Evaluating the Effect of Myofascial Release, on Parkinson's Related Tremor

By Sheree Phelps

A dissertation submitted in partial fulfilment of the requirements of the Jing Advanced Massage Training Institute, for the Professional Diploma in Advanced Clinical Massage and Sports Massage

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"I certify that this work has not been accepted in substance for any degree and is not concurrently being submitted for any degree other than that of the Diploma in Advanced Clinical Massage and Sports Massage being studied at the Jing Advanced Massage Training Institute. I also declare that this work is the result of my own investigations except where otherwise identified by references and that I have not plagiarized the work of others."

Mrs. Sheree Phelps - 31st March 2024

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To everyone reading this, thank you for taking the time and let us spread the word about how massage can help people living with Parkinson's disease.

CREATIVITY PAGE

"There are simply not enough complementary therapies researching how they can help the symptoms of Parkinson's Disease (PD). Evidence has shown that fascia has an enormous impact on people living with PD. Studies have shown that massage therapy is a useful tool in respite care for PD related tremor. And finally, massage post-sport has been documented for many years and is a reliable form of recovery for athletes.

Therefore, my aim is to create a massage protocol, teachable to fellow therapists, on how to give respite to PD-related tremor using MFR massage therapy." – Sheree Phelps

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ABBREVIATIONS AND MEANINGS

PD	Parkinson’s disease
SN	Substantia Nigra
BG	Basal Ganglia
CNS	Central nervous system
PSNS	Para-sympathetic nervous system
LID	Levodopa-induced dyskinesia
MS	Motor symptoms
NMS	Non – Motor symptoms
MFR	Myofascial release
CAM	Complementary and alternative medicine
PA	Physical activity
UPDRS	Unified Parkinson's Disease Rating Scale
MSK	Musculoskeletal
PDQ Exercise	PDQ Exercise Questionnaire
QUEST	Quality of Life in Essential Tremor Questionnaire
BPS	Biopsychosocial Model
HFMAST	Heat, Fascia, Muscle, Acupressure, Stretch, Teach
DBS	Deep brain stimulation

ABSTRACT

Objective: Parkinson's disease (PD) is the second-fastest neurological disorders in the world. Although there is no cure, medicines, surgical treatment, and other therapies can treat the symptoms of PD. The objective of this study is to determine whether myofascial release massage (MFR) can decrease the symptoms of Parkinson's-related tremor for people living an active lifestyle or playing sport.

Method: A hands-on study using two questionnaires (with appropriate permissions granted) to measure the outcome of MFR on the participants. All participants were cognitively aware and able-bodied.

Intervention: A course of six weekly one-hour massages, using hot stones and MFR massage techniques.

Outcome measures: Week 1-6, weekly QUEST questionnaires and one PDQ Exercise in week one. Weeks 7-12 weekly QUEST questionnaires the day before each treatment and one PDQ questionnaire in week seven - the day before first treatment. One PDQ Exercise questionnaire at the end of the intervention period. Both questionnaires repeated in week sixteen to see if results held.

Results: Results of this study suggest that using MFR is too relaxing for a person living with PD and the jump between the CNS being in control daily and the PSNS during the massage is too much of a change and can only temporarily reduce the tremor for the duration of the treatment. Conversely, the respite that a relaxation MFR massage can give, was widely subjectively reported.

Conclusions: The researcher's conclusion is that using more than one type of massage technique would potentially be better than taking one element and applying that to future studies of massage and PD.

INTRODUCTION

Parkinsons UK (2023) tells us around 145,000 people live with Parkinson's in the UK and that it is the fastest-growing neurological condition in the world. The three main symptoms are a tremor (shaking), slowness of movement and rigidity (muscle stiffness) (Dorsey et al., 2018). About 70-90% of people with PD, experience a tremor at some point in their lives (Pasquini et al., 2018) and although there is no cure, medicines, surgical treatment, and other therapies can help treat the symptoms (Weintraub, 2022).

1.1 WHAT IS PARKINSON'S DISEASE (PD)?

PD is a progressive disorder that is caused by degeneration of nerve cells in the part of the brain called the substantia nigra (SN), which controls movement. These nerve cells die or become impaired, losing the ability to produce an important chemical called dopamine (De Lau and Breteler, 2006).

Neurons of the SN communicate with neurons of the basal ganglia by liberating the neurotransmitter dopamine (Triarhou, 2013).

People living with PD do not have enough dopamine in their brain. Emamzadeh and Surguchov (2018) explain that this is one of the most crucial neurotransmitters to move. When the brain sends a signal to move a particular muscle, it adjusts the motions using the cells that need dopamine.

Cortez (2023) explains that the lack of dopamine produces slower movements and tremor - the main signs of PD.

1.2 THE SYMPTOM OF TREMOR AND CAUSES

There are over forty symptoms of PD, from tremor to stiffness, to problems with sleep and mental health issues (American Parkinson Disease Association, 2023). Problems with both the central nervous system (CNS) and the para-sympathetic nervous system (PSNS) can occur and limit daily life.

Tremor is often the first motor symptom of PD and is a direct cause of the reduced levels of dopamine in the brain. The typical PD tremor is known as resting tremor and occurs mostly at rest; however, it lessens during sleep and when the body part is not actively in use (Helmich et al., 2012). This is where the PSNS is largely at play and the brain is in alpha state. Alpha brain wave activity occurs when people are relaxed and not concentrating on anything (Cherry, 2023).

Kalia and Lang (2015) explain that the exact science as to why PD occurs is not yet known, however, it's believed that a combination of age, genetic and environmental factors cause the dopamine-producing nerve cells to die.

1.3 DIAGNOSIS AND STAGES

Hughes et al., (1992) discuss that despite advances in radiologic testing, the diagnosis of PD remains clinical and is often mis-diagnosed or takes multiple trips to various specialists before they pick up on a symptom and pursue with radiologic testing.

Studies show increasing knowledge on genetic and environmental risk factors of PD will probably elucidate the cause of this disease within the near future (Tysnes, Storstein, 2017; Bellou et al., 2016; Yuan et al., 2022).

Often people living with PD are administered incorrect treatment. Parkinson's UK (2020) surveyed 2,000 people, and found that 26% were first given a diagnosis other than PD. As a

result, almost half of this group (48%) were given treatment for a non-existent condition, with 36% receiving medication and 6% undergoing operations or procedures. (see Figure 1 for algorithm of PD diagnosis). Of those receiving unnecessary treatment, more than a third (34%) reported that their health worsened as a result. The poll also found that women were more likely to be misdiagnosed than men, and errors were most common in people aged 51 to 60 (Parkinson's UK, 2020).

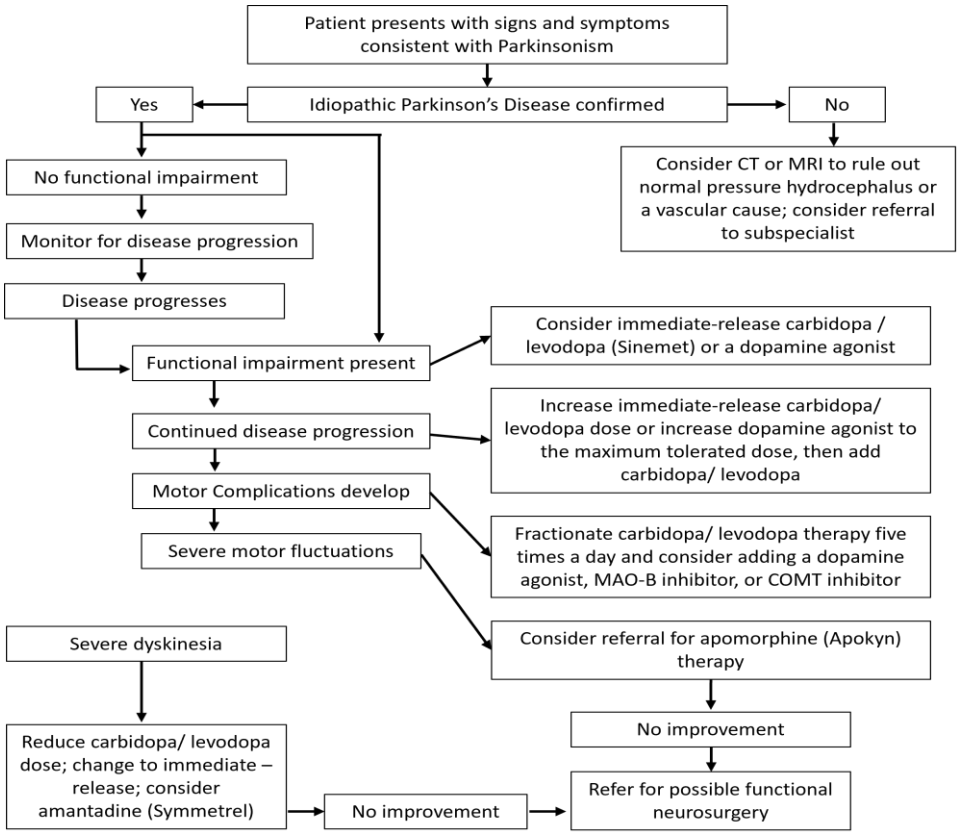

Figure 1. Algorithm for the diagnosis and management of Parkinson's disease. (CT = computed tomography; MRI = magnetic resonance imaging; MAO-B = monoamine oxidase-B; COMT = catechol O-methyltransferase (Rao, 2006.) (Reproduced with permission from the American Academy of Family Physicians AAFP).

1.4 CONVENTIONAL TREATMENT

Several studies support the early introduction of anti-parkinsonian treatment as soon as the diagnosis is confirmed (Marsh and Dawson, 2000; Sy and Fernández, 2020).

Oral levodopa, the initial gold-standard therapy for PD, is still the most effective and widely used therapeutic option in the treatment of this neurodegenerative disorder. However, its use eventually results in the development of motor fluctuations and levodopa-induced dyskinesia (LID). Nearly 40% of PD patients develop LID after 4 to 6 years of levodopa treatment (Pirtošek et al., 2020).

