Evaluating the effects of the Jing method of clinical massage on joint pain in people with Hypermobility

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

March 2024

Total word count: 4465

"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 Jing Advanced Massage Training. I also declare that this work is the result of my own investigations except where otherwise identified by references and that I have not plagiarised the work of others".

Jayne Drew Jayne E Drew

Date: March 2024

ACKNOWLEDGEMENTS

To my husband, I never knew unconditional love until I met you, thank you for always being there for me.

To my beautiful daughters, you are shining lights in this world, thank you for your love and help, I couldn't have done it without you.

To Theo Nanny loves you always.

To Jenny and Paul whose friendship and love is unfailing, your help means the world to me.

To the directors of Jing Rachel and Meghan for the foresight and amazing knowledge that they have and give so selflessly, thank you for giving me the confidence to carry on.

To all the fantastic teachers but especially Susan, thank you for all your kindness, knowledge, and care, you are a very special lady.

To all my fellow BTEC students thank you for the friendship and fun, it's been a blast!

A big thankyou to you all, you have made this amazing journey so much smoother and fun.

Jayne Drew 2024

CREATIVITY PAGE

Hypermobility

It’s always there, never free a dull ache pain always gnawing at me,

Fear of falling, broken again, joint dislocation, more and more pain.

Are there stairs? Avoid them please, what if I fall, bother these knees.

What shoes can I wear that won’t trip me up to further that pain or is it bad luck.

People smile at my tricks, yes, my thumbs do this! Yes, I’m supple, bendy, flexy, can wrap my foot around my neck, what the heck!

Subluxing shoulders, elbows, thumbs, ankles, hips, and knees, what can I do to stop this please.

No one to help, understand or care, or give me a pathway to get me there.

But small slow steps can be taken to try, to change people’s thinking and tell them why,

we need to be listened to, treated with care, and helped holistically to get us there.

Jayne Drew 2024

ABSTRACT

Hypermobility is a "connective tissue disorder, characterised by musculoskeletal pain due to joint hyperextensibility".

Hypermobility syndrome disorder (HSD) still seems to be misdiagnosed, poorly understood and mismanaged by the medical professions.

The aim of this study was to evaluate the effects of the Jing method of the multi modality approach using the Stress and chronic pain protocol in individuals with hypermobility.

METHOD

A group of 4 people were recruited to take part in the study that would take 12 weeks with a follow up at week 16, to see if the results had a lasting effect. For 6 weeks the participants followed a control phase where they answered the Bristol impact of hypermobility questionnaire on weeks 1,3,5,7,9 and 11 and a follow up on week 16, then a simple numeric pain scale score was sent out on weeks 2,4,6,8,10 and 12. The intervention was a 55 minute hands on treatment using the Jing Chronic stress and pain protocol. The participants were also given a meditation and isometric strengthening exercises for weeks 7-12.

CONCLUSION

The results of the study showed that the Jing method of clinical massage was effective with a pain reduction of 40% on the numeric pain scale score and a reduction of 37% on the Bristol impact of hypermobility scoring.

The benefits were still seen at week 16 but had started to decline, it was thought that this could be due to not having the continued support that had previously been given with the weekly intervention.

The researcher found the results extremely positive, however felt a larger study was needed and further investigation into the biopyscosocial model as 'There is a complex and often self-perpetuating relationship between pain and emotion' (Fairweather & Mari , 2015 pg 35).

