note any improvements compared to their initial assessments.
- **Footwork Evaluation:** Assess the trainees' footwork techniques, agility, and movement around the table. Consider their ability to position themselves for optimal shots.
- **Ball Control Test:** Observe the trainees' control over the ball, including their ability to return different types of shots (e.g., spins, speed variations) with accuracy.
- **Match Play:** Organize practice matches among trainees to assess their overall game strategy, shot selection, and decision-making under real game conditions.

**Scoring and Feedback:**

- **Use a Scoring System:** Assign scores or ratings for each aspect assessed, such as posture, footwork, ball control, and match performance.
- **Provide Feedback:** After the test, offer individualized feedback to each trainee based on their performance. Highlight areas of improvement and acknowledge their strengths.

**Documentation:**

- **Record Results:** Keep detailed records of each trainee's performance during the test, including scores, observations, and feedback.
- **Compare to Previous Assessments:** Compare the results of this test to the initial assessments conducted at the beginning of the training program. This will help measure progress effectively.

# TABLE TENNIS TRAINING VIDEOS

- Dr Andre Stang Training Videos
- PISTA Ping Pong Footwork movements
- PISTA Ping Pong for Athletes
- PISTA Ping Pong for Parkinson Patients.

## ALL TRAINING VIDEOS FOR TABLE TENNIS WILL BE SENT THROUGH WHATSAPP





# PISTA MODALITIES

The use of various modalities within the PISTA device, including P15, P25, P5, and the utilization of entry points, plays a pivotal role in the management of emotions, including fears and anxiety, for patients with Parkinson's. P15 modalities offer a tailored approach, addressing specific emotional objectives and enabling patients to experience transformative personal growth. These customizable exercises empower patients to navigate their emotions, such as sadness and anxiety, with a newfound understanding, ultimately fostering emotional healing and a renewed sense of well-being. The P5 + 7 motivation technique enhances efficiency, prompting patients to transition swiftly from planning to action and achieve their goals with determination, helping to overcome the fears and anxiety associated with inaction. Entry points serve as focused anchors for patients during sessions, helping them work through emotional challenges and adapt to evolving needs, including the management of fears and anxiety. Altogether, these modalities provide a flexible and personalized approach to emotional management, empowering patients to lead more fulfilling lives while addressing their emotional fears and anxieties.

# 1. P15

## 15 Minutes Use of the PISTA Machine

Each P15 application is designed to achieve specific and targeted results. By tailoring the P15 modalities to address particular objectives, the patient can effectively work towards their desired outcomes. Through the implementation of these customized P15 exercises, the patient gains valuable insights and experiences transformative changes, enabling them to make meaningful progress in their personal and emotional growth. The flexibility and adaptability of the P15 modalities ensure that the patient's unique needs and goals are addressed, leading to a more fulfilling and successful journey of self-improvement.

By implementing the P15 techniques, the patient's brain is expected to undergo training to process sadness, gaining a deeper understanding of its purpose and learning to work through it without becoming emotionally trapped. This process aims to achieve a balance between feeling sad and enjoying daily living, enabling the patient to effectively deal with grief and establish a new, positive relationship with herself and her future self. Ultimately, the program endeavors to bring relief from the burden of sadness and pain, fostering emotional healing and a renewed sense of well-being for the patient.

**Step 1.**

While having the machine on, the coach will ask the client to close their eyes during the entire 15 minutes of wearing the machine.

**Step 2.**

The coach will suggest a topic to the client. Tell the client to allow their brain and mind to just focus on the topic.

The topic chosen will be called as the **THEME.**

**Sample Topics:** The topic that causes them anxiety, stress or a topic that they want a solution or a topic that they want some more insights on or a habit. E.g., Planning your day

**Step 3.**

Tell the client that don't push himself/herself to think of answers.

If their mind thrift away from the given topic, it's OKAY.

Just allow these 15 minutes to focus on their thoughts.

**Step 4.**

After 15 minutes, tell them to write down what comes out and what other thoughts after using P15.

**Step 5.**

Tell them that they can record what topic has done, what are the results, how it helps them and how their emotion changes, and how are they feeling after.

## 2. P25

- 25 Minutes Use of The PISTA Machine but Should Be Focused Only on A Certain Task
- You have to be away from your mobile or any kind of disturbance you just need to focus on the topic or task or some assignment you need to work on.
- Try to estimate the time needed for this task, choose something that requires 2 hours or three and you can see that you can reduce a lot of time.
- P25 only need 25 minutes of using the PISTA device while working on your certain task but during that period of time you need to be away from any of the other media or computer and you will see how you will benefit from this 25-minute of focus and concentration and get your work done.

Integrating the P25 modality into table tennis training for patients with Parkinson's is a targeted approach to enhance their focus, concentration, and skill development. To tailor this integration, begin by establishing specific training objectives, taking into consideration the unique challenges associated with Parkinson's, such as balance, coordination, and motor skills. Allocate a dedicated 25-minute segment within the training session for the use of the PISTA device with the P25 modality, ensuring a distraction-free environment. Select a table tennis training task that aligns with the patient's objectives and addresses the challenges posed by Parkinson's. Use the PISTA device while doing P25 promoting focused engagement in the chosen task while minimizing external distractions. Following the 25-minute session, assess the patient's progress and gather feedback on their experience. Gradually increase the frequency of PISTA Device sounds and beeps in adapting exercises to address different aspects of their Parkinson's-related challenges. This approach empowers individuals with Parkinson's to make meaningful advancements in their table tennis skills while effectively managing the unique demands of their condition, all within a structured and supportive training environment.

## 3. P5+7

In the P5 + 7 motivation technique, the patient takes five minutes to carefully contemplate and plan their upcoming activity while utilizing the vibration and sound features at the fastest speed on the Pista device. Once the five minutes have elapsed, the patient is prompted to immediately put their planned action into motion without delay. This modality aims to enhance motivation and prompt swift action, enabling the patient to efficiently transition from planning to execution and achieve their desired goals with focused determination.

- Patients can choose specific table tennis videos to watch, focusing on aspects of the game they aim to improve, such as stroke techniques, footwork, or strategy.
- Begin with the five-minute planning phase, during which patients use the PISTA device's vibration and sound features to concentrate and set their goals. This phase is ideal for taking notes, visualizing strategies, and mentally preparing for what they will learn from the video.
- Patients watch the selected table tennis video, paying close attention to the techniques and insights presented.
- Immediately after watching the video, patients transition to the action phase. They put the insights gained from the video into practice on the table tennis court.
- Patients repeat this process regularly, using different videos to target various aspects of their game. By consistently applying the P5 + 7 modality, they can efficiently learn and improve their table tennis skills while staying motivated and determined.

## 4. Entry Point

- 11 SETS
- Each set is equivalent to one and a half minutes

**Step 1.**

While having the machine on, the coach will ask the client to close their eyes during each set. You can tell them to time themselves using a mobile timer.

**Step 2.**

The coach will give an ENTRY POINT topic to the client. Tell the client to allow their brain and mind to just focus on the topic on each set.

**WHAT IS ENTRY POINT?**

An entry point is a thought or an image to which the client focuses on throughout the session. The entry point can also be a scenario or an experience in the past, which an individual continues to feel strongly about. The coach helps the client in identifying this image and later in applying the stimulus that will stimulate the brain. The entry point may change as the sessions continue, depending on the progress of the user.

**Step 3.**

After each set of one and a half minute, tell the client to write down what are their thoughts.

Aside from recording the thoughts, tell them to also record their feelings, emotions or physical emotions that might arise during each set. E.g.: headache, sobbing, weeping laughter, difficulty in breathing etc.