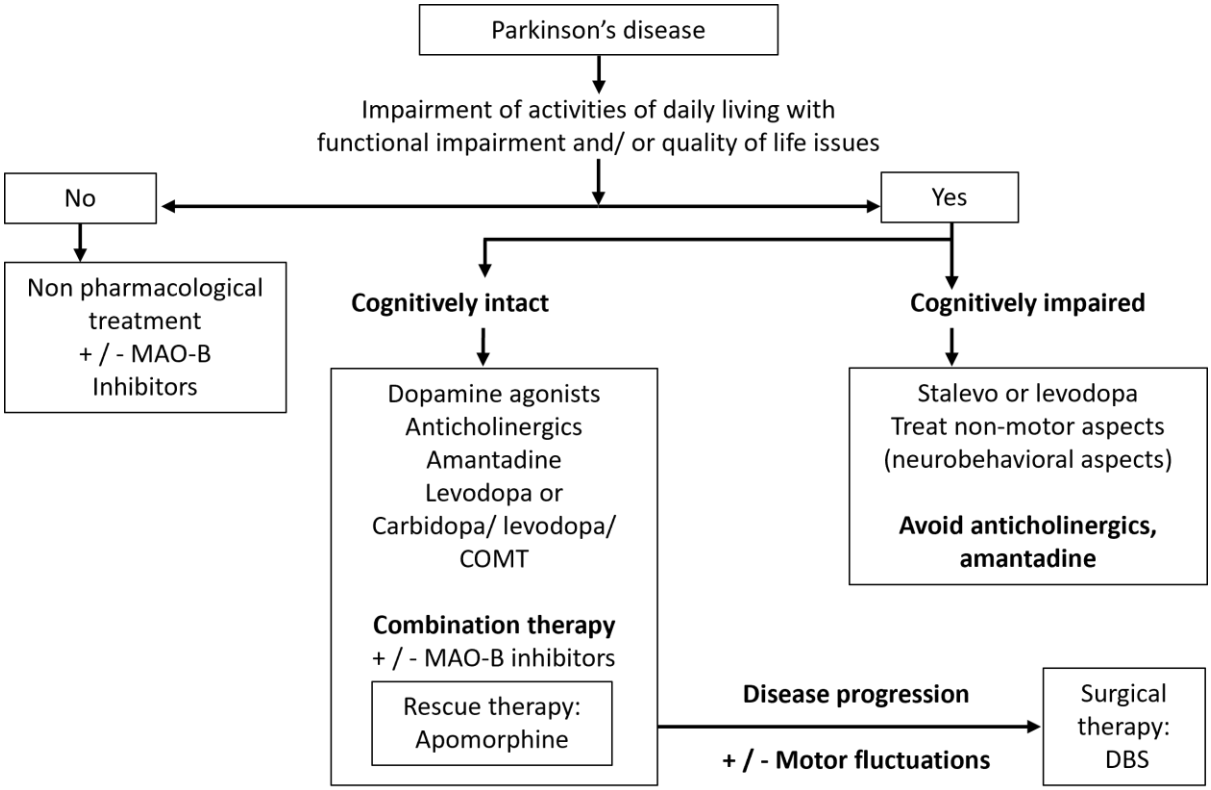

Figure 2. Treatment guidelines for the progressive stages of Parkinson's disease.

Abbreviations: COMT, catechol-o-methyl-transferase; DBS, deep brain stimulation; MAO, monoamine oxidase (Jankovic and Aguilar, 2008). Reproduced with permission).

Enormous progress has been made in the treatment of PD, through advances in experimental therapeutics, with many promising therapies emerging (Jankovic and Aguilar, 2008) as shown in Figure 2.

A therapy with more minor side effects is needed for PD (Bega et al., 2014). Therapeutic massages are the most used forms of complementary and alternative medicine (CAM), but no systematic review or meta-analysis have focused on the efficacy of massage on PD (Kang et al., 2022).

FASCIA AND THE NERVOUS SYSTEM

1.5 WHAT IS FASCIA?

Andry Vleeming once said, “Fascia is your soft skeleton.”

Lesondak et al. (2023) stated that as far as the body is concerned, the fascia is all one: one complex, holistic, self- regulating organ/ tissue/ system. Medical literature does not suggest a sole definition of fascia, as it varies in terms of thickness, function, composition, and direction depending on its location. Myers (2009) explains that it can, however, be split into different layers and areas, namely the superficial & deep fascia, meningeal and visceral fascia.

The superficial layer is often described as a fibrous layer of loose connective tissue: loose because there is not a strong, regular pattern to its organization; whereas deep fascia is a dense, well-organized fibrous layer that covers and runs through the muscles (Davies, 2009; Stecco et al., 2011).

Meningeal fascia surrounds the nervous system and the brain. The fascial continuum is essential for transmitting muscle force, for correct motor coordination (Lesondak et al., 2023). Like muscles, nerves are also encased in fascia (Bove, 2008).

1.6 THE ROLE OF FASCIA IN PARKINSON'S DISEASE

Sharpe (2022), conveys that because fascia tends to tighten, contract, and stiffen in response to different stresses on the body, movement disorders and chronic pain issues would be directly affected. Sharpe continues to say that when the dopamine replacement drugs abate, fascia begins to contract and re-stiffen again, because without the medication, the central nervous systems of people living with PD get stuck in a profound stress response.

A study into the effectiveness of Anma (also known as amma) massage therapy in alleviating physical symptoms in outpatients with PD (Donoyama, Suoh and Ohkoshi, 2014), showed that after a single session, visual analogue scale scores were significantly lower with less muscle stiffness, movement difficulties, pain, and fatigue. Drawing comparisons between Anma massage therapy and myofascial release massage concludes that myofascial release is a vital holistic approach into mitigating the symptoms of PD-related tremor.

1.7 MYOFASCIAL RELEASE MASSAGE

A physical therapist, John Barnes, adopted the term: 'Myofascial release' (MFR) to describe his method of freeing restrictions in the myofascial system (Barnes, 1992). The overall intention of MFR is to relieve pain, resolve structural dysfunction, restore function and mobility, and release emotional trauma (Fairweather and Mari, 2015).

Fairweather and Mari (2015) explain that MFR focuses on the myo-fascia, i.e. the fascia running through and around the muscles ('Myo'). Softening, lengthening, a sense of increased fluid flow in the tissue and a feeling of heat radiating from the region are some of the main tissue release sensations that a therapist may feel when working with MFR techniques. A client can experience a relaxing, unwinding feeling, with movement patterns potentially changing for

the better. A releasing of adhesions within the tissues – the freeing of fascia – is often voiced from the client (Fairweather and Mari (2015).

With the sensory nerve endings sitting in superficial layers of fascia, Barnes explains how the essential "time element" of the MFR technique increases viscous flow and the piezoelectric phenomenon: a low load (gentle pressure). Applied slowly, a low load will allow a viscoelastic medium (fascia) to elongate (Barnes, 1992). MFR taught by Jing, is based on the principles developed by Barnes. The Jing method utilises heat, fascial work, massage, acupressure, self-care, and includes teaching clients about how to help themselves.

Whilst there is little research on the effect of MFR in relieving PD symptoms, studies show that MFR in other neurological conditions, such as Cerebral Palsy and Dementia, can improve symptoms (Bhalara and Talsaniya, 2014; Suzuki et al., 2010). These studies conclude that stretching alongside MFR can help reduce spasticity in Cerebral Palsy patients rather than stretching alone. In this current study, the researcher has chosen to take the one element of The Jing Method and explore if this alone would help with PD tremor. Donoyama, Suoh and Ohkoshi (2014) supports this theory.

Myofascial release is a very relaxing treatment and effects can be amplified with practicing mindfulness at the same time. Neurobehavioral effects of mindfulness have been recorded for people with PD (Van Der Heide et al., 2020).

1.8 THE BENEFITS OF SPORTS AND EXERCISE IN PARKINSON'S DISEASE

Exercise has been proven to improve movement, co-ordination, thinking and memory function in many studies. It may improve overall mobility and quality of life, which for people living with PD is essential. Evidence suggests that a minimum of 4 weeks of gait training and prescribed exercises can have positive effects that persist for 3-12 months (Mak et al., 2017; Yang et al., 2019).

According to the Parkinson's Outcomes Project, increasing physical activity to at least 2.5 hours a week can slow the progression of Parkinson's symptoms (Physical Therapy and PD, 2023).

Ideally, finding alternative, non-pharmacotherapies are necessary to delay and slow the dopamine neuron degeneration. Physical activity (PA) can complement pharmacological therapy to manage the inherent decline associated with the disease. Accumulating evidence suggests that patients with PD might benefit from PA in several ways. PA may lead to disease-modifying effects in addition to general improvements in health of PD patients (Speelman et al., 2011; Lauzé et al., 2016).

There have been many studies on how exercise can reduce PD-related tremor, using different measures, including the Unified Parkinson's Disease Rating Scale (UPDRS). Farashi et al., (2021) explain that the torque measurement, tremor amplitude and frequency were obtained by electronic sensors, which showed the positive effects of exercise on tremor reduction in PD.

1.9 MFR MASSAGE POST-SPORT

MFR is one of the many techniques used to increase mobility in a joint or series of joints to improve athletic performance (Cheatham et al., 2015; Peacock, 2014).

Ferreira et al., (2018) and Alves et al., (2019) present evidence that resistance training and strength training can benefit PD in ways of reducing anxiety symptoms and respiratory muscle strength, therefore combining MFR and a specific exercise routine could potentially increase the wellbeing and the quality of life for persons living with PD, thus potentially influencing the PD tremor.

Even though clinical research has been carried out on people living with PD, a poor appreciation exists for the appropriate clinical use of sports massage (Brummitt, 2008).
Sports massage has been suggested to help prepare an athlete for competition, as a tool to enhance athletic performance, and as a treatment approach to help the athlete recover after exercise or a competition. Additionally, MFR has been suggested as a manual therapy intervention for sports-related musculoskeletal (MSK) injuries and for chronic pain conditions or pathologies (O'Connell, 2018).

