Original Article

Effectiveness of Mindfulness Yoga and Progressive Resistance Exercises on Anxiety and Depression among Parkinson's Disease

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Abstract

Background: This study was designed to inspect the effectiveness of Mindfulness Yoga and Progressive resistance exercise on anxiety and depression among Parkinson's disease.

Purpose: To compare the effectiveness of Mindfulness Yoga and Progressive resistance exercise on anxiety and depression among Parkinson's disease

Materials and Methods: The study was conducted with a sample size of 28 participants . The subjects were selected from Sri Saga Physiotherapy Centre, according to inclusion and exclusion criteria. Patients were completely explained about the safety and simplicity of the procedure and informed consent were obtained from the patient. For all the subjects Pre-test outcome measure were assessed using Hamilton anxiety and Hamilton depression scale. The subjects was divided into two groups based on concealed envelope method .Group A were given mindfulness yoga for 4 weeks of duration of 30 mins and Group-B were given Progressive resistance exercise for 4 weeks (10 reps*3 sets where 10RM=1kg) .At the end of 4^{th} week post outcome measures were analyzed using Hamilton anxiety and Hamilton depression scale and statistically tabulated.

Result: Statistical analysis of Hamilton anxiety and Hamilton depression scale examination post-test values revealed the constantly significant differences, with P value of < 0.0001.

Conclusion: Mindfulness yoga was found to be more effective than progressive resistance exercise in reducing anxiety and depression symptoms among Parkinson's patients.

Key Words: Mindfulness yoga progressive resistance exercise, anxiety, depression, Parkinson's disease, HAM-A, HAM-D.

Introduction

The clinical syndrome known as Parkinson's disease is distinguished by tremor, rigidity, bradykinesia (slowness of movement), hypokinesia (reduced movement), and akinesia (loss of movement), as well as postural issues. The clinical manifestation of Parkinsonism, which is connected to a rare disorder that includes the degeneration of pigmented brain stem nuclei, including the dopaminergic Substantia nigra, is Parkinson's disease[1]. Parkinson's disease patients experience depression at a rate of 40%, which

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is different from other depressive disorders in that it is characterized by more anxiety and fewer thoughts of self-punishment [2].

According to the preliminary research, yoga helped people with PD improve their functional mobility, balance, and lower limb strength. This has effects on gait, postural stability, trust in one's capacity to maintain balance, and functional deficits brought on by inactivity. Yoga has been shown to promote flexibility in the upper and lower body, which can reduce rigidity, shuffled gait, and flexed posture in people with Parkinson's disease. The evidence given also revealed favorable results for mood and sleep, proving yoga's advantages for self-efficacy and social support [3].

Resistance training, for example, has been shown to lessen the symptoms of anxiety in adults and those with various chronic diseases. Resistance training and other types of physical activity, according to studies, are useful for the management of both motor and nonmotor symptoms of Parkinson's disease[4]. The impact of PRET on Parkinson's disease patients' quality of life and both motor and nonmotor symptoms, including depression, cognitive, sleep issues, and autonomic nervous system dysfunction[5].

Aim

To find out the comparison between mindfulness yoga and progressive resistance exercise on anxiety and depression among Parkinson's disease.

Materials and Methods

This research is an experimental study. The study was conducted with a sample size of 28 participants. The participants were selected from Shri Saga Physiotherapy Centre, according to inclusion and exclusion criteria. Participants received an extensive overview of the method, and a formal informed consent form was acquired.

Materials required: Yoga mat, Resistance band, Weights, Timer, Sand bags.

Inclusion criteria:

- Patient with stage I-III(Hoen and Yahr scale [6]) Parkinson's disease
- Gender: both males and females
- Age: 60 and above.

Exclusion criteria:

- Recent fractures in lower limb
- Unstable cardio-vascular disease
- Other neurological disease

Outcome measure:

The HAM-A and HAM-D was one of the first rating scales developed to measure the severity of anxiety symptoms, and is still widely used today in both clinical and research setting.

a) Hamilton anxiety rating scale (HAM-A[7])

b) Hamilton depression rating scale (HAM-D [8])

Procedure

Total of 28 participants were selected according to inclusion and exclusion criteria. Patients were explained in-depth about the safety and simplicity of the procedure and informed consent was obtained from the patients. The subjects were divided into two groups based on concealed envelope methods. Group A – 14 subjects and Group B -14 subjects. These subjects were assessed through Hamilton anxiety rating scale and Hamilton depression rating scale as a part of pre-assessment. Group A was given mindfulness yoga for 4 weeks duration of 30 minutes and Group B was given Progressive resistance exercise for 4 weeks (10 reps* 3 sets, where 10 RM= 1 kg). At the end of 4th week post outcome measures will be analyzed using Hamilton anxiety rating scale and anxiety depression scale and statistically tabulated.