**Step 4.**

After finishing 11 sets. Tell the client that they need to take a short quiet break of five to ten minutes and let their mind sink in.

**Step 5.**

Then, the client has to write down the summary of the new insights n feeling they have for the session.

# GAIT TRAINING STRENGTH TEST

Patients with Parkinson’s disease can develop an alteration of the postural reflexes that causes instability in gait and balance control. Such alterations usually develop later in the course of the illness and are a major cause of disability, especially because of the high risk for falls that derives.

Using the exam to pick up postural instability is of the utmost importance for the management of patients with PD, since it will trigger either a medication adjustment or a physical therapy intervention both aimed at falls prevention.

1. **Partial Standing up**

   **Objective Explanation:** Clearly explain the purpose of the exercise: "The goal of this exercise is to partially stand up from the chair while using it for support. We won't be standing all the way up."

   **Starting Position:** Instruct the patient to begin in a seated position with a straight back, feet flat on the floor, and knees at a 90-degree angle.

   **Chair for Support:** Emphasize the use of the chair for balance and support. Patients can place their hands on the armrests or the sides of the chair.

   **Partial Stand-Up:** Encourage the patient to start standing up slowly, pushing through their legs, but only going about halfway up from the seated position.

   **Cue for Stop:** Let the patient know that you will provide a cue or signal to stop the upward motion at the desired height.

   **Balance and Control:** Stress the importance of maintaining balance while partially standing. Ask them to engage their core and distribute their weight evenly on both feet.

   **Return to Seated Position:** Explain the process of lowering back into the chair slowly and in a controlled manner, using the chair for support as needed.

## 2. Standing up from a chair

Position the patient:

- Have the patient sit comfortably on the chair with their back against the chair's backrest.
- Position yourself behind the patient with one hand ready to provide support.

Cross arms and stand up:

- Instruct the patient to cross their arms on their chest.
- Start the PISTA Device to emit regular beeps.
- Ask the patient to stand up from the seated position without using their hands for support.
- Keep one hand behind the patient's back to ensure safety and stability during the test.
- Observe the patient's ability to stand up and maintain balance.

3. **Leg Lift While Standing Exercise**

**Objective Explanation:** Clarify the purpose of this exercise: "We'll be building on the previous exercise. This time, you'll stand up just like before, but when you reach the top, we'll add leg lifts."

**Starting Position:** Instruct the patient to begin in a seated position with a straight back, feet flat on the floor, and knees at a 90-degree angle.

**Stand Up:** Encourage the patient to stand up slowly, similar to the previous exercise, and emphasize control in the movement.

**Leg Lift:** Explain that when they reach the fully upright position, they will lift one leg and then put it down. "You'll lift one leg while staying standing, then put it down."

**Alternate Leg Lifts:** Inform the patient that you will alternate between lifting one leg and the other. "I'll guide you to lift one leg, then the other, while we stay standing."

**Repetition:** Let them know the number of repetitions you'll be doing: "We'll perform this leg lift sequence five times."

**Do this while wearing the PISTA Device, sound and vibration both uses.**

4. **Walking and Turning Exercise**

   **Objective Explanation:** Explain the purpose of the exercise: "Today, we'll be practicing a walking and turning exercise, which is beneficial for improving mobility and balance."

   **Starting Position:** Ask the individual to begin from a comfortable standing position.

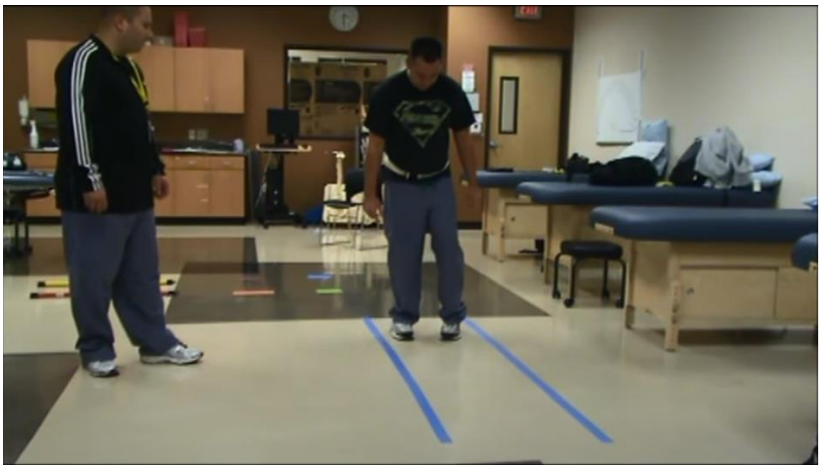
   **Forward Walking:** Instruct them to start walking forward slowly and steadily.

   **Turning Instructions:** Let them know that you'll guide them to turn around during the exercise.

   **Posture and Focus:** Emphasize the importance of maintaining good posture and keeping their attention forward.

   **Turn Around:** Encourage them to perform a slow and controlled turn when they feel ready.

   **Do this while wearing the PISTA Device, sound and vibration both uses.**



5. **Synchronized Foot Movement Exercise**

**Synchronization:** Emphasize the importance of synchronizing foot movements with the instructor.

**Foot Movements:** Describe the specific foot movements, such as bringing the outside foot to the center and then the other foot to it, making big steps.

**Direction Change**: Inform the individual that the movement will reverse, going back the other way.

**Big Movements:** Encourage participants to make their movements big and deliberate.

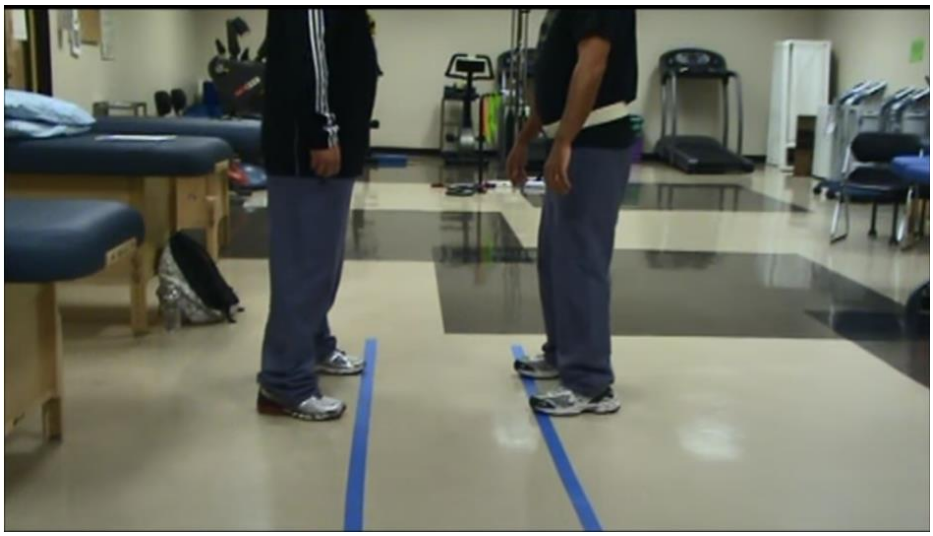
**Continued Synchronization:** Stress the need to stay synchronized with the instructor's movements.

**Sidestepping Transition:** Transition to sidestepping and instruct individuals to turn their toes in and align them.

**Sync in Sidestepping:** Emphasize the importance of staying in sync as they perform sidestepping movements.

**Foot Placement:** Guide them to bring their foot out to the side in alignment with the other foot during sidestepping.

**Do this while wearing the PISTA Device, sound and vibration both uses.**



# BALANCE TRAINING PROTOCOL

## 1. Heel Raising Exercise

**Starting Position:** Begin in a standing position with your feet hip-width apart. Place a sturdy chair in front of you.