Massage therapy may increase blood flow to the brain, decrease muscle stiffness, promote relaxation, and increase mobility in some people with PD. Research has shown that massage can also improve gait speed by about 10% (Parkinson's Resource Organization, 2023; Qureshi et al, 2021).
This study aims to look at the effectiveness of MFR on Parkinson's-related tremor in people who exercise and partake in sports, through a six weekly MFR massage programme, which follows a six-week control period, using validated questionnaires to record outcomes.

METHOD

Ethical approval was received from the Jing Institute of Advanced Massage training (Appendix D).

Recruitment to the study was done via email to regular clients with PD, local PD sports clubs and local PD support groups and social media platforms. Once suitable candidates applied and met the criteria, a six-week control period was conducted, and a six-week hands-on period followed. Using the PDQ Exercise, and the QUEST questionnaires (APPENDICES A & C).

2.1 INCLUSIONS AND EXCLUSIONS

The criteria for participants were as follows:

Inclusions	**Exclusions**
Adults over 18 years of age	Non- mobile
Medically diagnosed with PD	Not cognitively aware
Experiencing PD-related tremor	Pregnant
Cognitively aware	Undergoing medication changes
Able to attend weekly 1-hour massages	Undergoing deep brain stimulation (DBS) surgery within the 12-week period
Able to use verbal communication	Had DBS surgery in the last 6 months

2.2 PROGRAMME

The week prior to control period, each participant had a one to one, 30-minute consultation, to access their suitability and outline the programme. Once the study was explained and any questions answered, participants gave consent to take part. The study was a within-subjects design.

In weeks 1– 6 Participants filled in the PDQ Exercise (Appendix A) once at the beginning of week one. The QUEST questionnaire (Appendix C) was then filled in on the same day/ time weekly. Weeks 7-12 Participants attended a one-hour massage, once a week, using the adapted MFR protocol (Appendix I). This involved hot stones and then structural, direct, and indirect MFR techniques.

Participants filled in the PDQ Exercise once at the beginning of week seven. The QUEST questionnaire was filled in on the same day/ time weekly, the day before each treatment. The PDQ Exercise was taken at week twelve.

Week sixteen saw each participant repeat both questionnaires to see if there were any longer-term effects of the intervention.

RESULTS

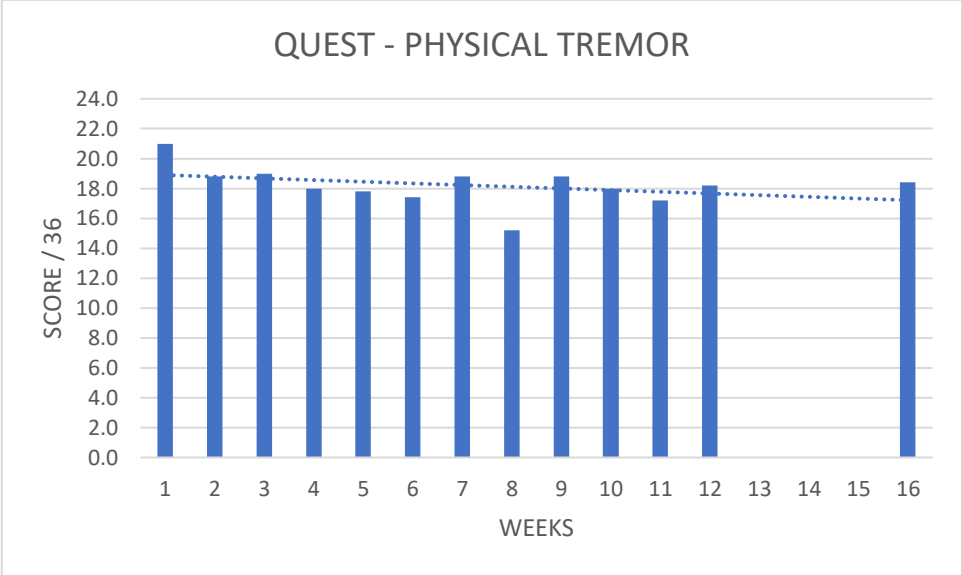

Figure 3. QUEST questionnaire results of MFR treatment on the physical effects of PD-related tremor. Scored out of 36. Showing a 13.3% decline in tremor between weeks 1 and 12, but not holding one month past the last treatment.

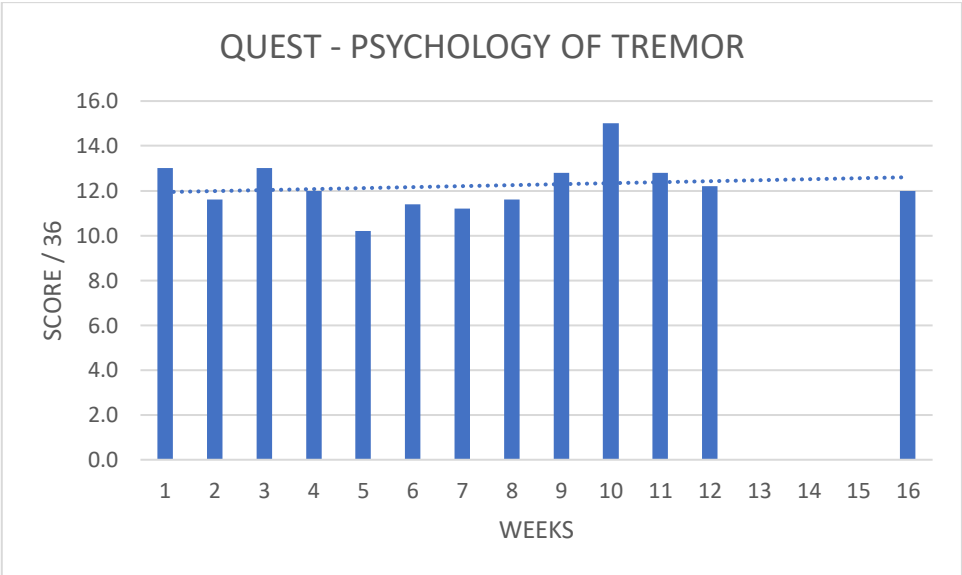

Figure 4. QUEST questionnaire results of MFR treatment on the psychological effects of PD-related tremor. Scored out of 36. Showing a 6.15% decrease in the psychological effect of PD tremor on participants. With results holding one month past the last treatment.

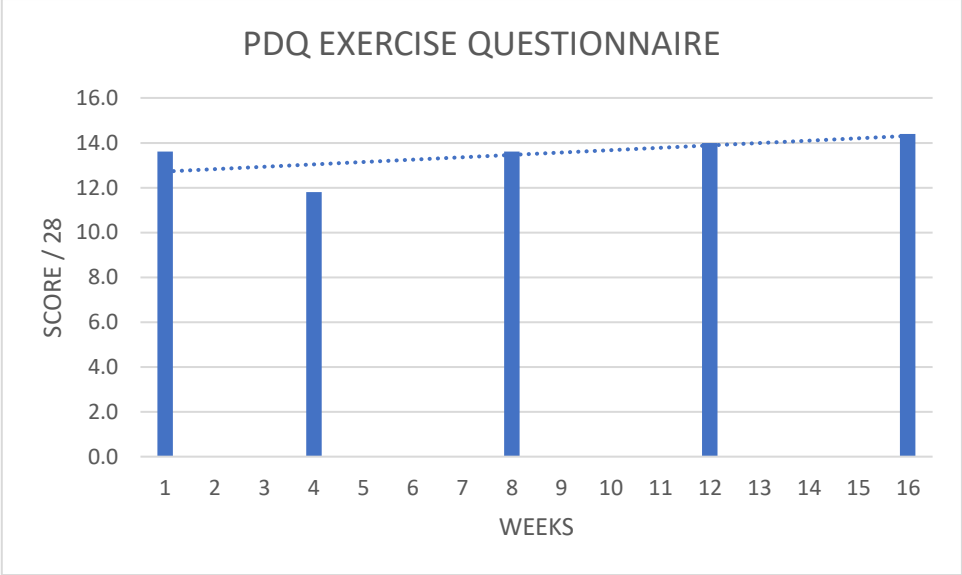

Figure 5. PDQ Exercise questionnaire results on the effect of MFR treatment on PD-related tremor. Scored out of 28. Showing a 2.94% increase in difficulty during exercise with PD-related tremor between the weeks of 1 and 12, with results not holding one month on.

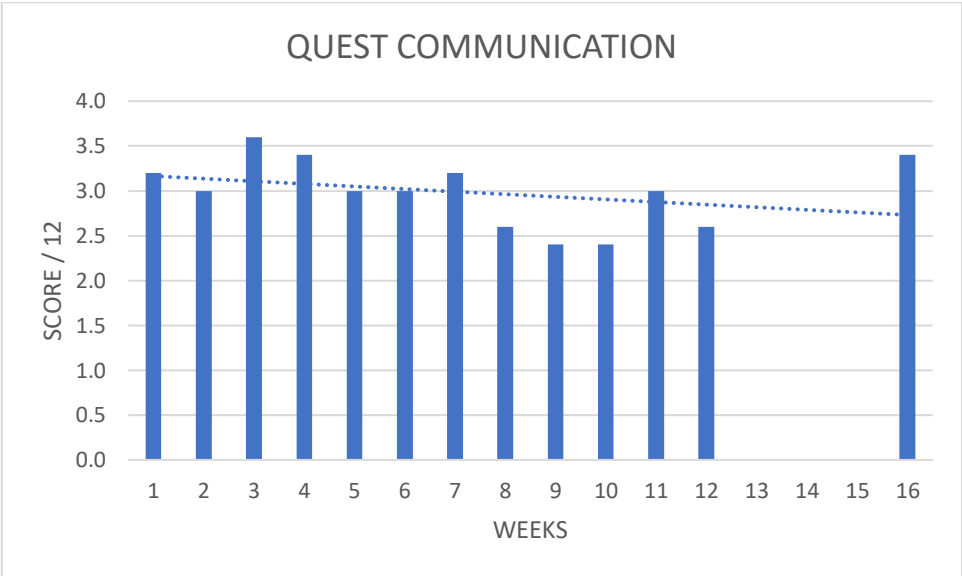

Figure 6. QUEST Questionnaire results on the effect of MFR treatment on communication in PD-related tremor. Scored out of 12. Showing a 18.75% improvement on communication skills with PD-related tremor between weeks 1 and 12. Results did not hold one month past the last treatment.