Group-A: Mindfulness Yoga

Mindfulness yoga positively affects one's capacity to perceive and accept bodily sensation . A structured approach to mind-body training, mindfulness yoga reduces emotional disturbances by reducing sensory-perceptual evaluations and enhancing the connection between the mind and body. Due to its ability to promote stress tolerance, mindfulness yoga may be particularly useful for treating depression and anxiety. Mindfulness yoga focuses on the connection between the brain, mind, body, and behavior with the aim of using the mind to influence how the body functions and improve wellness.

Duration: 30 mins

Poses of Mindfulness Yoga:

- Tadasana
- Uttanasana
- Navasana

Tadasana:

A fundamental standing stance in yoga is tadasana, sometimes referred to as mountain pose. The word "Tada" (which means mountain in Sanskrit) alludes to the posture's power and steadiness. Tadasana is an excellent stance for developing strength, balance, and body awareness and is sometimes used as a springboard for subsequent standing postures. It supports better alignment, greater stability, and a calmer, more centered state of mind. Tadasana can help with overall alignment, balance, and mindfulness when practiced regularly.

Uttanasana:

The Standing Forward Bend pose, also known as Uttanasana, is a common yoga pose that promotes flexibility, relaxation, and mindfulness. It is a forward bending pose that stretches the hamstrings, calves, and lower back while also relaxing the mind and promoting a sense of calm. The pose has a calming effect on the nervous system and can help reduce stress, anxiety, and mild depression.

Regular practice of Uttanasana can help improve overall posture and balance by strengthening the muscles along the spine and core.

Navasana:

Navasana, also known as Boat Pose, is a popular yoga asana that offers a range of physical and mental benefits. It is a seated posture that resembles a boat, and it requires core strength and balance to perform correctly. Balancing in Navasana requires concentration and focus, helping to improve mental clarity and stability. While Navasana primarily targets the core, it also stretches the hamstrings and lower back, improving overall flexibility.

Practicing Navasana cultivates mindfulness, as it requires concentration on maintaining balance and posture. Being present in the moment can help individuals with anxiety and depression break free from ruminative thought patterns and foster a stronger mind-body connection.

Group-B: Progressive Resistance Exercise

Progressive resistance training is defined as exercise that involves fewer repetitions till tiredness, enough recovery time in between workouts, and an increase in resistance as the patient's capacity for force production grows[6]. Progressive resistance training sessions lasting 20 to 30 minutes were done three different days of the four-week intervention exercise programme. The progressive resistance training programme calls for three sets of 10 repetitions,(where,10RM=1kg) .Between each set, there was a 30 second break, and the activity lasted one to two minutes.

Bench Press:

Bench press is a popular strength training exercise that primarily targets the muscles of the chest, shoulders, and triceps. It is typically performed lying on a bench, pushing a barbell or dumbbells upwards from the chest to arm's length and then lowering it back down. Like other forms of strength training, bench pressing can have positive effects on mental well-being, including reduced stress, improved mood, and increased self-confidence.

Dead-Lift:

Deadlifts are a popular and effective exercise that can offer numerous benefits, not only for physical health but also for mental well-being. Deadlifts, being a compound movement that engages multiple muscle groups, can trigger a significant endorphin release, leading to reduced stress and improved mood.

Deadlifts require a strong mind-body connection, where you need to be aware of your body positioning, muscle engagement, and movement patterns. This increased awareness can translate to improved mindfulness and a better ability to stay present, reducing anxious thoughts about the past or future.