**Chair Support:** Hold onto the chair with both hands for support throughout the exercise.

**Heel Raises:** Lift both heels off the ground by pushing through the balls of your feet. Raise them as high as is comfortable for you.

**Hold and Lower:** Hold the raised position briefly, then slowly lower your heels back to the ground.

**Repetition:** Aim to perform a specific number of repetitions, such as 10 heel raises, or as advised by your instructor.

**Control and Balance:** Focus on controlled movements and use the chair for balance if needed.

**Do this while wearing the PISTA Device, sound and vibration both uses.**

# Bradykinesia Test Protocol

**Rapid Alternating Movements**

To test for the presence of bradykinesia we will have the patient perform rapid alternating movements. It is important to remember that these movements must be performed as fast as possible and as big as possible, meaning with the amplest range possible. All these tests are positive for bradykinesia if the range of motion and/or the speed reduce over time. For this reason, it is crucial to ask the patient to do at least ten repetitions for each movement.

Also, in both the upper and lower extremities, the movements more affected by bradykinesia are the finest ones, such as the movements of the toes and fingers.

## 1. Finger Tapping

**Objective:** The objective of the finger tapping assessment is to measure the patient's ability to tap their index finger on their thumb as rapidly and widely as possible. This assessment should be conducted on both the right and left sides to assess any asymmetry.

- Begin with the patient's dominant hand (usually the right hand):
- Hold the PISTA Device in their non-dominant hand.
- Start the PISTA Device and explain that it will emit regular beeps.
- Instruct the patient to tap their index finger onto their thumb in time with the beeps.
- Start the stopwatch or timer simultaneously.
- Allow the patient to perform this for 30 seconds.
- Repeat the test on the non-dominant hand (usually the left hand), following the same procedure.
- Document the test results, including the number of taps for each hand and any observations about the patient's performance.

## 2. Fist Open Close

In cases where the patient has arthritis of the hand joints and finger tapping may not be suitable, the Fist Open-Close Test can be used as an alternative to assess fine motor skills and hand coordination. Here are the step-by-step instructions for conducting this test:

**Objective:** The objective of the Fist Open-Close Test is to evaluate the patient's ability to rapidly open and close their fist while spreading their fingers as widely as possible.

- Instruct the patient to open and close their fist as fast as possible while spreading their fingers apart.
- Hold the PISTA Device in their non-dominant hand.
- Start the PISTA Device and explain that it will emit regular beeps.
- Observe and count the number of times the patient successfully opens and closes their fist during this time period.
- Document the number of fist open-close cycles completed by the patient for the affected hand.

### 3. Pronation/Supination of the Hand

This represents another alternative to the finger tapping test. The patient is instructed to flex the shoulder forward at 90° and fully extend the forearm. From this position, ask the patient to rapidly alternate pronation and supination of the hand. Again, look for a reduction in the speed and amplitude of movement, no matter how slight this is.

- Hold the PISTA Device in their non-dominant hand.
- Start the PISTA Device and explain that it will emit regular beeps
- Show the patient how to perform the Forearm Pronation-Supination motion. Emphasize that they should start with their shoulder flexed forward at a 90° angle and fully extend their forearm. Then, they should rapidly alternate between pronation (palm down) and supination (palm up) of the forearm.
- Instruct the patient to sit or stand comfortably at a table with their arm extended and their shoulder flexed forward at a 90° angle. The forearm should be fully extended.
- Instruct the patient to rapidly alternate between pronation and supination of the forearm while maintaining the flexed shoulder position.
- Ask the patient to perform this motion for a duration of 10 seconds.
- Document the number of forearm pronation-supination cycles completed by the patient

**4. Toe Tapping**

It is possible to test for bradykinesia in the lower extremities too, where the most sensitive test is toe tapping. In this test the patient sits on a chair with both feet on the ground. The patient is instructed to rapidly tap the floor with the toes while the heel is kept in touch with the ground. The test is positive if the speed and/or amplitude of movement reduce over time.

- Instruct the patient to sit on the chair with both feet flat on the ground. Ensure that the chair provides stability and that the patient's back is comfortably supported.
- Hold the PISTA Device in one hand.
- Start the PISTA Device and explain that it will emit regular beeps.
- Show the patient how to perform the Toe Tapping motion. Emphasize that they should rapidly tap the floor with their toes while keeping their heels in contact with the ground. The tapping should be as fast as possible.
- Instruct the patient to start with both heels in contact with the ground and both sets of toes hovering slightly above the floor.
- On your cue, ask the patient to start tapping the floor with their toes as rapidly as possible. They should maintain heel contact with the ground throughout the test.
- Assess the test for signs of bradykinesia by observing if the speed and/or amplitude of toe tapping movements reduce over time during the 30-second test period.

**5. Heel Tapping**

To carry on the test, first the patient has to sit on a chair with the feet on the ground. Then, instruct the patient to repetitively and rapidly tap the whole foot on the ground. This maneuver tends to be less sensitive than toe tapping. Again, the test is positive if the speed or amplitude of movement reduces over time.

- Instruct the patient to start with both feet flat on the ground, heels in contact with the ground, and the entire foot hovering slightly above the floor.
- Hold the PISTA Device in one hand.
- Start the PISTA Device and explain that it will emit regular beeps.
- On your cue, ask the patient to start tapping the whole foot on the ground as rapidly as possible while keeping the heels in contact with the ground. The tapping should be continuous and as fast as they can manage.
- During the test, carefully observe and count the number of whole foot taps made by the patient.
- Assess the test for signs of bradykinesia by observing if the speed or amplitude of whole foot tapping movements reduces over time during the 30-second test period.

# Rigidity Test Protocol

Rigidity is defined as increased resistance to passive movement about a joint. It usually starts on one side and later spreads to the other one. It is similar to spasticity since both conditions show increased resistance to passive movement. However, rigidity is not direction dependent, that means there is the same amount of resistance both in extension and flexion of the affected limb. Also, rigidity is not velocity dependent, meaning that the tone does not change based on the speed of passive motion.

### 1. Upper Extremity Testing

For the upper extremity the most sensitive joint where to check for rigidity is the wrist.

- Position the patient's arm:
- Have the patient rest their forearm comfortably on a flat surface, palm facing down.
- Hold the PISTA Device in one hand.

Using both hands, one under the patient's forearm and the other gripping and rotating the wrist:

- Instruct the patient to fully relax their arm.
- Start the PISTA Device to emit regular beeps.
- With your proximal hand under the forearm and your distal hand holding the wrist, gently rotate the patient's wrist.
- Feel for any resistance to the movement.
- Note any resistance or rigidity encountered during the wrist rotation.
- Pay attention to changes in the patient's ability to fully relax as indicated by the PISTA Device beeps.
- The presence of resistance or rigidity during wrist rotation may indicate wrist rigidity, which is a common symptom in Parkinson's disease.
- Document the findings, including the presence of resistance and any observations about the patient's relaxation level.


**Wrist rotation with activation maneuver.**

- It is also possible to test for rigidity in the elbow by passively flexing and extending the forearm.
- In both cases, we can unmask the rigidity by asking the patient to forcefully and repeatedly tap the other hand on the knee as activation maneuver.


**Elbow flexion-extension with activation maneuver.**

## 2. Lower Extremity Testing

- Position the patient's leg:
- Have the patient rest their lower leg comfortably on a flat surface, with the knee bent at 90 degrees and the foot hanging freely.
- Hold the PISTA Device in one hand.

**Rotate the ankle joint:**

- Place your top hand under the patient's knee to fully support the weight of the leg and ensure relaxation.
- Use your bottom hand to gently grab and rotate the patient's foot, testing the ankle joint.
- Feel for any resistance to the movement.
- Start the PISTA Device to emit regular beeps.