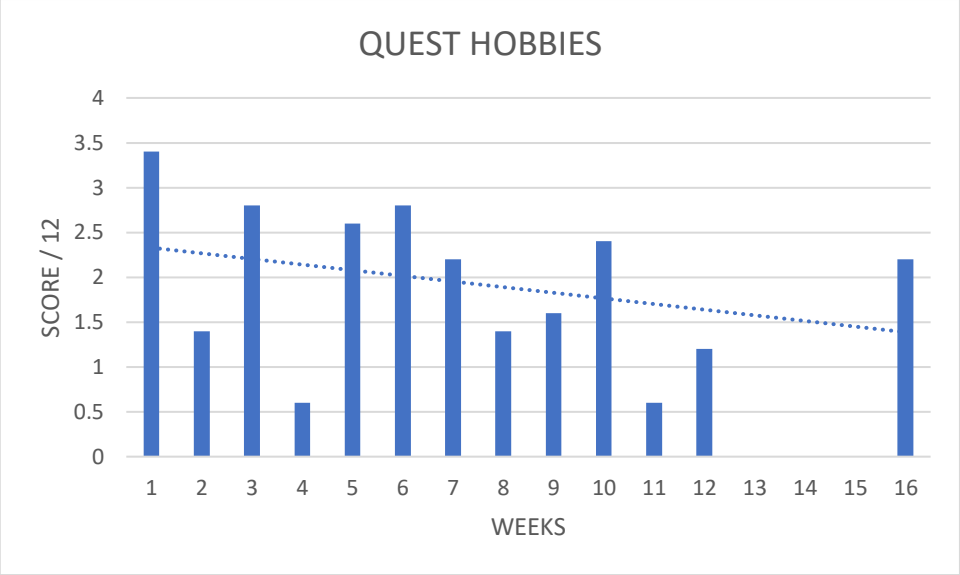

Figure 7. QUEST Questionnaire on the effect of MFR treatment on hobbies with PD-related tremor. Scored out of 12. Showing a 64.7% decrease in difficulty when taking part in participant hobbies across week 1 – 12. With results not returning to the first week's scores, one month on.

DISCUSSION

This study was to find out if MFR, as a standalone treatment would decrease the symptom of PD- related tremor in exercise or sporting activities. The results show that MFR did not produce any lasting changes to symptoms.

Previous studies have shown how myofascial release can help with chronic musculoskeletal pain and neurological conditions (Castro-Sánchez et al., 2011; Laimi et al., 2017); the hypothesis for this current study was that MFR would be a key element in helping with PD-related tremor.

Castro-Sánchez et al., (2011) investigated the benefits of MFR on pain, anxiety, quality of sleep, depression, and quality of life in people living with Fibromyalgia, which are all known symptoms of PD as well. In this study, immediately post treatment, participants reported they could feel tremor had reduced. Similarly, Castro-Sánchez et al., saw, straight after treatment, symptoms had decreased.

A study of PD patient with Hoehn-Yahr Stage 4 PD (see appendix L), who was treated with massage therapy five times over the course of six weeks, indicated that massage therapy treatment had a positive effect on reducing resting and postural tremor. The treatment was also effective in temporarily reducing rigidity during treatment, but did not produce a lasting effect (Casciaro, 2016). As Casciaro's and Castro-Sanchez et al., studies did not produce a lasting effect, it compares to this study.

However, results show that the study can help the quality of life for a person living with PD (Pickut et al., 2015). Additionally results from the QUEST Questionnaire in figures 6 and 7 show that MFR can help with communication and in participant's hobbies.

4.1 FINDINGS

During the six-week intervention period, there is a minimal result for all the main measured aspects shown in figure 3, 4 and 5. The researcher focused on looking at the physical tremor and psychological effect of the tremor from the QUEST questionnaire, (see figures 3 and 4); and the impact that MFR release had on exercise for the participant, (see figure 5).

Figure 3 shows a slight decline in the physical tremor by 13.3%. This contrasts with a study by BiNgöl (2018), who showed that functional massage on neurological conditions such as cerebral palsy has good outcomes. However, BiNgöl's study was on children and not adults. This research study focusing on using MFR alone for PD-related tremor does not show the same improvements.

The improvement in this study is so minor, that only with a larger participant group could more of a comparison between MFR and functional massage be drawn in neurological conditions such as cerebral palsy and PD. Also, there is a slight downward trend (shown in figure 3), so a longer study may continue to show more improvement for participants also.

Between weeks 12 and 16, figure 3 shows that although results did not hold, they did not increase to the original control period scores.

The researcher found that using heat in the form of hot stones before MFR techniques was beneficial to the participant with a subjective feedback questionnaire confirming this. This supports the Jing method of HFMAST (see Appendix K) of utilizing heat to soften the tissues, which for people with PD, helps to relax the contracted, stiffened tissues before MFR is applied. Continuing from the aspect of heat, as this helps to start the relaxation process and encourages the PSNS to kick in, a deeper therapeutic alliance between the researcher and participant was observed and mentioned in participant's feedback post-study.

The Jing method of HFMAST is a proven protocol that has been used on many physical pathologies, as well as mental health and wellbeing. The use of the Biopsychosocial (BPS) model is predominantly used in every consultation prior to treatment (see Appendix K).

Whilst the subjective study results do not hold post-massage, each week the researcher would observe participants relaxing into the treatment more quickly, and their tremor reduce more rapidly.

Gibson (2017) explains that applying a BPS model approach to dementia patients has proven successful. So, applying the same BPS model to people with PD, could potentially identify suitable interventions for everyday life.

The Jing HFMAST protocol agrees with the Saxena et al., (2022) use of the BPS model to guide patient-centred neurological treatments and in figure 4, shows the psychological effect of the tremor on a PD patient. Although there was only a 6.15% decrease across the 12 weeks, the use of the BPS model may have been the contributing factor to this. Again, results did not hold one month on.

Figure 5 sees difficulty in exercise with tremor increasing by 2.94%. This is so small, many contributing factors may have affected this result, but does point to the question of using MFR prior to exercise or directly after exercise to improve results potentially.

O'Connell's (2018) study indicates that myofascial release can help increase speed in 100m swimmers when used pre-event, suggesting that using MFR pre-sport would be better than post sport to look at exercise improvements. As this study's treatments were not performed post-exercise, it suggests that future research towards massage, exercise and PD, should be conducted before exercise as in O' Connell's study, or straight after exercise to see if this prevents such stiffness and muscle contraction setting in.

Richman, Tyo and Nicks, (2019) looked at the combined effects of self-myofascial release and dynamic stretching on the range of motion, jump, sprint and agility performance pre-exercise and saw improvements, which also supports future studies of MFR being used prior to exercise for people with PD also.

Sharpe (2022) previously explains, when the dopamine replacement drugs wear off, the fascia begins to contract and stiffen again, because, without the drugs, the central nervous system is stuck in a profound stress response. The researcher believes MFR helped loosen the fascia by activating the PSNS, thereby allowing brain waves to function in an alpha state, like when sleeping, and thus reducing their tremor temporarily (Helmich et al., 2012).

For future studies, researchers would have to evaluate if they would prefer to measure an athlete feeling relaxed after an event or have them in the best physical shape for a match and not worry about the post-event symptoms.

People living with PD are stuck in a constant 'fight-or-flight' response with their CNS being overloaded by the thought that "this isn't a curable disease" (Shifke. H, 2017); MFR allowed each participant respite from this.

The researcher theorizes that the reason the reduction in tremor did not hold past the treatment period is because the difference between the functioning CNS in everyday life in someone with PD, and the relaxation state of the PSNS during massage, is too much of shock to the system when the massage finishes.

Mandal, (2019) studies show that Beta wave control in a PD brain could be a potential therapy. Dr. Mandal explains that research of making a neurofeedback system, whereby the patients with PD can themselves voluntarily control their beta brain activity in their own deep brain, may give them control on their symptoms. The researcher's study concludes how MFR

massage can assist in reducing the tremor temporarily, therefore putting the brain into a relaxed state. If participants can meditate, the neurobehavioral effects may help post treatment and be used as a self-care approach at home (Mandal, 2019).

A self-care help sheet, for use between treatments was considered by the researcher to be another factor which required measurement and could further affect outcomes; and it was, therefore, was not used in this study. Although not part of this study, studies show that meditation may be a key element of self-care in the home between MFR massages (Van Der Heide et al., 2020) thus potentially helping with PD tremor.

Client education is also part of the Jing MFMAST protocol: teaching self-help exercises, meditations or stretches at home. Whilst this would have been another element to record, collective studies support the use of self-care between treatments (Mandal, 2019; Van Der Heide et al.,2020).

Box breathing has been used in between massage therapy interventions with successful results being shown. Martinez – Perez (2023) and Quayle (2023) tested this, looking into studies of depression in men (a major side effect of PD), and had good outcomes in both studies.

Figure 6 shows us how communication improved for participants. Although this was not a result the researcher intended to look at, results show an 18.75% improvement in communication. This shows us why using the BPS model is so important in consultations and ongoing treatments and can aid people living with PD to communicate better with MFR treatment.

Finally, we can see in figure 7, another surprising result, showing a 64.7% decrease in difficulty when taking part in participant hobbies across week 1 – 12, with results not returning to the first week's scores, one month on. Although results show on the PDQ Exercise results that MFR did not help with tremor in physical exercise, the results from the QUEST questionnaire

hobby results clash with this, suggesting they did. Suggestions for future studies would propose only using one instrument to prevent these clashes.