Unilateral Rowing:

Unilateral rowing, also known as single-arm rowing, is an exercise where you perform rowing movements using one arm at a time. This exercise is typically done with a dumbbell, kettlebell, or cable machine. Unilateral exercises like the single-arm row offer several benefits for both physical and mental health. Like any physical activity, rowing (unilateral

or bilateral) can trigger the release of endorphins, which are natural mood lifters and stress reducers. Regular exercise, including unilateral rowing, can help alleviate symptoms of anxiety and depression. Performing unilateral rowing requires concentration and focus to execute the movements correctly and maintain proper form. This focus can have a meditative effect, allowing you to shift your attention away from stressors and distractions, promoting mindfulness during the exercise.

Standing calf raise:

The standing calf raise is a simple yet effective exercise that primarily targets the calf muscles (gastrocnemius and soleus) in the lower legs. Performing calf raises, like other forms of exercise, can serve as a distraction from daily stressors and worries. Focusing on the exercise and feeling the muscles working can provide a mental break and reduce the impact of stress on the mind.

The act of performing standing calf raises involves concentrating on the body and its movements. Developing a stronger mind-body connection through exercise can enhance mindfulness and promote a greater sense of self-awareness, which is beneficial for mental health.

Lower Abdominal Exercise:

1. Reverse Crunches: Patients are made to lie on their back with their legs bent and raised in the air so that their thighs are perpendicular to the floor. Ask them to place their hands on the floor or behind their head for support. Asked them to contract their abs to lift their hips off the ground while pulling their knees toward their chest. Slowly lower the hips back down without fully touching the ground, and repeat.

2. Leg Raises: Patients are made to lie flat on their back with their legs straight. Placed their hands palms down on the floor beside you or under their lower back for support. Keeping your legs together and straight, lift them off the ground using your lower abs until they are perpendicular to the floor. Slowly lower them back down without touching the ground, and repeat.

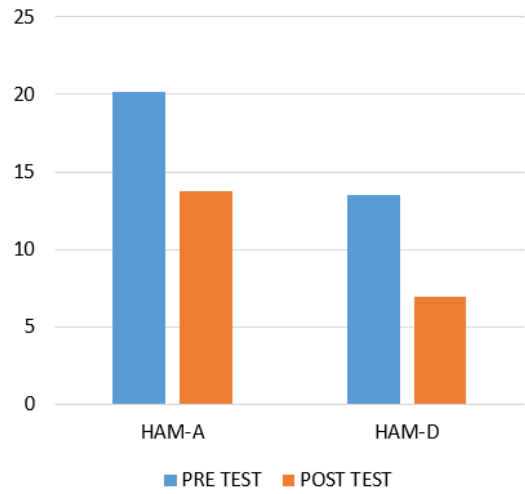
3. Mountain Climbers: Started with a high plank position with their arms extended and their body in a straight line. Engage their core muscles and one knee brought up to their chest then swiftly switch legs, bringing the other knee to their chest while stretching the other leg back. Maintaining a firm core throughout the exercise, continue running while alternating legs

4. Bicycle Crunches: With their hands behind their heads and elbows pointing out to the sides, the patient is forced to lie flat on their back. As the patient stands with their right leg straightened, instruct them to lift their shoulders off the floor and bring their right elbow to their left knee. Then switch, bringing their left elbow to their right knee and stretching their left leg straight. Then cycle back and forth between the two sides.

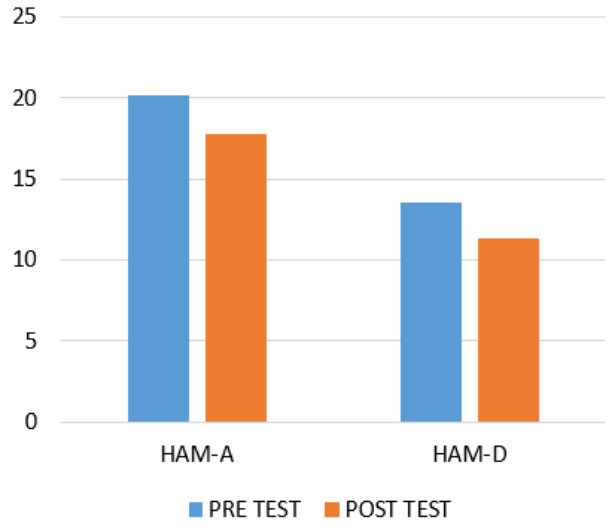
5. Plank Variations: Planks are excellent for targeting the entire core, including the lower abdominal muscles. Start in a push-up position and lower yourself onto forearms. Keep the body in a straight line from head to toe, engaging their core muscles. Patients are made to hold the position for as long as they can maintain proper form. To increase the difficulty can try side planks, plank with leg lifts, or planks with knee tucks.