**Flex and extend the knee:**

- While still holding the patient's foot, passively flex and extend the knee.
- Feel for any resistance during this movement.
- Continue to pay attention to the patient's relaxation level indicated by the PISTA Device beeps.


**Passive rotation of the ankle.**

**Passive flexion-extension of the knee.**

Note any resistance or rigidity encountered during ankle and knee joint movements.

Pay attention to changes in the patient's ability to fully relax as indicated by the PISTA Device beeps.

The presence of resistance rather than a limitation to the range of movement may indicate rigidity in the lower extremities, which is a common symptom in Parkinson's disease.

# TREMOR TEST PROTOCOL

Tremor is defined as an involuntary trembling of a body part. There are three main types of tremors:

- Resting tremor
- Action (Kinetic) tremor
- Postural tremor

All of these types of tremors can be seen in Parkinson’s disease, even though resting tremor is the more frequently observed one and also the most severe when all three tremors are present in PD.

Patients with essential tremor, instead, classically have more severe postural and kinetic tremors as compared to resting tremor.

## 1. Resting Tremor

In Parkinson's disease resting tremor most commonly manifests in the hands as a rotatory movement of the fingers, especially the thumb and index (pill-rolling). Even though we could observe a resting tremor while the patients are giving the history, sometimes they may assume a position that suppresses the tremor.

- For example, they could sit on their hands or hold them in their lap.
- The best position to uncover a resting tremor is with the patient sitting on the chair with both hands lying relaxed on the thighs.


**Resting tremor on the left hand.**

## 2. Postural Tremor

Postural tremor is a type of tremor that emerges when the patient maintains a position against gravity.

- To test for postural tremor, first have the patient fully extend the elbow and flex the arm forward at 90°.
- Then, ask the patient to spread the fingers out as much as possible and hold this position for a few minutes.
- This is necessary since a postural tremor in PD is often evidenced only a few seconds or minutes after the position in assumed.
- Do this while wearing the PISTA Device with sound and vibration.

**Observe for postural tremor:**

- Instruct the patient to hold this position.
- Start the PISTA Device to emit regular beeps.
- Carefully observe the patient's hand and arm for any tremor or shaking.

Note if any postural tremor emerges during the assessment


**Position to test postural tremor.**

### 3. Kinetic (Action) Tremor

Action or kinetic tremor is a type of tremor that is uncovered only when the patient is carrying out a movement.

- To test for kinetic tremor, we can use the finger to nose test.
- In performing this test, the patients are instructed to alternatively touch their nose and our finger.
- In doing so, the patients should stretch their arm completely and should not move too fast. In this way we have more chances of triggering the tremor.
- There is a different variant of the finger to nose test, in which the finger of the examiner changes positions every time that the patient tries to reach it. This variant of the test is used to test for ataxia, rather than for tremor.


**Finger to nose test: the patient reaches for the finger of the examiner.**


**Finger to nose test: the patient goes back to his nose.**

# Berg Balance Scale (BBS)

The Berg Balance Scale (BBS) is used to objectively determine a patient's ability (or inability) to safely balance during a series of predetermined tasks. It is a 14 item list with each item consisting of a five-point ordinal scale ranging from 0 to 4, with 0 indicating the lowest level of function and 4 the highest level of function and takes approximately 20 minutes to complete. It does not include the assessment of gait.

**Equipment required**

- A ruler
- 2 standard chairs (one with arm rests, one without)
- A footstool or step
- 15 ft walkway
- Stopwatch or wristwatch
- PISTA Device

Name: _____ Date: _____

***ITEM DESCRIPTION SCORE (0-4)***

1. Sitting to standing _____
2. Standing unsupported _____
3. Sitting unsupported _____
4. Standing to sitting _____
5. Transfers _____
6. Standing with eyes closed _____
7. Standing with feet together _____
8. Reaching forward with outstretched arm _____
9. Retrieving object from floor _____
10. Turning to look behind _____
11. Turning 360 degrees _____
12. Placing alternate foot on stool _____
13. Standing with one foot in front _____
14. Standing on one foot _____

Total _____

# Berg Balance Scale (BBS)

**General instructions for completing the scale**

Please document each task and/or give instructions as written. When scoring, please record the lowest response category that applies for each item.

In most items, the subject is asked to maintain a given position for a specific time. Progressively more points are deducted if:

- the time or distance requirements are not met.
- the subject's performance warrants supervision.
- the subject touches an external support or receives assistance from the examiner.

The subject should understand that they must maintain their balance while attempting the tasks. The choices of which leg to stand on or how far to reach are left to the subject. Poor judgment will adversely influence the performance and the scoring.

Equipment required for testing is a stopwatch or watch with a second hand, and a ruler or other indicator of 2, 5, and 10 inches. Chairs used during testing should be a reasonable height. Either a step or a stool of average step height may be used for item # 12.

**Interpretation**

Cut-off scores for the elderly were reported by Berg et al 1992 as follows:

- A score of 56 indicates functional balance.
- A score of < 45 indicates individuals may be at greater risk of falling.

It has been reported more recently that in the elderly population a change of 4 points is needed to be 95% confident that true change has occurred if a patient scores within 45–56 initially, 5 points if they score within 35–44, 7 points if they score within 25–34 and, finally, 5 points if their initial score is within 0–24 on the Berg Balance Scale.

# ARM SWING TEST

**Explanation:** Explain the Arm Swing Test: "Today, we're going to perform the Arm Swing Test. This test assesses the coordination and amplitude of your arm movements, which can be affected by Parkinson's disease. You'll be swinging your arms back and forth while standing in place."

**Demonstration:** Show the patient how to perform the arm swing by swinging your own arms gently back and forth.

**Patient's Turn:** Have the patient start swinging their arms back and forth in a relaxed manner.

**Observation:** As the patient performs the arm swing, carefully observe their arm movements for any signs of reduced amplitude, asymmetry, or tremors.

**Encourage Full Range:** Encourage the patient to swing their arms through their full range of motion without rushing.

**Counting:** If needed, you can count the arm swings for them, such as "One, two, three" for each swing.

# Conducting Report and Dual Tasking on Daily Activities

Assisting patients in conducting self-report assessments and dual tasking on daily activities is essential for understanding their cognitive and physical capabilities. Here are the instructions to guide patients through these processes:

**Objective:** The objective of these assessments is to gauge the patients' daily functioning, cognitive abilities, and any challenges they may face in multitasking or dual tasking scenarios.

**Self-Report Assessment:**

- **Explain the Purpose:** Begin by explaining the purpose of the self-report assessment. Let patients know that their feedback is valuable for tailoring their care and support.
- **Provide Assessment Tools:** Distribute self-report assessment forms or questionnaires that cover various aspects of daily living, such as mobility, personal care, household tasks, and social interactions.
- **Instructions for Self-Reporting:**
  - Ask patients to fill out the assessment forms honestly and to the best of their abilities.
  - Encourage them to provide details about any difficulties or challenges they encounter in their daily activities.
  - Privacy and Confidentiality: Assure patients that their responses will remain confidential, and their input will be used solely for their benefit.
- **Assistance When Needed:** Offer assistance to patients who may have difficulty reading or completing the forms independently. Ensure that their responses accurately reflect their experiences.
- **Review and Clarify:** After patients have completed the self-report, review their responses together. Clarify any uncertainties and ensure that all aspects of daily living have been covered.

**Caregiver Assessment Protocol**

Objective: To conduct an assessment of patients after they have used PISTA and provide v
Procedure:

**A. Assessment Preparations:**

- **Schedule Assessment:** Coordinate with the PISTA coach to establish a schedule for assessments that aligns with the patient's training sessions.
- **Collect Assessment Tools:** Gather relevant assessment tools, which may include self-report forms, questionnaires, or any specific guidelines provided by the PISTA coach.
- **Patient Briefing:** Before conducting the assessment, communicate with the patient. Explain the purpose of the assessment and assure them that their feedback is valuable for enhancing their experience with PISTA.