To add to what we already know about clinical massage, the researcher can conclude that using one type of massage technique for PD is not enough. Although a slight decrease in tremor is noted between weeks 1 and 12, with communication and hobbies mirroring this trend, it has little to no effect on PD tremor whilst exercising or playing sport.

4.2 LIMITATIONS

The main limitation for this study was the number of participants being so low and although participants met the inclusion/ exclusion criteria there was a varied degree of symptoms with this small cohort.

Treatment guidelines for the progressive stages of PD are measured by using the UPDRS (See figure H). The UPDRS combines elements of several scales to produce a comprehensive and flexible tool to monitor the course of PD and the degree of disability. This was not used within this study but might have given a more homogenous group of participants.

Recruitment for the study was difficult for several reasons. Whilst many forms of recruitment were taken, the uptake was low. As a result, although all participants met inclusion/ exclusion criteria, not all tremor symptoms were comparable, and the grade of PD was vastly different between participants.

Another limitation to the project were the numerous dependant variables that people with PD experience have on a daily basis. Sleep interference, mixed stress levels and irregular

medication timings, along with many other variable PD symptoms, were all contributing factors that would change results on both instruments. As all participants played sports and exercised regularly, muscle strains, post-exercise tightness and post-exercise delayed-onset muscle soreness were variables that could change the outcome of this study (Rascol et al., 2003). The implication of this is that the study has no effect on any of this.

4.3 PDQ EXERCISE AND QUEST QUESTIONNAIRES

The researcher chose to use the PDQ Exercise and QUEST questionnaires, as the focus of the study was to measure PD-related tremor, and both these questionnaires had specific questions relating to tremor that could be evaluated for the intervention. Ideally, these questionnaires are designed to be used with 30 – 2000 participants. This study design was to measure the effects 7 days after each treatment intervention.

4.4 FUTURE THOUGHTS AND LESSONS LEARNT

Ferreira et al., (2018) and Alves et al., (2019) present evidence that resistance training and strength training can benefit PD in ways of reducing anxiety symptoms and respiratory muscle strength.

O'Connell's (2018) study indicates that pre-event myofascial release can help increase speed in 100m swimmers, suggesting that using MFR pre sport would be better than post sport to observe exercise improvements.

The current study was not performed immediately before or after exercise. The aforementioned research studies with regards to massage, exercise and Parkinsons, indicate consideration is given to evaluate if it should be conducted straight after exercise to prevent such stiffness and muscle contraction setting in; or pre-event to reduce the anxiety that comes with these symptoms.

Rienzi (2022) explains how a study published in Parkinson's Disease journal, showed improvement in mood and overall quality of life, and, for some, motor functions, including enhanced posture and gait and the reduction of tremors that affect the hands, legs, and feet whilst using music as therapy. Would this, combined with MFR, have a better outcome for massage as a non-pharmaceutical therapy (Bastepe-Gray et al., 2022)?

5. CONCLUSION

This study was to see if MFR as a standalone technique would help decrease the symptom of PD-related tremor. Results of this study suggest that using MFR is too relaxing for a person living with PD and the jump between the CNS being in daily fight-or-flight and the PSNS relaxing during the massage, is too much of a change.

Whilst there were limitations because of the instruments used, subjective feedback was that respite from the tremor was a success, but results did not hold post massage.

Owing to the nature of PD and the numerous symptoms that come with the disease, future studies are needed to individualize each symptom and record outcomes using massage. Studies may benefit from collaboration with PD charities and funding for larger scale research.

This study focused on PD tremor, and results showed a temporary decrease in tremor post treatment, it poses the question whether MFR alone for dystonia may help reduce rigidity more so than reducing a PD tremor.

The subjective feedback from using heat in the form of hot stones suggested that using the whole Jing HFMAST protocol would be better than taking one element from it and applying that to future studies of massage and PD. Results from previous Jing studies that used only one or a selection of the HFMAST protocol, had similar outcomes of results not holding post treatments (Crabb, 2018; Stewart, 2022).

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APPENDICES

APPENDIX A – PDQ EXERCISE QUESTIONNAIRE

Parkinson's Disease Questionnaire, Exercise Module (PDQ – Exercise)

Due to having Parkinson's disease,
how often during the last month have you…

*Please **tick one box** for each question*

		Never	Occasionally	Sometimes	Often	Always
1.	Felt you have struggled to maintain your exercise regime?	☐	☐	☐	☐	☐
2.	Had difficulty doing as much exercise as you feel you should?	☐	☐	☐	☐	☐
3.	Felt that your exercise regime is not working?	☐	☐	☐	☐	☐
4.	Felt that the amount of exercise you do is never enough?	☐	☐	☐	☐	☐
5.	Lacked the motivation to undertake exercise?	☐	☐	☐	☐	☐
6.	Lacked the motivation to do the things you enjoy?	☐	☐	☐	☐	☐
7.	Had problems moving after exercise?	☐	☐	☐	☐	☐

Please check that you have ***answered all the questions.***

Thank you for completing the questionnaire.

APPENDIX B - QUEST QUESTIONNAIRE PERMISSION

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International Parkinson and Movement Disorder Society

February 7, 2024

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Re: Authorization to Use Materials Owned by the International Parkinson and Movement Disorder Society (MDS)

Dear Mrs. Phelps:

Thank you for your interest in the Unified Dyskinesia Rating Scale ("UDysRS"), Quality of Life in Essential Tremor Questionnaire ("QUEST"), and Rush Dyskinesia Rating Scale ("RDRS") (collectively, the "Rating Scales"). MDS grants permission for use of the Rating Scales in English within the dissertation titled, "Evaluating the effect of myofascial release on Parkinson's related tremor," developed by you, Sheree Phelps, and carried out under the academic supervision of personnel at Jing Institute of Massage and Complementary Medicine. This study is identified by the Student Pearson registry number: NG23432. As this project is being done toward the completion of Level 6 BTEC, there is no associated fee for this use.

By submitting your request to MDS, you agreed to the following:

I understand that the Rating Scales may only be used in paper format for the purposes described above. I also understand that reproduction, distribution, translation, or sale of any portion of the Rating Scales is strictly prohibited. Changes, modifications, adaptations, and derivative works of the Rating Scales are not permitted without the permission of MDS. Furthermore, the Rating Scales may not be incorporated into clinical trials, training materials, certification programs, software programs, electronic platforms or otherwise except through express authorization of MDS and payment of any applicable fees. Further, MDS shall have no liability related to use of the Rating Scales or any other MDS owned rating scale, and I hereby release, hold harmless, and indemnify MDS, its officers, directors, employees, volunteers, and agents, from any loss, damage, or claim based on such use.

Please do not hesitate to contact me with any questions or concerns.

Sincerely,

Jennie Socha
Executive Director
International Parkinson and Movement Disorder Society
ratingscales@movementdisorders.org

APPENDIX C - QUEST QUESTIONNAIRE

Quality of Life in Essential Tremor Questionnaire (QUEST)

Patient's Name: _____ ID: _____ Date: ____ / ____ / ____

Gender: ☐ Male ☐ Female Date of Birth: ____ / ____ / ____

Health Status

In general, how would you rate your overall health? (0=very poor health, 100=excellent/perfect health)

Circle: 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Overall Quality of Life

Overall, how would you rate your quality of life? (0=very poor health, 100=excellent/perfect health)

Circle: 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

General Information

In the past month, has your tremor interfered with your sexual satisfaction?	Y	N
In the past month, have you had side effects from tremor medications?	Y	N
In the past month, have you been satisfied with the tremor control achieved by your medications?	Y	N

Which most appropriately describes your work status?

- ☐ Never worked
- ☐ Not working, retired because of tremor
- ☐ Not working, retired NOT due to tremor
- ☐ Working full time
- ☐ Working part time

TREMOR SELF ASSESSMENT

For the purposes of this questionnaire, tremor is defined as uncontrollable shaking or quivering of the body part in question.

On a typical day, how many of your waking hours do you have tremor in ANY body part?

Circle: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Put a mark in the box to rate the severity of your tremor in each of the body parts listed below.

None - no tremor at any time
Mild - mild tremor not causing difficulty in performing any activities
Moderate - tremor causes difficulty in performing **some** activities
Marked - tremor causes difficulty in performing **most** or **all** activities
Severe - tremor **prevents** performing some activities

		None	Mild	Moderate	Marked	Severe
1.	Head	☐	☐	☐	☐	☐
2.	Voice	☐	☐	☐	☐	☐
3.	Right arm/hand	☐	☐	☐	☐	☐
4.	Left arm/hand	☐	☐	☐	☐	☐
5.	Right leg/foot	☐	☐	☐	☐	☐
6.	Left leg/foot	☐	☐	☐	☐	☐

continued on next page

For each question below, please mark the box which best describes your current situation.

