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Community Based Recreational Therapy Treatment Case Report: Parkinson's Disease

Tim RJ Passmore^{1*}, Mekenna Beesley², Brandt Brickell³, Donna Lindenmeier⁴ and Shelby Jackson⁵¹*Professor, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, USA*²*BS Undergraduate Student Researcher, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, USA*³*Doctoral Research Associate, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, USA*⁴*Associate Professor, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, USA*⁵*Doctoral Research Associate, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, USA*

***Corresponding author:** Tim Passmore, Recreational Therapy/Kinesiology, Applied Health, & Recreation, Oklahoma State University, 181 Colvin, Stillwater, OK 74078, USA.

Received Date: December 18, 2021**Published Date: January 26, 2022****Abstract**

A community based recreational therapy program for individuals living within the community with Parkinson's disease. The intervention program focused on maintaining and improving where possible the functional abilities and self-confidence of individual who is the subject of the study. Overall as indicated by the HADS, MFES, TUG and BioSway Measurements the individual either improved or maintained their abilities.

Keywords: Parkinson's disease; Recreational Therapy; Community Based; Community Based Treatment

Introduction

Approximately 60,000 people are diagnosed with Parkinson's disease each year within the United States, and approximately four to six million people worldwide are diagnosed worldwide, lending Parkinson's disease to be the second most prevalent neurodegenerative disorder [1]. Parkinson's disease is a progressive disease where the neurons in the brain that control movement are weakened and eventually die; this leads to numerous symptoms including asymmetric resting tremors, rigidity of muscles, bradykinesia, postural instability, depression, cognitive impairments, sleep disorders, sensory problems such as tingling or burning, speech problems, swallowing problems, and more [1]. According to Harvard Health Publishing [2], to be diagnosed with Parkinson's, one must have at least two of the four following

symptoms: bradykinesia, asymmetric resting tremors, rigidity of muscles, and/or postural instability. The onset of Parkinson's disease generally occurs between 55 and 75, and currently has no identifiable cause [1]. Symptoms of Parkinson's disease are progressive, which can lead to a delayed diagnosis in patients whose symptoms are not severe enough to disrupt daily living [3].

One of the most significant symptoms of Parkinson's disease is the postural instability with loss of balance. This symptom generally emerges eight or more years into the disease process, with the greatest worry being fall risks [1]. Due to the advancing age within the onset of Parkinson's the likelihood of comorbidities increases, which can lead to more severe issues if a patient falls [4]. Falls within Parkinson's disease can occur due to numerous causes,

including balance impairments, freezing of gait, postural instability, muscle weakness, feeling unsteady or dizzy, tripping, dyskinesia, side-effects of medication, and more [5-7].

Recreational Therapy is a whole health practice that utilizes recreation and leisure interventions to address the needs of individuals with illnesses and/or disabling conditions in both psychological and physical domains by promoting independence in life activities, health, and overall wellness [8]. The profession can be beneficial to numerous different diagnoses and populations but is especially beneficial for those diagnosed with Parkinson's disease. After assessing the needs of the individual, a recreational therapist may focus on improving gait, postural stability, balance, endurance, fine motor skills, gross motor skills, tremors, adaptations of activities of daily living (ADLs), quality of life, cognition and memory, and more [1]. Specific interventions include balance training, resistive exercise, tai chi, dance, obstacle course maneuvering, multiple task intervention, and more [1,9-12].

Case Presentation

Subject

The subject of the case report is an 84 year old female living in the community with Parkinson's disease (PD) who voluntarily participated in a weekly group. The subject was invited to participate in the study from a Parkinson's support group within the same community. The inclusion criterion was that the subject needed to be living independently within the local community. The exclusion criteria included requiring an aid or assistant for activities of daily living, residential setting in an assisted living, long-term, or with family other than significant other.

Dependent Measures

The subject's mobility, sit to stand and potential fall risks were measured using the Timed Up and Go (TUG) assessment. The TUG has reported good reliability (test-retest) and good construct validity [13-16]. The subject's fall risk was measured with the Modified Falls Efficacy Scale (MFES) which has been demonstrated to have good reliability and validity [17]. The Hospital Anxiety and Depression Scale (HADS) has good reliability and validity in determining anxiety and depression related to living with a health threat such as PD [18]. The BioDex Balance system specifically the BioDex BioSway (BioSway) system measures dynamic and static balance (Postural Stability) through application of a dynamic and static platform. The BioSway provides information related to motor control, proprioception, and vestibular reception. The BioSway has good test-retest and overall reliability [19]. The BioSway static balance (stable platform) measurements were collected for the present case report with eyes open and eyes closed.