**B. Conducting the Assessment:**

**Physical Evaluation:**

- Observe the patient's physical state, including their balance, mobility, and coordination.
- Note any improvements or challenges they may face after using PISTA.

**Cognitive Assessment:**

- Assess the patient's cognitive abilities, such as memory, attention, and problem-solving skills.
- Determine if there have been any noticeable cognitive enhancements.

**Dual Tasking Evaluation:**

- Engage the patient in dual tasking scenarios to observe their multitasking capabilities and identify any improvements or areas that need further attention.

**C. Recording and Reporting:**

**Collect Data:** Compile the patient's self-reports, physical observations, cognitive assessments, and dual tasking results.

**Analysis:** Analyze the gathered data to identify trends, improvements, or challenges the patient may be experiencing after using PISTA.

**Consult with the Patient:** Discuss the assessment findings with the patient, clarifying any areas of concern or potential improvements.

**Complete Assessment Forms:** Fill out the caregiver assessment forms or any reporting templates provided by the PISTA coach.

**Reporting to PISTA Coach:**

- Share the completed assessment forms or reports with the PISTA coach through the designated communication channels.
- Schedule a meeting or discussion to review the assessment findings and provide context.

**Dual Tasking Assessment:**

- **Explain Dual Tasking:** Clarify the concept of dual tasking, which involves performing two tasks simultaneously, such as walking and counting, to evaluate cognitive and motor skills.
- **Choose Appropriate Dual Tasks:** Select dual tasks that are relevant to patients' daily lives, such as walking while talking or carrying objects.
- **Demonstrate Dual Tasking:** Demonstrate how to perform the chosen dual tasks. Ensure that patients understand the tasks and their objectives.
- **Start with Simple Tasks:** Begin with simple dual tasks and gradually progress to more complex ones as patients become more comfortable with the process.
- **Safety Precautions:** Emphasize safety during dual tasking. Patients should prioritize their physical safety, and you should monitor them to prevent any accidents.
- **Recording Observations:** Keep detailed notes on patients' performance during dual tasking. Note any challenges, such as balance issues or difficulties in managing both tasks simultaneously.
- **Feedback and Improvement:** After completing dual tasks, provide feedback to patients. Discuss any areas where improvement may be needed and suggest strategies to enhance their dual tasking abilities

# PISTA SOUND AND VIBRATION INTEGRATION WITH THE TRAINING PROTOCOLS

The integration of PISTA Sound and Vibration technology, which utilizes binaural beats holds immense potential in the implementation of exercise protocols for patients with Parkinson's disease. PISTA technology provides sensory feedback through the innovative use of binaural beats, in addition to vibration, thereby revolutionizing the way exercises are conducted.

These binaural beats offer a unique auditory experience, enhancing patient awareness of their movements and assisting in motor control. They provide cues that aid in initiating and maintaining specific movements, particularly useful for patients who may experience difficulties in initiating actions or freezing of gait.

Additionally, PISTA technology can provide rhythmic cues for gait training, fostering a more regular and fluid walking pattern. It offers instant feedback on movement quality, motivating patients to make real-time adjustments. The interactive and engaging nature of this technology, coupled with binaural beats, improves patient adherence to exercise routines and allows for personalized therapy plans, while the data collected aids in tracking progress.

Furthermore, its integration into PISTA device facilitates home-based therapy and remote supervision, ensuring continuity of care. Ultimately, PISTA Sound and Vibration technology, with the incorporation of binaural beats, not only enhances the effectiveness of exercises but also empowers patients to take an active role in their rehabilitation journey, leading to improved motor skills and a better quality of life for individuals living with Parkinson's disease.

**BINAURAL SOUND**

The incorporation of binaural sound through PISTA technology plays a pivotal role in the implementation of training protocols, leading to significant enhancements in both the mental and physical health of patients with Parkinson's disease. Binaural sound, with its unique auditory experience, captivates patients' attention during exercises, making them mentally engaged and reducing the risk of monotony. Moreover, it contributes to stress reduction and relaxation, which can alleviate symptoms exacerbated by stress. Binaural beats enhance focus, concentration, and cognitive functioning, addressing common cognitive challenges faced by patients. By aligning brainwave frequencies and promoting neural synchronization, binaural sound fosters efficient neural processing and motor control. It also has the potential to enhance mood and uplift emotions, positively impacting patients' motivation for physical activities. Furthermore, it strengthens the mind-body connection, improving body awareness and coordination. Importantly, binaural sound may help alleviate specific Parkinson's

symptoms and can be personalized to address individual patient needs. In summary, the integration of binaural sound in training protocols not only enhances the mental and emotional aspects of therapy but also complements physical rehabilitation, promoting a holistic approach to improving the overall well-being of individuals living with Parkinson's disease.

**VIBRATIONS**

The synchronized use of vibration in conjunction with binaural beats through PISTA technology represents a comprehensive approach to enhancing the well-being of Parkinson's patients. This combination creates a multi-sensory experience that engages both auditory and tactile senses, fostering heightened awareness of body and movement. By aligning vibration cues with specific exercises, it serves as a prompt for initiating and maintaining desired motions, addressing difficulties in initiating movement often associated with Parkinson's disease. Furthermore, this synchronized approach aids in balance and coordination training, offering immediate feedback for postural adjustments and gait improvement. The cognitive engagement elicited by these sensory stimuli enhances focus and motivation during rehabilitation, encouraging active participation. Moreover, it induces a calming effect, reducing stress and anxiety levels, which can significantly benefit both mental and physical health in Parkinson's patients. This approach can be tailored to individual needs, and data collected allows therapists to track progress and optimize rehabilitation outcomes.

# PISTA DEVICE INTEGRATION FOR COGNITIVE AND PHYSICAL WELL-BEING

Integrating the PISTA device into the daily routines and training exercises of Parkinson's patients, with the invaluable assistance of their caregivers, offers a comprehensive approach to enhancing well-being. Caregivers can play a pivotal role in facilitating this integration, ensuring that patients receive optimal benefits from the technology.

Each day can begin with caregivers assisting patients in donning the PISTA device, including earphones and vibration capsules, as part of their morning routine. This collaborative effort helps patients experience synchronized auditory and tactile stimulation, setting a positive tone for the day ahead. During exercise sessions, caregivers can provide guidance, helping patients adjust the device settings, select appropriate programs, and maintain motivation throughout the workout.

In cognitive training exercises, caregivers can actively participate alongside patients, both utilizing the PISTA device to enhance cognitive engagement. This shared experience not only

bolsters cognitive functions but also strengthens the emotional connection between patients and caregivers.

For exercises aimed at improving balance and mobility, caregivers can offer physical support while patients wear the PISTA device, ensuring safety and confidence during these activities. Meditation and relaxation sessions can become shared moments of calm, with both caregivers and patients benefiting from the deepened meditative state facilitated by PISTA.

Caregivers can also take an active role in coordinating and personalizing the PISTA device's programs, collaborating with healthcare providers to tailor settings and programs to the patient's evolving needs and goals. They can assist in monitoring and tracking the patient's progress, recording data, and sharing it with healthcare providers for ongoing assessment and adjustments.

Perhaps most importantly, caregivers provide consistent motivation, encouragement, and emotional support throughout the patient's exercise and training routines with the PISTA device. This steadfast support significantly enhances patient motivation and adherence to the regimen.