For example: N R ~~S~~ F A

N = Never/No
R = Rarely
S = Sometimes
F = Frequently
A = Always/Yes
NA = Not Applicable

1.	My tremor interferes with my ability to communicate with others.		N	R	S	F	A
2.	My tremor interferes with my ability to maintain conversations with others.		N	R	S	F	A
3.	It is difficult for others to understand my speech because of my tremor.		N	R	S	F	A
4.	My tremor interferes with my job or profession.	NA	N	R	S	F	A
5.	I have had to change jobs because of my tremor.	NA	N	R	S	F	A
6.	I had to retire or take early retirement because of my tremor.		N				A
7.	I am only working part time because of my tremor.	NA	N				A
8.	I have had to use special aids or accommodations in order to continue my job due to my tremor.	NA	N	R	S	F	A
9.	My tremor has led to financial problems or concerns.		N	R	S	F	A
10.	I have lost interest in my hobbies because of my tremor.		N	R	S	F	A
11.	I have quit some of my hobbies because of my tremor.		N				A
12.	I have had to change or develop new hobbies because of my tremor.		N				A
13.	My tremor interferes with my ability to write (for example, writing letters, completing forms).		N	R	S	F	A
14.	My tremor interferes with my ability to use a typewriter or computer.	NA	N	R	S	F	A
15.	My tremor interferes with my ability to use the telephone (for example, dialing, holding the phone).		N	R	S	F	A
16.	My tremor interferes with my ability to fix small things around the house (for example, change light bulbs, minor plumbing, fixing household appliances, fixing broken items).		N	R	S	F	A
17.	My tremor interferes with dressing (for example, buttoning, zipping, tying shoes).		N	R	S	F	A
18.	My tremor interferes with brushing or flossing my teeth.		N	R	S	F	A
19.	My tremor interferes with eating (for example, bringing food to mouth, spilling).		N	R	S	F	A
20.	My tremor interferes with drinking liquids (for example, bringing to mouth, spilling, pouring).		N	R	S	F	A
21.	My tremor interferes with reading or holding reading material.		N	R	S	F	A
22.	My tremor interferes with my relationships with others (for example, my family, friends, coworkers).		N	R	S	F	A
23.	My tremor makes me feel negative about myself.		N	R	S	F	A
24.	I am embarrassed about my tremor.		N	R	S	F	A
25.	I am depressed because of my tremor.		N	R	S	F	A
26.	I feel isolated or lonely because of my tremor.		N	R	S	F	A
27.	I worry about the future due to my tremor.		N	R	S	F	A
28.	I am nervous or anxious.		N	R	S	F	A
29.	I use alcohol more frequently than I would like to because of my tremor.		N	R	S	F	A
30.	I have difficulty concentrating because of my tremor.		N	R	S	F	A

THANK YOU!

QUEST Scoring

Patient Name: _____ Date: _____

If a question is Not Applicable, "X" through NA and leave blank--do not assign a score of 0.

Scoring algorithm:	*Total **applicable** points for each dimension* / *Total possible points (# of **applicable** questions x 4) for each dimension*	x 100 =	dimension score

N=0 R=1 S=2 F=3 A=4 NA=blank Note: Questions 6, 7, 11, & 12--0 OR 4 points possible (if applicable).

Communication

1. My tremor interferes with my ability to communicate with others. _____
2. My tremor interferes with my ability to maintain conversations with others. _____
3. It is difficult for others to understand my speech because of my tremor. _____

Work and Finances

4. My tremor interferes with my job or profession. NA _____
5. I have had to change jobs because of my tremor. NA _____
6. I had to retire or take early retirement because of my tremor. _____
7. I am only working part time because of my tremor. NA _____
8. I have had to use special aids or accommodations in order to continue my job due to my tremor. NA _____
9. My tremor has led to financial problems or concerns. _____

Hobbies and Leisure

10. I have lost interest in my hobbies because of my tremor. _____
11. I have quit some of my hobbies because of my tremor. _____
12. I have had to change or develop new hobbies because of my tremor. _____

Physical

13. My tremor interferes with my ability to write (for example, writing letters, completing forms).
14. My tremor interferes with my ability to use a typewriter or computer. NA _____
15. My tremor interferes with my ability to use the telephone (for example, dialing, holding the phone). _____
16. My tremor interferes with my ability to fix small things around the house (for example, change light bulbs, minor plumbing, fixing household appliances, fixing broken items). _____
17. My tremor interferes with dressing (for example, buttoning, zipping, tying shoes). _____
18. My tremor interferes with brushing or flossing my teeth. _____
19. My tremor interferes with eating (for example, bringing food to mouth, spilling). _____
20. My tremor interferes with drinking liquids (for example, bringing to mouth, spilling, pouring). _____
21. My tremor interferes with reading or holding reading material. _____

Psychosocial

22. My tremor interferes with my relationships with others (for example, my family, friends, coworkers). _____
23. My tremor makes me feel negative about myself. _____
24. I am embarrassed about my tremor. _____
25. I am depressed because of my tremor. _____
26. I feel isolated or lonely because of my tremor. _____
27. I worry about the future due to my tremor. _____
28. I am nervous or anxious. _____
29. I use alcohol more frequently than I would like to because of my tremor. _____
30. I have difficulty concentrating because of my tremor. _____

APPENDIX D – ETHICS FORM

	CHECKLIST OF INSTRUCTIONS FOR STUDENTS	✓
1	Complete Section 1 to Section 13	
2	Electronically sign and date	
3	Participation information form	
4	Participation consent form	

Jing BTEC Research Ethics Form

BTEC Level 6 – Professional diploma in advanced clinical sports massage

1

Section 1: to be completed by student

Student's name:	Sheree Phelps
BTEC Year-group:	2022-2024
Date of application:	29/04/2023
Student email address:	sheree@podiumtherapies.co.uk
Title of research project:	Evaluating the effect of Myofascial release on Parkinson's related tremor

Section 2:
Does your project involve any primary research using human subjects?
Please delete as appropriate.

	YES	NO
Does your project involve any primary research using human subjects?	Y	
If yes, does it involve children under 16?		N
If yes, does it involve children under 18?		N
Other vulnerable populations (i.e. mental illness, aged subjects)?		N
Does your project involve NHS patients, NHS staff or Local Authority Service Providers? *If yes, you must obtain 'external ethics approval' for your proposal before the form can be signed-off by 'Jing' and before you can start your fieldwork.*		N
Are you planning to use deception?		N
Are you collecting sensitive personal data such as sexuality, mental health data, etc?		N

Does your project make use of a validated questionnaire? **PDQ Exercise - Oxford University** **QUEST - Movement disorder society, USA** **Both under license and permission letters obtained**	Y	
Does your project make use of a new/adapted questionnaire or semi-structured interview checklist?		N

Section 3:

Where is your research being undertaken? Podium Therapies, 135 Maindy Road, Cardiff, CF24 4HN		
If your research is being undertaken outside of your own premises, do you have written confirmation from the establishment involved? If yes, please provide evidence. All hands on treatment will be within my clinic at the above address. I rent my room from within the gym and have a rental contract. Therefore, no further written confirmation will be needed.	YES	

Section 4:

How will you recruit subjects for this research study? Current clients with Parkinson's disease from Podium Therapies. Reaching out via email, social media and contacts to local Parkinson's sports clubs

Section 5:

How will you manage participant confidentiality? Ensure that the information refers to GDPR and is compliant with this legislation.

Use the guidelines of GDPR already in use in my clinic, for example:

- All personal information will be kept in paper format, and in a locked fireproof filing cabinet in a locked clinic room.
- No personal information will be shared with any third parties, unless agreed by the client.
- Clients will only be contacted in the form of email / phone / text, to what they have previously agreed.

Section 6:

1. Outline your project procedure

The study will be a within-subjects design, a 6-week control period (Weeks 1-6) to compare against a 6-week hands on myofascial release massage blend of protocols, to help reduce the symptoms of Parkinson's related tremor (Weeks 7-12).
Each subject will be given a half hour consultation in person or via zoom 1 week before the control period starts. This will be to benchmark and take a full consultation of each client. This will also allow time to explain how each treatment will be given, how and when to fill in the questionnaires and for the participant to give consent to the study.
The questionnaires will be as follows:

PDQ EXERCISE: 1st day of control period - 1st day of hands on period, last day of hands on period and one month after the last day of the control period, to see if results held. The PDQ will take approximately 5-10 minutes to complete.
QUEST Questionnaire: 1st day of each week of control period and the day before the treatment for the hands on periods. Total 12 times and once one month after the last day of the control period, to see if results held.
The QUEST questionnaire will take approximately 10 - 15 minutes to complete.

The techniques will be a blend of the myofascial direct and indirect techniques and structural release techniques taught.
Week 7: The chronic pain protocol will be used in line with the Jing HFMAST protocol.
Weeks 8, 9 and 10 will be the structural release protocol.
Weeks 11 and 12 are myofascial release techniques specific to the leg or arm affected by Parkinson's. Including acupressure points.

Each treatment will be 1 hour of hands on, with 5-10 minutes either side to allow for pretreatment discussion and post treatment dressing and discussion or questions.

2. Briefly describe, **what your participants** have to do

E.g. will they be interviewed? Where, for how long? Will they complete a Questionnaire? Will they receive a treatment intervention? Will they be involved in a group discussion?

Each participant will first of all have a consultation with the researcher to explain the process, ask any questions and give consent to take part in the study, according to Section 1.

Throughout the study, please advise the therapist if there are any medication changes or major lifestyle changes.

For week 1-6, there is no intervention but participants will complete the PDQ questionnaire at the start of week 1 this will take 5-10 minutes to complete. The QUEST questionnaire will be completed at the start of each week for weeks 1-6. This will take 10-15 mins to complete.

Weeks 7-12, will attend once a week, 1 hour hands on treatment. The questionnaires will remain the same with 1 x PDQ Exercise questionnaire at the beginning of the hands on period, and 1 x PDQ Exercise questionnaire at the end of the hands on period. The QUEST questionnaire the day before each treatment. The week 12 QUEST Questionnaire will be sent in 1 week past the 6th treatment.
Week 16, participants will repeat both questionnaires.

Section 7:

What sort of materials or stimuli will your participants be exposed to?		
	YES	**NO**
Questionnaires	Y – QUEST and PDQ Exercise	
Pictures (will you take a photo of participants)		N
Sounds	Y – clinic background music	

Words	Y – generalized clinic conversation	
Other	N	

If using a questionnaire you are required to attach an example.

For 'Other' please elaborate:

Massage fusion book by Rachel Fairwater and Meghan Mari and protocols from the Jing Myofascial release intensive course.

Section 8:

What sort of people will the subjects be? E.g. people with non-specific back pain, women above 55 years or people diagnosed with osteoarthritis

People of any age or gender, with an official diagnosis of Parkinson's disease. The only condition is that they play a sport or have a regular exercise routine. They can be on medication, have been diagnosed for any length of time, but no change in medication changes during the 6 week control and 6 week hands on period.
If during the study period, they need to change medication or any other major lifestyle factor for any reason, please inform the researcher.

Section 9:

If your research study involves minors, how will you obtain participation permission and who is the responsible adult?