Data Analysis

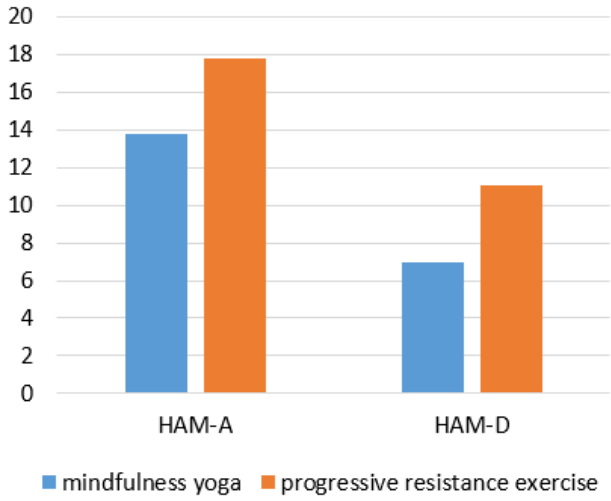
Using descriptive and inferential statistics, the acquired data was tabulated and evaluated. The mean and standard deviation (SD) were applied to all parameters. The significant differences between pre-test and post-test measures were analyzed using a paired t-test. The significance level of $p < 0.0001$ was judged statistically significant when using the unpaired t-test to examine significant changes between two groups.



GRAPH 1: Comparison of pre-test and post-test values of Mindfulness yoga



GRAPH 2: Comparison of pre-test and post-test values of Progressive resistance exercise



GRAPH 3: Comparison of post-test values of Mindfulness Yoga and Progressive resistance exercise

Result

The collected data was tabulated and analyzed using descriptive and inferential statistics. Statistical analysis with quantitative data revealed significant difference values. A sample of 28 was taken.

In the HAM-A post-test the mean value in the group-B was 17.81(1.82), while it was 13.76(1.95) in the group-A. This indicates that the progressive resistance exercise group HAM-A scores were noticeably greater than the mindfulness yoga group, with a P value of <0.0001. (Table -3).

In HAM-D, the post-test mean value of progressive resistance exercise group was 11.05 (+1.97), whereas the mindfulness yoga group was 6.95 (+1.63). This indicates that the progressive resistance exercise group HAM-D score were noticeably greater than the mindfulness yoga group, with a P< 0.0001. (Table -3).

Statistical analysis of the HAM-A and HAM-D post-test results revealed that the mindfulness yoga and progressive resistance exercise showed similar statistically significant differences. As a result, the mindfulness yoga Group exceeds the progressive resistance exercise group statistically.

Discussion

The goal of the present study is to compare the effectiveness of mindfulness yoga and progressive resistance exercise on anxiety and depression among Parkinson's disease and also assess the effectiveness in terms of reducing anxiety and depression symptoms. This comparison is demonstrated with a duration of 4 weeks. The outcome results were measured by HAM-A and HAM-D scale before and after treatment. Beneficial effects were significantly greater in Mindfulness yoga than the Progressive resistance exercise. When the responses were compared between both groups, the result showed a significant difference in the Mindfulness yoga group than Progressive resistance exercise group.

Based on the statistical analysis, both groups showed improvement in both the outcome measures. However, subjects in the Mindfulness yoga group showed better improvement in both the outcome measure than the subjects in the Progressive resistance exercise group.

An early study by Guillaume Lamotte, Elizabeth Skender(2015), in this highly supervised PRET programme may be effective for those with mild to moderate Parkinson's disease, according to a systematic review that synthesize the data that PRET can enhance strength and motor indications of Parkinsonism in PD patients as well as may be helpful for physical functions [5].

Conclusion

According to the study, mindfulness yoga and progressive resistance exercise both reduces anxiety and depression symptoms. The findings suggest that mindfulness yoga is more advantageous than progressive resistance exercise in lowering anxiety and depression symptoms in Parkinson's patients.

Ethical Clearance: The ISRB committee of a private hospital and institution in Chennai has provided its clearance for the conduct of human research that complies with all applicable national laws, institutional regulations . (Application Number : 03/024/2022/ISRB/SR/SCPT).

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Conflicts of Interest: The authors state that there is no conflict of interest.

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