By integrating the PISTA device into daily life and training exercises, with caregivers as partners in this journey, patients with Parkinson's can unlock the full potential of this innovative technology. Together, they can enhance physical mobility, cognitive function, and overall well-being, while simultaneously strengthening their bond through shared experiences and mutual support.

## HOW THE PISTA METHOD WORKS

The PISTA methodology employs a range of techniques, harnessing the power of brainwave feedback, brain stimulation, and self-regulation procedures to optimize brain function and correct inefficient mental activities, particularly tailored to the unique needs of Parkinson's patients. Through the integration of the PISTA Sound Tool, this approach leverages the science of brain entrainment to facilitate a self-questioning process aimed at achieving desired brain states.

The PISTA Sound Tool serves as a catalyst, stimulating the brain and inducing a state known as brain entrainment. This state is achieved when the brain synthesizes a third tone from two distinct tones delivered separately into the right and left ears. This alteration of sound frequencies renders the brain more amenable to change and constructive reinforcement. Notably, thought patterns undergo significant transformation. Unwanted and destructive

thought patterns are systematically eliminated and replaced with constructive affirmations tailored to the specific cognitive and emotional challenges faced by Parkinson's patients.

Within the framework of PISTA's holistic approach, seven distinct modalities are thoughtfully applied by a team of medical professionals with specialized expertise in psychology and mental health care. These professionals serve as guides, assisting patients in delineating their life direction and instilling the motivation to navigate the array of challenges encountered on a daily basis.

PISTA sessions are instrumental in helping both clients and therapists identify key triggers for adversities specific to Parkinson's disease. These sessions facilitate the healing process by encouraging individuals to move forward in life through structured short and long-term programs, all under the compassionate and expert guidance of the dedicated PISTA team of professionals. The ultimate goal is to enhance mental well-being, promote resilience, and improve the overall quality of life for individuals grappling with the challenges of Parkinson's disease.

## PRINCIPLE OF NEUROPLASTICITY AND PERSONALIZED TRANSFORMATION

The methodology employed by PISTA is rooted in the principle of neuroplasticity and personalized transformation. It acknowledges the brain's remarkable capacity to adapt, rewire, and optimize its functions even in the face of neurological challenges like Parkinson's disease. This principle holds that by strategically leveraging a combination of brainwave feedback, brain stimulation, self-regulation techniques, and the power of sound entrainment through the PISTA Sound Tool, individuals can undergo profound cognitive and emotional transformations.

The methodology recognizes that each individual's journey with Parkinson's is unique, characterized by distinct cognitive, emotional, and physical challenges. Therefore, it emphasizes the importance of personalization, tailoring interventions to address the specific needs and goals of each patient. This personalized approach empowers individuals to embark on a journey of self-discovery, guided by a team of dedicated professionals with expertise in psychology and mental health care.

Through the principle of neuroplasticity and personalized transformation, PISTA strives to harness the brain's innate adaptability to replace destructive thought patterns with constructive affirmations, enhance cognitive function, and improve emotional well-being. Ultimately, the methodology aims to optimize brain function, foster resilience, and improve the overall quality

of life for individuals living with Parkinson's disease. It underscores the belief that, with the right interventions and support, positive and lasting change is not only possible but achievable for each individual on their unique path to recovery and well-being.

**NEUROPLASTICITY**

Neuroplasticity offers a multitude of significant benefits for Parkinson's patients, heralding a promising avenue for rehabilitation and improved quality of life. The brain's remarkable ability to adapt and rewire itself is particularly advantageous in this context. As Parkinson's disease affects motor skills, cognition, and emotional well-being, neuroplasticity allows the brain to forge new pathways and compensatory mechanisms. It can enhance motor control and coordination, enabling patients to regain or maintain functional independence. Moreover, neuroplasticity can bolster cognitive functions, aiding memory, attention, and problem-solving abilities, which may be compromised in Parkinson's. Overall, the benefits of neuroplasticity hold immense potential for Parkinson's patients, offering a path toward enhanced mobility, cognitive vitality, and emotional well-being in their journey to navigate the complexities of the disease.

## PISTA'S INNOVATIVE APPROACH TO EMPOWER PARKINSON'S PATIENTS

PISTA, with its innovative approach to Parkinson's patient care, leverages the science of neuroplasticity and binaural beats to deliver remarkable benefits. Neuroplasticity, the brain's adaptability, plays a pivotal role in enhancing the lives of individuals with Parkinson's. PISTA utilizes binaural beats to specifically target working memory capacity by influencing brain activity within the 7.5 Hz – 12.5 Hz frequency range, known to impact various cognitive functions.

Research has shown that when these binaural beats are employed, they have the potential to enhance attention, inhibitory processes, perceptual abilities, and working memory. Moreover, PISTA's unique approach introduces the concept of the PISTA Wave, a combination of carefully selected frequencies starting from 7.5 Hz. These frequencies are meticulously designed to target specific brainwave patterns, particularly those associated with cognitive functions such as attention and working memory.

Furthermore, the integration of PISTA Vibration, in addition to sound and speed, introduces an extra layer of innovation. Vibrations are harnessed to generate precise frequencies that align with the objectives of the PISTA program. This dynamic combination of sound, speed, and

vibration serves as a powerful tool to facilitate the achievement of desired tasks and goals, enhancing the overall effectiveness of the program.

Incorporating these cutting-edge scientific principles and techniques, PISTA aims to unlock the full potential of neuroplasticity, offering Parkinson's patients the opportunity for cognitive enhancement, improved memory, and enhanced cognitive function. Through the strategic use of binaural beats, the PISTA Wave, and PISTA Vibration, this holistic approach strives to optimize the well-being and cognitive vitality of individuals living with Parkinson's, marking a significant advancement in their journey toward a better quality of life.

## THE IMPACT OF PISTA AUDITORY BEAT STIMULATION

The PISTA approach, built upon auditory beat stimulation, offers a multifaceted strategy for improving the well-being of Parkinson's patients. By integrating various sound and vibrational models, PISTA creates customized modalities and protocols that seamlessly blend into a patient's daily life and routines.

Auditory beat stimulation is a potent cognitive tool that operates through rhythmic auditory and vibrational patterns. These patterns generate perceptible "beats" that engage the brain, potentially influencing cognitive processes and mood states. In the context of Parkinson's disease, where cognitive challenges and mood fluctuations are common, auditory beat stimulation represents a promising avenue for enhancing cognitive functions and regulating mood.

What sets PISTA apart is its commitment to patient empowerment. Through the program, patients are not passive recipients of therapy; instead, they become active participants in managing their conditions. PISTA equips patients with specific protocols during their coaching course, imparting valuable skills that can be applied to navigate difficult situations and bolster self-confidence. Importantly, these skills are not transient but remain accessible and beneficial long after the coaching course is completed, providing continuous support as patients confront and manage the cognitive and emotional facets of living with Parkinson's disease. PISTA represents a holistic and adaptable approach to improving the lives of Parkinson's patients by harnessing the potential of auditory beat stimulation.

# PISTA'S EVIDENCE-BASED APPROACH FOR ENHANCING THE LIVES OF PARKINSON'S PATIENTS

The effectiveness of PISTA is substantiated by a wealth of research findings, including extensive longitudinal studies spanning three generations. These studies offer compelling evidence of the efficacy of PISTA's modalities, which encompass the application of sound and vibration across a spectrum of experiences, from memory and learning enhancement to addressing cognitive decline, managing panic attacks, and mitigating the effects of traumatic experiences. PISTA's unique approach within a psychological framework encourages the brain to process memories and emotions effectively, resulting in deep insights among research participants. Guided by trained PISTA coaches, individuals have harnessed these insights to instigate crucial changes, combat anxiety, reverse cognitive decline, and reframe traumatic experiences.