N/A

Section 10:

Special Issues. Give brief details of other special ethical issues and the controls you will put in place to minimize ethical risk. All participants will provide informed consent and have full confidentiality throughout and after the research. If there are any signs of worsening symptoms, increased disorganization or cognitive deterioration, I will speak to the subject and advise them to speak to their consultant or G.P immediately.

Section 11

What procedures will you follow in order to guarantee the confidentiality of your participants' data? Personal data will be kept within guidelines of GDPR. Data will be anonymized and participants given a number.

Section 12

Does any of the following apply to your research study?	YES	NO
It requires participants to give information of a personal nature	Y	
It involves minors or other vulnerable individuals;		N
It involves paying participants or an alternative incentive to participate		N
It could put you or someone else at risk of injury.		N

Section 13:

I understand that I can only start my project, once this ethical application has been approved. This applies to ALL projects, whether using human participants or not.	YES	

Student's handwritten signature:

Sheree Phelps

_____

(To be completed, once ethical approval has been provided)

Print Name:

Sheree Phelps

Date: 17/05/2023

IMPORTANT

Consent

Informed consent must be obtained for **all** participants before they take part in your project. The Consent Form (example below) should clearly state the parameters and content of the research. It should explain what is expected of the participants and what they will be doing. It should draw specific attention to any elements that could conceivably cause subsequent objections, and the measures you are taking to ensure the confidentiality of their data. It should also state that the participants are free to withdraw from the study at any time. Studies carried out in schools require the permission of the head-teacher, and of any responsible adults as per the head teachers' recommendation. Minors aged over 14 years should also sign an individual consent form themselves. If you are planning to carry out a project whereby you will be in contact with minors, you must establish from the head-teacher or other responsible adult whether the work proposed will require you to have the relevant DBS disclosure. Please seek advice from your Local Authority.

You must complete a consent form for every participant involved in your study.

APPENDIX E – PARTICIPANT INFORMATION LETTER

PROJECT TITLE: Evaluating the effect of Myofascial release on Parkinson's related tremor

STUDENT NAME: Sheree Phelps
STUDY LOCATION: Podium Therapies, 135 Maindy Road, Cardiff, CF24 4HN
Tel: 07540864380
email: sheree@podiumtherapies.co.uk

INFORMATION FOR PARTICIPANTS

Important
Please be advised that you can withdraw your participation from this study at any time. There is no need to submit a reason and there will be no consequences to you as a result of withdrawing.

What will be expected of you, the participant?

- That you have an official diagnosis of Parkinson's disease from a Doctor/ Consultant and have a Parkinson's disease related tremor.
- That you participate in a sport or have a regular exercise routine and that you keep this consistent for a period of 12 weeks.
- That you are prompt and on time for all treatments and fill in the relevant questionnaires, listed below.
- To be as honest on all questionnaires submitted to give this research project as accurate results as possible.

What does the initial consultation and research study involve?

- A 30 minute face to face or online consultation the week before the control period starts. This will be to explain the process and questionnaires.
- To complete the PDQ questionnaire once at the start of the control period.
- To have a six week control period with no intervention.
- To complete the QUEST Questionnaire once a week during the 6 week control period.
- Then a six week hands on treatment period. Each treatment will be 1 hour of hands on, with 5-10 minutes either side to allow for dressing/ undressing and pre and post discussion.
- To complete the PDQ Exercise questionnaire once at the beginning of the 6 week hands on period.
- To complete the QUEST Questionnaire each week, the day before

treatment, during the hands on period and 6 days after the final hands on treatment.

- To complete the PDQ Exercise questionnaire at the end of the 6 week hands on period.

- To complete both PDQ Exercise and QUEST questionnaire one month on from the last hands on date to see if results hold.
- To inform the researcher at any time during the 16 weeks of the study if you have to take any new medication or start any new therapy treatment.

Are there any risks involved?

There is a small risk that your tremors might not improve or be slightly worse.

What are the potential benefits to you; the participants?

That your Parkinson's related tremor decreases or changes for the better. Although Parkinson's is a degenerative disease, the results of this research project may help with treatment plans for future flare ups.
To help the Parkinson's community further its research into holistic approach treatments.

How the results of the study will be used

Your data will be mathematically analysed together with all the other participants' data, and the findings from this analysis will be communicated to the project supervisor and possibly other practitioners. Communication of the findings may be in the form of all / any of the following: a dissertation, reports in scientific journals, articles in newsletters, and presentation at a conference.

Confidentiality

All data and personal information will be stored securely in accordance with the terms of the General Data Protection Regulation (GDPR), 2018, and will be accessible only by **Sheree Phelps.** After completion of the study, all data will be made anonymous (i.e. all personal information associated with your data will be removed). Your data will be anonymous in any written reports, articles, and presentations of the results of the study.

What to do now you have decided to participate

If you would like to participate, please return a completed consent form to **Sheree Phelps.**
If you have any further questions, please contact me on the telephone number or email address below.

Sheree Phelps -Podium Therapies
07540864380 sheree@podiumtherapies.co.uk

APPENDIX F – PARTICIPANT'S CONSENT FORM

PARTICIPANT CONSENT FORM

Title of study: Evaluating the Effect of Myofascial Release on Parkinson's related Tremor

Name of participant:

- I have read the information sheet about this study
- I have had an opportunity to ask questions and discuss this study
- I have received satisfactory answers to all my questions
- I have received sufficient information about this study
- I understand that I am / the participant is free to withdraw from this study:
  - At any time (until such date as this will no longer be possible, which I have been told)
  - Without giving a reason for withdrawing
  - That I am free to refuse to answer any question without saying why
  - That the services I am receiving will not be affected whether I participate or not.
- I understand that my research data may be used for a further project in anonymous form, but I am able to opt out of this if I so wish, by ticking here.
- I agree to take part in this study

Signed (participant)	Date
Name in block letters	
Signed (parent / guardian / other) (if under 18)	Date
Name in block letters:	
BTEC students contact details (including telephone number and e-mail address): **Sheree Phelps 07540 864380 sheree@podiumtherapies.co.uk**	

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Section 3: Jing 's assessment (to be completed by Jing)

EITHER:
This project is not designed to include fieldwork with human participants. Insofar as secondary data are to be used, I am confident that appropriate procedures are in place for data protection and non-disclosure of any personal or confidential data.

Signature: .....date: .....

OR:
This project is designed to include fieldwork with human participants.
(please circle yes or no)

YES All necessary statutory, legislative or other formal external approvals have been obtained (e.g., permissions, police checks, external research ethics and governance approvals in the case of research involving NHS staff or patients or Local Authority service providers or users).

YES The design of this study ensures that the dignity, welfare and safety of the participants will be ensured and that if children or other vulnerable individuals are involved they will be afforded the necessary protection.

YES I am confident that participants will be given all necessary information before the study, in the consent form, and after the study if necessary.

YES I am confident the participants' confidentiality will be preserved.

YES I consider that any risks involved to the student, the participants, and any third party are minimal.

YES I consider that Departmental approval should be given, since ethical risks have been appropriately addressed in the proposal and I am confident that steps will be taken to minimise any risks.

Signature: .....  **..... date: ...25/5/23.....**

If a second opinion was sought from a research ethics expert, the advisor should also sign this form below:
Advisor's name (please print):

Advisor's signature: ..... date: .....
Once the Jing's signature has been obtained, the student must return the completed form to the Jing Office.

APPENDIX G – PARKINSON'S DISEASE SYSMPTOMS

Motor Symptoms	Non-Motor Symptoms
➢ Tremor (hands, arms, legs, jaw or head) ➢ Muscle rigidity ➢ Bradykinesia (slowness of movement) ➢ Impaired balance and coordination ➢ Dystonia (muscle Spasms/ contractions) ➢ Dyskinesia (involuntary movements) ➢ Muscle Cramps ➢ Festinating Gait	➢ Physical Fatigue ➢ Cognitive Fatigue ➢ Low Blood Pressure or Orthostatic Hypotension (low blood pressure on standing) ➢ Bowl and Bladder problems ➢ Restless legs ➢ Disturbed sleep ➢ Skin and sweating problems ➢ Sialorrhea (saliva control) ➢ Difficulty in eating and swallowing ➢ Dental issues ➢ Dysarthria, (speech/communication problems) ➢ Hypomimia (masked facial expression) ➢ Eye problems including diplopia ➢ Pain, musculoskeletal ➢ Loss of smell ➢ Anxiety ➢ Dementia ➢ Depression ➢ Hallucinations and delusions

(American Parkinson's Disease Association, 2023)

APPENDIX H – UPDRS – UNIFIED PARKINSON'S DISEASE RATING SCALE

The **UPDRS** is another scale that looks at more than the ability to move and live alone, as well as non-motor symptoms. Doctors use it to monitor the response to medicines used to improve the signs and symptoms of PD. The UPDRS contains four parts:

- **Part 1 –** Mentation (thinking), behaviour, mood
- **Part 2 –** Activities of daily living
- **Part 3 –** Motor function
- **Part 4 –** Complications of therapy

Parts 1 to 3 are scored on a 0 to 4 rating scale. Part 4 is scored with yes and no ratings. Higher scores indicate increased severity of PD. Once parts 1 through 4 are completed, a doctor can then complete the Y-H staging system.

The Movement Disorder Society revised this scale to create the MDS-UPDRS. This new scale has the same format as the original. However, it is reorganized and emphasizes the non-motor symptoms of Parkinson's. It includes more symptoms such as depression, dementia, and nervous system function. These scales were created to be more thorough than H-Y staging.

The four parts of the MDS-UPDRS include:

- **Part 1 –** Non-motor experiences of daily living
- **Part 2 –** Motor experiences of daily living
- **Part 3 –** Motor examinations
- **Part 4 –** Motor complications

Parts 1 through 4 of the MDS-UPDRS are scored on a 0 to 4 rating scale. Higher scores indicate increased severity of PD. The MDS-UPDRS also specifies whether a caretaker or person with PD is answering the questions. (International Parkinson and movement disorder society (no date).