Interventions

Upon arrival at the research site the subject participated in a 5 minute warm-up involving basic chair exercises (e.g. heel & toe touches, marching in place, pumping arms in a curling and punching motion); Twenty minutes of exercise in both a seated and standing

position e.g. sit to stand, standing heel raises, leg abduction and adduction (seated position), medicine ball curls and presses; Five minutes of balance exercises from a normal stance, semi-tandem stance, and full tandem stance both with eyes open and eyes closed following directional instructions to look with head left, right, up, and down.

The subject then progressed to 10 minutes of gait training including endurance and maneuvering in and around an established obstacle course. The subject then moved to a strength, endurance and balance intervention in the form of boxing for 10 minutes. The boxing movements included basic stance, upper extremity punching air (with gloves) and punching a boxing pad using jabs at varying intensities. The final phase of the intervention was participation in Tai Chi for individuals with PD for 10 minutes.

Subjects home exercise prescription included a similar program for thirty minutes: 3 minutes of warm-up, 10 minutes of exercise 5 minutes of balance training, 5 minutes of obstacle course maneuvering, and 7 minutes of Tai Chi for PD.

Procedures

The subject in the present case report actively participated in the prescribed interventions one day per week for a period of 5 months (December through April) and participated in a home exercise prescribed program two times per week for the same duration. Upon arrival at the research site the subject on the first day of research completed the HADS and the MFES; and then completed the TUG and the BioSway. The subject at the end of each consecutive month completed each of the instruments and tests. The subject performed three consecutive TUGs (providing three separate scores and an average score) before moving to the BioSway balance system. As part of the BioSway balance system measurements the subject performed each measurement with their shoes removed, eyes open and eyes closed, and on a static foundation. The TUG and the BioSway levels were recorded following the same procedures as the HADS and the MFES.

Descriptive Data

Visual analysis of the HADS over a 5 month period reveals a stable measurement of anxiety and depression moving towards normal (HADS scoring 0-7=normal, 08-10=borderline, & 11-21-abnormal). Indicating the potential of continuing to trend towards of normal or no existing anxiety nor depression the longer an individual participates in the prescribed program (see Figure 1).

Review of the MFES reveals little change as the subject presents as confident and appears to maintain performance through most of the study. The scoring of the MFES is ranked 0-10 with a score of 10 reflecting more confidence and less fear of falling [17]. However, at the fourth month interval the subject experienced a fall in the bathtub apparently resulting in the lower reported score. The subject did however recover in the fourth month reporting the highest score for the research period (see Figure 2).