Crucially, the PISTA program integrates these research findings by harnessing the power of binaural beats and vibrations to establish a baseline of brain stimulation, particularly for working memory improvement. This approach exhibits considerable potential in benefiting individuals facing dementia and Alzheimer's disease, and it can also be effectively applied to the daily lives of Parkinson's and Alzheimer's patients. Whether it's a leisurely walk in the park, a serene stroll by the sea, or the practice of meditation to cultivate a meditative state of mind, PISTA's integrated approach energizes and fosters motivated thinking for relevant tasks.

PISTA's rhythmic methodology strategically combines vibration speed and volume to achieve specific desired outcomes, inducing distinctive brainwave patterns that effectively alter negative neural connections. Through the integration of various frequencies, speeds, and volumes, PISTA actively regulates mood, enhances learning capabilities, bolsters memory, and supports cognitive and executive functioning. The program incorporates a variety of activities, including running, walking, and everyday tasks, to facilitate the entrainment of brainwave patterns.

What sets PISTA apart is its user-centric approach, allowing individuals to personalize programs based on their daily activities and desired effects. This model encompasses a wide range of rhythms, hertz frequencies, and machine models to cater to diverse needs, empowering individuals to embark on a personalized journey towards cognitive enhancement and improved overall well-being.

# PISTA EMOTIONAL REGULATION

PISTA, with its innovative approach rooted in auditory beat stimulation, serves as a transformative tool in regulating the emotions of Parkinson's patients. It addresses a spectrum of emotional challenges that often accompany the condition, including stress, fear, anger, a sense of hopelessness, and diminished motivation. Through the manipulation of auditory and vibrational patterns, PISTA offers a multifaceted approach to emotional well-being.

Firstly, PISTA excels in **stress reduction.** The rhythmic auditory patterns and soothing sounds it employs facilitate a deep sense of relaxation, effectively lowering stress levels. This is especially vital for Parkinson's patients who frequently grapple with heightened stress due to the uncertainties and physical limitations associated with the disease.

Moreover, PISTA is a powerful ally in **managing fear and anxiety.** By modulating brainwave patterns associated with these emotions, it enables patients to confront and manage their fears more effectively. This newfound emotional resilience can prove invaluable in navigating the challenges posed by Parkinson's.

**Anger and frustration**, which often stem from the frustrations of managing motor and cognitive impairments, are also addressed by PISTA. The therapy's techniques aid in calming the mind, allowing patients to mitigate these negative emotions and approach their daily lives with greater composure.

Beyond the immediate emotional responses, PISTA contributes to the cultivation of hope and motivation. Through auditory beat stimulation, it stimulates brainwave patterns linked to

motivation and optimism. For patients who may experience a sense of hopelessness or demotivation, this can be a game-changer, rekindling their drive to set and attain meaningful goals.

Perhaps most importantly, PISTA fosters **emotional resilience**. It equips patients with a toolkit of skills and coping mechanisms that extend well beyond the therapy sessions. Patients can autonomously manage their emotions, navigate the emotional complexities of life with Parkinson's, and build lasting emotional strength.

In essence, PISTA's holistic approach offers a comprehensive solution for the emotional well-being of Parkinson's patients. Through auditory beat stimulation and personalized modalities, it enables patients to navigate the intricate emotional landscape of their condition, reducing stress, managing fear and anger, nurturing hope, and fostering emotional resilience, ultimately enhancing their overall quality of life.

## “WHY ME” Behavior

PISTA plays a crucial role in addressing the "why me" behavior often observed in Parkinson's patients. This behavior, characterized by feelings of despair, frustration, and self-pity as patients grapple with the challenges of the disease, can be significantly alleviated through PISTA's innovative approach.

Firstly, PISTA employs auditory beat stimulation to modulate brainwave patterns associated with negative emotional responses. By promoting relaxation and calming the mind, it helps patients reduce feelings of despair and frustration. This can be pivotal in shifting their perspective from "why me" to a more constructive outlook.

Moreover, PISTA provides a platform for emotional expression and processing. Patients can use the therapy sessions to explore their emotions and engage in self-reflection. This can be instrumental in helping them come to terms with their condition and gradually move away from feelings of self-pity.

Additionally, PISTA fosters a sense of empowerment. By equipping patients with tools and coping mechanisms to manage their emotional responses, it enables them to regain a sense of control over their lives. This newfound control can significantly reduce the "why me" behavior as patients start to focus on what they can do rather than dwelling on their condition.

Furthermore, PISTA's emphasis on building emotional resilience ensures that patients are better equipped to navigate the emotional complexities of Parkinson's disease. They learn to

adapt to the challenges they face and find ways to maintain a positive outlook, ultimately diminishing the "why me" behavior.

In conclusion, PISTA is a valuable resource in addressing the "why me" behavior observed in Parkinson's patients. Through auditory beat stimulation, emotional expression, empowerment, and resilience-building, it offers a holistic approach to emotional well-being, helping patients shift their perspective and focus on living a fulfilling life despite their condition.

## PISTA on Managing Fears and Anxiety

PISTA's approach to the management of fear and anxieties in patients with Parkinson's disease is a comprehensive and multifaceted strategy. At its core, PISTA employs auditory beat stimulation as a powerful tool to address anxiety. This technique involves exposing patients to carefully designed sounds and vibrational patterns, which induce rhythmic "beats" in the brain. These beats have the potential to influence brainwave patterns associated with anxiety, ultimately promoting a sense of calm and relaxation. By incorporating auditory beat stimulation into their daily routines, patients can experience a noticeable reduction in their anxiety levels, providing them with a valuable tool to manage this common emotional challenge.

Beyond the neurological impact, PISTA creates an environment conducive to emotional expression and processing. In therapy sessions, patients are encouraged to openly discuss and explore their emotions, including fear and anxiety. This emotional processing is instrumental in helping individuals gain insight into the root causes of their anxieties. It provides a safe space for patients to confront and manage their fears more effectively, thereby alleviating the emotional burden associated with anxiety.

Furthermore, PISTA equips patients with a toolkit of coping strategies that can be applied in real-life situations. Through therapy sessions and guidance, patients learn to recognize and respond to anxiety triggers with constructive techniques. This empowerment allows individuals to regain a sense of control over their emotional responses, significantly reducing the impact of fear and anxiety on their daily lives.

Crucially, PISTA places a strong emphasis on building emotional resilience. It goes beyond immediate anxiety management to focus on the long-term well-being of patients. By teaching individuals how to adapt to the challenges posed by Parkinson's disease, PISTA helps them become better equipped to handle fear and anxiety as they arise. This holistic approach ultimately reduces the emotional toll of these feelings and fosters a greater sense of emotional well-being.

To ensure ongoing progress, PISTA offers continuous support and progress tracking. Patients receive personalized care, with therapy sessions and strategies adjusted to align with their evolving needs. This dynamic approach ensures that patients have the tools and support necessary to effectively manage fear and anxiety throughout their journey with Parkinson's disease.

In essence, PISTA's approach to managing fear and anxieties in Parkinson's patients is rooted in science, compassion, and empowerment. By harnessing auditory beat stimulation, encouraging emotional expression, teaching coping strategies, and fostering emotional resilience, PISTA provides patients with a holistic framework to effectively address and mitigate the emotional challenges associated with Parkinson's disease.

## PISTA on Depressive thoughts

PISTA, with its comprehensive approach, plays a pivotal role in facilitating a transformation in the patterns of depressive thought often experienced by individuals grappling with the challenges of Parkinson's disease. This shift in thought patterns is achieved through a multi-faceted and holistic strategy that addresses the emotional and cognitive aspects of depression.