APPENDIX I – ADAPTED MFR RELEASE PROTOCOL

In prone position

- Grounding between client and therapist.
- Amma across full body.
- Fascial leg pulls and arm pulls.
- Use of hot stones across back, arms and hands.
- Cross hand stretches across traps, lower to upper back along spine.
- Skin rolling across traps, levator scap, rhomboids, erector spinae muscles.
- J strokes and thumb fascial stretches along transverse spinal processes.
- Focused cross thumb stretches on any adhesion sites.
- Cross hand arm stretches across infraspinatus.
- Cross hand stretch across back of triceps.
- Ringing of the traps and latts.
- Ringing of arms – triceps/ bicep and forearms.
- Direct hand and arm fascial work around carpel tunnel, flexors and extensors and palm of hand.
- Finish with hot stone sweep of all areas worked.

In supine position

- Fascial leg pulls and arm pulls.
- Use of hot stones across chest area, arms and hands.

- Cross hand stretch across peck muscles.
- Fascial release on sternum of peck attachment.
- Direct fascial release on peck attachment of the humorous.
- Sub clavicle fascial release.
- Soft fist into pec minor and major.
- Soft fist stripping the deltoids and coracobrachialis.
- Soft fist/ fingers across bicep heads.
- Hot stones to the neck area.
- Neck fascial release around the SCM, Scalenes and collar bone.
- Specific work to the suboccipital muscles.
- Neck fascial holds at occiput.
- Grounding between client and therapist.

APPENDIX J – SUBECTIVE FEEDBACK QUESTIONNAIRE

Did you enjoy the treatments? If yes, please tell me why and wat you enjoyed the most? If you did not enjoy or like something, please tell me how I could improve or make changes for you.

P1: "Yes most definitely, could feel the tremor improve during the treatment and enjoyed discussing how we were progressing, and taking away some hints and tips to use at home."

P2: "I very much enjoyed the treatments. I found the atmosphere really relaxing and was able to switch off from the normal craziness."

P3: "Yes, I enjoyed the relaxation of not having tremors for a short period."

P4: "Yes, really enjoyed the treatments and I found them very relaxing. Enjoyed the use of the hot stones the most."

P5: "Yes, I enjoyed the treatments immensely! In fact, unlike many other forms of treatment I have had or am having, I actually looked forward to attending the sessions! Regrettably, many people with PD develop an "I can't be bothered," apathetic attitude towards the various forms of exercise and other ways of slowing down the inevitable decline in their motor (and non-motor) symptoms. However, I approached the treatments with a growing sense of anticipation and optimism that the massage therapy would help me find some permanent relief from the neck and back pain caused by my worsening Parkinson's "stoop" and Sciatica. The thing I enjoyed the most was getting off the couch after the massage sessions and standing there, much more relaxed and free of pain! Such a shame that this didn't last until the following morning!"

Did you feel the tremor changed during the massage? Better? Worse? More frequent, lesser movements etc?

P1: “Was less frequent during the massage, usually only coming on towards the end of the hour.”

P2: “My tremor is quite mild. There was an overall marginal but tangible over the period of the trial.”

P3: “Better.”

P4: “Yes, in general the tremor decreased during the massage and became less frequent with little movement. The only time I experienced some increase in tremor is when my right forearm was being treated.”

P5: “Definite change for the better during the massage - no noticeable tremors at all.”

Did you feel the tremor changed after the massage? Better? Worse? More frequent, lesser movements etc?

P1: “Didn't seem as pronounced after the massage, partly due to feeling more relaxed too.”

P2: “Yes it got better.”

P3: “Returned to normal.”

P4: “Yes, the tremor was eased and less visible directly after the massage.”

P5: “Changed for the better immediately after the massage, but only for a short time - maybe 1 hour of no tremors - but returned to “normal” intensity by c. 3 hours.”

Did it change anything about your weekly exercise activities? Easier movement? Less worried about the tremor interfering?

P1: “Definitely improved overall movement throughout the week, and the tremor was less pronounced.”

P2: “I seem to be more relaxed and slept better. Exercises marginally easier.”

P3: “No.”

P4: “Unfortunately although the treatment temporarily eased my tremor, I didn’t notice any change over the week to my exercise activities.”

P5: “No change in exercise programme.”

If you choose to come back for future treatments, what would be the main reason be?

P1: “Combination of improved PD symptoms, improved posture and flexibility, along with the chance to relax and destress.”

P2: “The whole experience orchestrated by Sheree was highly professional from the outset.”

P3: “Relaxation and to try acupuncture.”

P4: “To experience the short-term relaxing benefits and reduction in my tremor.”

P5: “Definitely will return as part of a new, more intensive exercise programme for the New Year. Also, to try and ease the sciatic pain.”

Would you recommend massage to other living with Parkinson's disease? If so, why?

P1: "100% not just to help classic PD symptoms but general relaxation and well-being. Sometimes we think about PD all the time so anything that breaks that cycle has to be beneficial."

P2: "Yes, for the reasons stated above."

P3: "Definitely, tremors are exhausting, and relaxation is key."

P4: "Yes, although I only noticed a short period of improvement from the treatments, I believe massage can help PD sufferers long term with stiffness and tremor issues."

P5: "I would certainly recommend massage to others, and - subject to negotiations on costs - would recommend the therapy for inclusion in a potentially major exercise project being developed by Cardiff Branch of Parkinson's UK."

If you could change anything about the treatment, what would it be? Environment? Pressure etc?

P1: "Everything worked really well for me."

P2: "Nothing needs to change."

P3: "No, it was all an education for me in relaxation."

P4: "Personally I would prefer more pressure applied during the treatments."

P5: "The massage therapy was quite gentle - maybe a brief element of more stretching, deeper moves might be beneficial. The environment was okay - couldn't be described as luxurious! but more importantly, was very welcoming, friendly, and cheerful!"

Please let me know any criticism about any stage of the research project, from recruitment to emails etc?

P1: “From my perspective all the recruitment and admin was smooth and easy, broken down well, clearly explained and the folder was so handy.”

P2: “None.”

P3: “None.”

P4: “No criticisms.”

P5: “More objective measures to assess benefits.”

Please let me know any changes I could make or suggestions for future research.

P1: “Maybe add a review point halfway through so you could pivot if needed.”

P2: “None, more of the same.”

P3: “The PD tremor is electrical @ 5mHz, could this be added to massage therapy at pressure points?”

P4: “Playing the patients music and personally for me more pressure applied during the treatment.”

P5: “In the (much) longer term, the use of multiple wearable motion sensors, with the resulting masses of data being analysed by artificial intelligence (AI) techniques, could identify which types of massage are having the most beneficial results for people with Parkinson’s. Additional/alternative therapies, e.g. acupuncture, mindfulness, Tai Chi, etc.”

APPENDIX K – THE JING PROTOCOL - HFMAST

HEAT – The application of heat, such as hot stones, relaxes and warms tissues, preparing then for deeper work. It allows the person to relax and has a calming effect, reducing pain intensity.

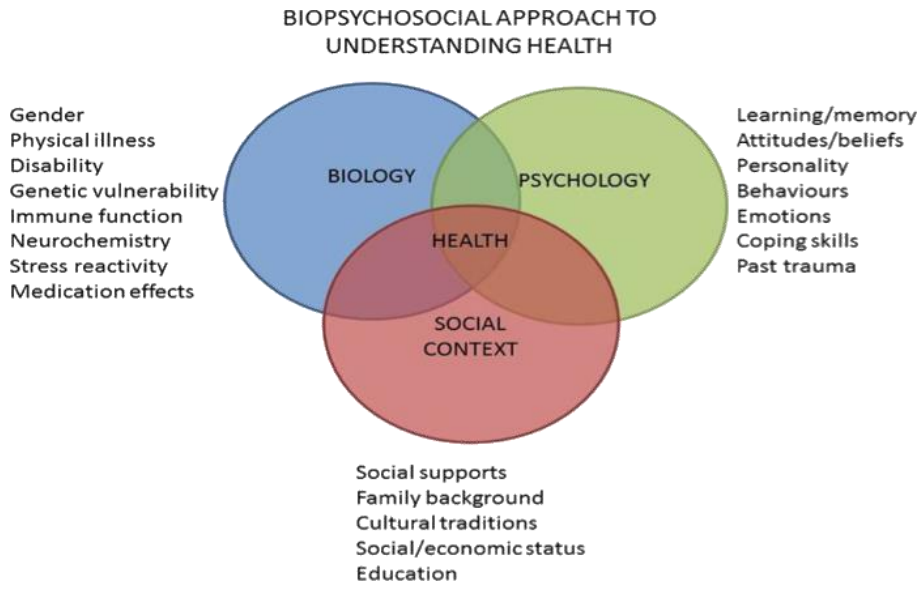
FASCIA – Fascia work is done without the use of oil or wax. Fascia work restores mobility to the connective tissues surrounding the muscles and joints.

MUSCLES – Trigger points in the muscles are known to cause or contribute to the pain or lack of range of motion the client is feeling. They can cause referral pain patterns. Reducing trigger points by stripping the muscle and working with the trigger points can reduce pain and increase range of motion.

ACCUPRESSURE – An Eastern practice, targeting meridians to release blocked Qi (energy), believed to be a source of ill health. HFMAST integrates Eastern and Western techniques for a holistic pain management approach.

STRETCHING – Stretching in a treatment is about increasing range of motion and helps teach the client to continue at home. There are several types of stretches used for different benefits of the client.

TEACHING – Self-care educates individuals and ranges from rehabilitation to mindfulness. It empowers the client and moves away from being wholly dependent on passive treatments.



APPENDIX L – HOEHN – YAHR STAGES OF PARKINSON'S DISEASE

Stage 1.0: Unilateral involvement only.

Stage 1.5: Unilateral and axial involvement.

Stage 2.0: Bilateral involvement without impairment of balance.

Stage 2.5: Mild bilateral involvement with recovery on retropulsion (pull) test.

Stage 3.0: Mild to moderate bilateral involvement, some postural instability but physically independent.

Stage 4.0: Severe disability, still able to walk and to stand unassisted.

Stage 5.0: Wheelchair bound or bedridden unless aided.

(Clarke, 2016)