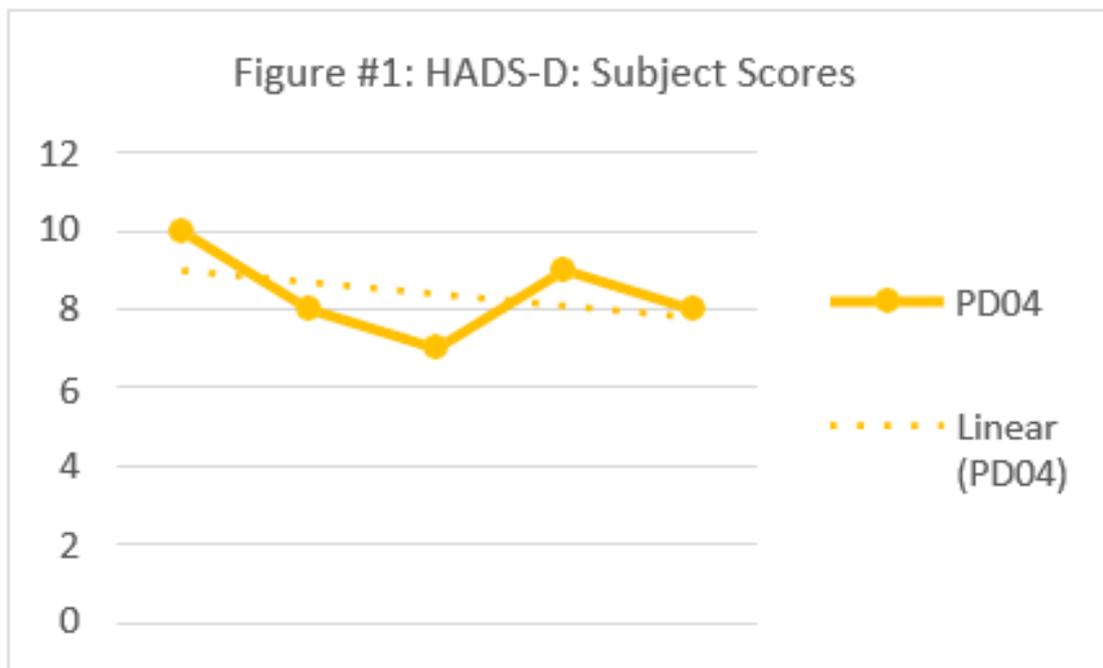


Figure 1: HADS-D: Subject Scores.

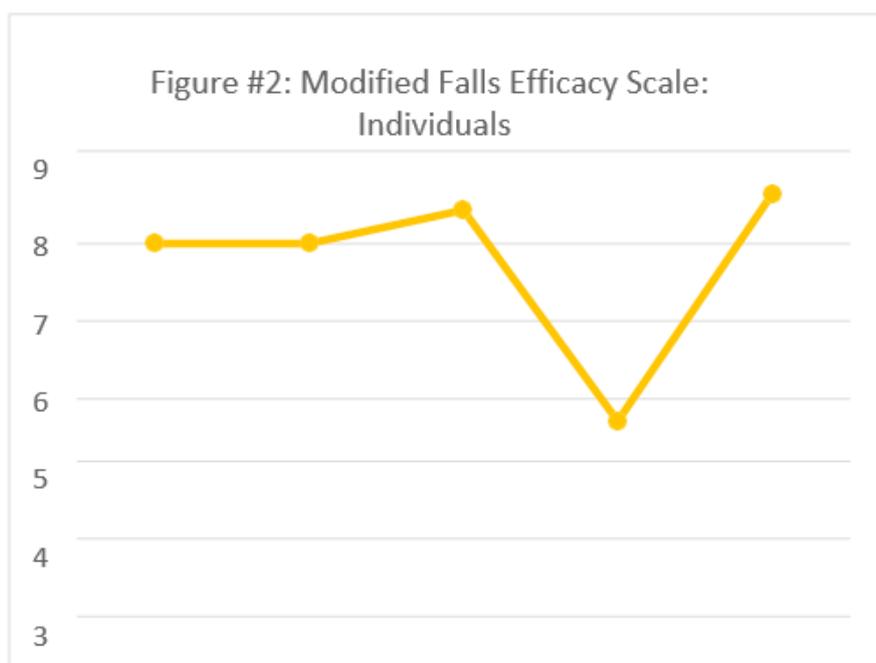


Figure 2: Modified falls efficacy scale individuals.

The subject's scores on the TUG as evidenced by the related trend lines represented in Figure 3 implies a decrease in the amount of time needed to complete the TUG course. The average

TUG score trend line, represents an overall decrease in the amount of time required to complete the test and potential improvement in subject's sit to stand and potential fall risk has decreased over time.