Firstly, PISTA incorporates cognitive restructuring techniques. Through cognitive training exercises, patients learn to identify and challenge negative thought patterns that contribute to depression. They acquire skills to reframe these thoughts, replacing them with more positive and realistic perspectives. This cognitive reprogramming is essential for breaking the cycle of depressive thinking.

Emotional processing is another cornerstone of PISTA's approach. Patients are provided with a safe and supportive environment to express and process their emotions, including the profound sadness and despair that often accompany Parkinson's disease. This emotional expression is instrumental in acknowledging and addressing the emotional impact of the condition, allowing patients to work through their depressive thoughts.

Mindfulness and meditation practices are integrated into the PISTA program. These techniques encourage individuals to stay in the present moment, fostering a sense of inner calm and peace. They serve as effective tools for countering the persistent rumination and negative thought patterns that characterize depression.

Positive reinforcement is a key element of PISTA. Through objective progress tracking, patients receive regular feedback on their physical and cognitive improvements. This positive feedback serves as a powerful counterbalance to depressive thoughts, instilling a sense of accomplishment and hope for the future.

Furthermore, PISTA recognizes the importance of social support. Group therapy and support networks are encouraged, providing individuals with opportunities to share experiences and receive understanding and encouragement from peers who also face the challenges of Parkinson's. This sense of community combats feelings of isolation and contributes to improved emotional well-being.

Building emotional resilience is a fundamental aspect of PISTA. Patients learn how to adapt to the realities of living with Parkinson's disease, acquiring coping strategies and emotional fortitude. This resilience equips them with the tools to effectively manage depressive thoughts when they arise.

Ultimately, PISTA empowers individuals to take an active role in managing their condition. Through the practical tools and coping strategies, it provides, patients gain a sense of control over their health. This empowerment counters feelings of helplessness and reinforces the belief that they can influence their emotional well-being.

In conclusion, PISTA's approach to changing patterns of depressive thought is both comprehensive and holistic. By addressing cognitive restructuring, emotional processing, mindfulness, positive reinforcement, social support, resilience-building, and empowerment, PISTA empowers individuals to confront and overcome depressive thought patterns, fostering emotional well-being and a more positive outlook on life despite the challenges of Parkinson's disease.

## BUILDING CONFIDENCE WITH PISTA

PISTA plays a significant role in building confidence among patients with Parkinson's disease, instilling in them a belief that their physical condition can improve. This confidence-building process is multifaceted and highly effective, thanks to PISTA's unique approach.

**1. Objective Progress Tracking:** PISTA employs objective measures to track the physical progress of patients. By regularly assessing and quantifying improvements in mobility, balance,

and motor skills, patients receive tangible evidence of their physical advancements. This data-driven approach provides a sense of accomplishment and reinforces the belief that their condition can improve.

**2. Physical Rehabilitation:** PISTA integrates physical rehabilitation exercises tailored to the individual needs of each patient. These exercises are designed to enhance mobility, strength, and coordination. As patients actively engage in these exercises and witness their own physical growth, their confidence in their ability to improve their condition naturally increases.

**3. Cognitive Empowerment:** Parkinson's often involves cognitive challenges, and PISTA addresses this aspect as well. Through cognitive training exercises, patients sharpen their mental faculties, enhancing their problem-solving skills and cognitive flexibility. The resulting improvement in cognitive function bolsters their self-esteem and confidence in managing their condition.

**4. Emotional Support:** Confidence is closely tied to emotional well-being. PISTA creates a supportive environment where patients can openly express their fears and doubts. Through therapy sessions, they learn effective coping mechanisms and resilience-building techniques. This emotional support enhances their self-assurance in facing the physical challenges posed by Parkinson's.

**5. Empowering Autonomy:** PISTA's approach is empowering, encouraging patients to take an active role in their own rehabilitation. By teaching patients how to manage their condition and providing them with tools and strategies, PISTA fosters a sense of autonomy and control over their health. This sense of agency significantly boosts their confidence.

**6. Setting and Achieving Goals:** PISTA encourages patients to set achievable goals for their physical and cognitive improvement. As they work towards and attain these milestones, their self-efficacy grows. The satisfaction of reaching these objectives reinforces the belief that further progress is possible.

In conclusion, PISTA's holistic approach to building confidence in Parkinson's patients rests on a foundation of objective progress tracking, physical rehabilitation, cognitive empowerment, emotional support, autonomy, and goal-setting. Through these interwoven components, PISTA empowers patients to believe in their capacity for improvement, enhancing their confidence and overall quality of life.

## PISTA Monitoring Progress and Personalized Support

PISTA devices play a pivotal role in monitoring the progress of Parkinson's patients, providing a comprehensive assessment of how the physical illness impacts their daily lives. Through a multifaceted approach, these devices collect objective data on various aspects of the patient's physical and cognitive functioning, including gait patterns, motor skills, balance, and cognitive performance. This data-driven approach allows healthcare providers to gain quantifiable insights into the patient's daily capabilities and limitations, offering a detailed view of the disease's impact. Additionally, patients can log their daily activities and experiences, creating a valuable record of their journey and highlighting any changes in symptoms or abilities. Longitudinal tracking over time enables clinicians to identify trends in the disease's progression, aiding in the adjustment of treatment plans. Regularly reviewed during in-person assessments with certified PISTA Coaches, this wealth of information aids in customizing interventions tailored to the patient's specific needs, optimizing the effectiveness of care and support for those living with Parkinson's disease.

## PISTA Devices

1. **PISTA Power**


Packed with a louder tone and stronger vibration, the PISTA Power Device is your ideal companion for supercharging your daily activities. Whether it's kickstarting your morning routine or maintaining peak productivity throughout the day, this device is designed to provide that extra push you need to elevate your performance and make the most out of every moment.

## 2. PISTA 24


The PISTA 24 Device is your essential companion for restful nights. Its soft tones and gentle vibrations create a serene ambiance, perfect for winding down your nighttime routine. Enjoy a tranquil transition to sleep and wake up refreshed, ready to conquer the day.

## 3. PISTA Sonic

PISTA Sonic is designed for seasoned PISTA users seeking advanced benefits and faster effectiveness. Elevate your wellness journey with these specially crafted headphones, enhancing your overall PISTA experience for accelerated results using sound and vibrations.

## 4. PISTA Life Power


This innovative device uses binaural beats and vibration technology to provide a truly immersive and therapeutic experience. With built-in vibration modes and heating pads that can be placed on the neck.

# PISTA Beeps Speed and Frequency

The PISTA Device's binaural sound beats feature offers a range of different frequencies and speeds, allowing for a highly customizable experience tailored to an individual's specific needs. These binaural beats are essentially auditory stimuli created by playing two slightly different frequencies in each ear. When the brain processes these frequencies, it perceives a third frequency, known as the binaural beat, which is the difference between the two played frequencies.

The key feature of PISTA's binaural sound beats is their flexibility. Users can adjust the frequencies and speed of these beats to create a unique auditory experience. The frequencies can vary from slow to fast, offering a spectrum of options. This customization is essential because different frequencies and speeds can have distinct effects on the brain and cognition.

For example, slower beeps are associated with relaxation, stress reduction, and deep meditation. In contrast, faster beeps can enhance alertness, focus, and cognitive function. By allowing users to set the desired frequencies and speed, PISTA empowers individuals to choose the auditory stimulation that aligns with their specific goals and needs.

This customization is particularly valuable in the context of Parkinson's disease, where cognitive and emotional well-being are crucial. Patients can use the PISTA Device to select the binaural sound beats that best suit their current state, whether it's to promote relaxation, boost cognitive function, or achieve a specific mental state. This adaptability ensures that individuals have access to a versatile tool for optimizing their mental and emotional health as they navigate the challenges of Parkinson's.