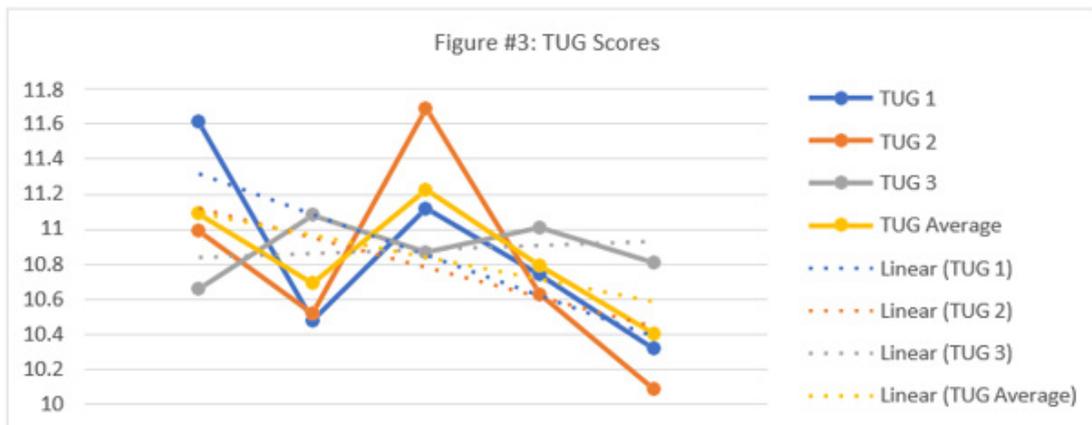


Figure 3: TUG Scores.

The BioSway provide several measurements including the following:

- Eyes open (EO)
- Eyes closed (EC)
- Anterior/Posterior Index (API)
- Medial/Lateral Index (MLI)
- Overall Stability Index (OSI)

Interpretation of the measurements of the BioSway indicates an overall improvement in the trending measurements towards stability (see Figure 4). A score of Zero indicates normal or normed referenced postural stability and any score outside of zero indicate percentage of sway or postural instability. The improvement in all four specific categories and the improvement in the two OSI scores clearly indicates movement towards postural stability and maintaining current levels of stability.

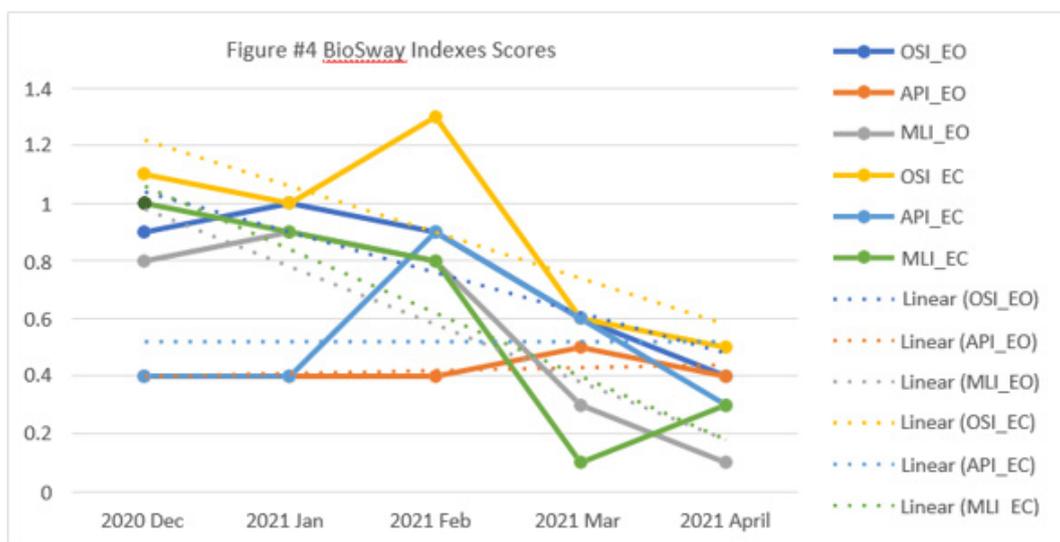


Figure 3: TUG Scores.

Discussion

As with all neurological disorders early detection and intervention is key to maintaining and potentially improving functional abilities of individuals living with the Parkinson’s disease. This present case report is encouraging as the data collected shows that individuals living within the community can

take action to assist with improving and maintaining the levels of physical functioning specifically their ability to go from a seated to a standing position and to decrease their likelihood of falling.

The recreational therapy intervention program should provide focused strengthening and balance (static and dynamic) interventions over time at an intensity level to impact change.

The intensity level for each participant should be personalized to the individual abilities and levels of functioning upon entering the programs. All intervention programs should have focused areas addressing balance (static and dynamic), strengthen training, endurance training, and obstacle course maneuvering. The community based recreational therapy intervention program presented in the present case report provides support for implementation of similar intervention programs in community and residential setting where individuals living with PD are residing.

Acknowledgement

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Conflict of Interest

The authors declare no competing interests.

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