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Section 1: ABBREVIATIONS

Abbreviation	Definition
HSD	Hypermobility syndrome disorder
hEDS	Hypermobile Ehlers Danlos syndrome
JH	Hypermobile joint
LJH	Localised joint hypermobility.
PJH	Periperal joint hypermobility
JHS	Joint hypermobility syndrome
BS	Beighton score
GJH	Generalised joint hypermobility.
BIOH	Bristol impact of hypermobility
MFS	Marfan syndrome
IBS	Irritable bowel syndrome
TMD	Temporomandibular joint disorder
CWP	Chronic widespread pain
CBT	Cognitive behavioural therapy
TENS	Transcutaneous electrical nerve stimulation
NSAIDS	Non steroidal anti-inflammatory drugs
MSK	Musculoskeletal
PNF	Proprioceptive neuromuscular facilitation
BSP	Biopsychosocial model
GAD	Generalised anxiety disorder
ED	Ehlers danlos

Section 2: LITERATURE REVIEW

Evaluating the effects of the Jing method of Clinical massage on joint pain in people with Hypermobility.

Hypermobility is a "connective tissue disorder, characterised by musculoskeletal pain due to joint hyperextensibility"(Kumar & Lenert, 2017). It affects about 3% of the population, according to a 2013 UK poll of 12,853 individuals (Simmonds et al., 2019). This is a prevalence rivalling gout, fibromyalgia, and rheumatoid arthritis (Kumar & Lenert, 2017).

Hypermobility syndrome disorder (HSD) still seems to be misdiagnosed, poorly understood and mismanaged by the medical professions (Grahame, 2013) and its prevalence is expected to be much higher (Simmonds & Keer, 2007).

Childhood symptoms such as clumsiness, frequent falls and poor proprioception are important to explore as early recognition can be vital in the management of the condition.

A single joint, a small number of joints, or numerous joints may exhibit hypermobility, which is a range of motion that is deemed excessive, it refers to increased active or passive movement of a joint beyond its normal range, you can have joint hypermobility without having (HSD)(Atwell et al., 2021), it may be linked to substantial impairment, multi-systemic symptoms, and discomfort. Joint hypermobility may also be a symptom of a connective tissue condition that is hereditary (Simmonds, 2022).

Classification of hypermobility

There is confusion surrounding the terminology used with hypermobility. Key terms that are used are shown in table 1. In 2017 at Ehler-Danlos Syndrome consortium, the nosology for Hypermobile Ehlers Danlos Sydrome (hEDS) was created as a research criteria rather than a verified diagnostic criteria, as yet the UK bodies have not yet adopted it. However, it is a source of reference for people experiencing hypermobility issues.

Table 1 Terminology associated with different hypermobile conditions and a brief definition (adapted from Where we are at with diagnostic terms hEDS,HSD,JHS and hypermobility 2021)

Terminology	Acronym	Definition summary
Hypermobile Ehlers- Danlos Syndrome	hEDS	Signs of faulty connective tissue throughout the body, skin features, hernias, prolapses, family history of the condition and musculoskeletal problems.
Hypermobile joint	JH	Excessive motion of a joint in the normal plane.
Localised joint hypermobility	LJH	One or a few joints, typically fewer than five.
Peripheral joint hypermobility	PJH	Only the hands and feet exhibit peripheral joint hypermobility.
Joint Hypermobility Syndrome	JHS	Affects all four limbs as well as the axial skeleton, it is frequently congenital, or hereditary.
Hypermobility Spectrum Disorders	HSD	Encompass an array of connective tissue disorders characterised by joint instability and chronic pain (Castori et al., 2017).

Click or tap here to enter text.

How is hypermobility measured?

The Beighton Score (BS) is used to define hypermobility. It is a series of 9 manoeuvres using a 9 point scoring system used to define hypermobility and there is debate over whether it really reflects generalised joint hypermobility (GJH) because the joints used in the scoring system are mainly upper body joints, which ignore several key joints (Malek et al., 2021a).

It excludes ankles, hips, and shoulders all of which are likely to be sites of instability, the BS does not assess or address symptomatic hypermobility where there is musculoskeletal or systemic involvement, but its frequent use over decades has kept it as a current tool for diagnosis (McNeill et al., 2018). It does not look at a patient's pain levels.

The Bristol Impact of Hypermobility is a questionnaire consisting of 55 questions which asks about the impact hypermobility has had on the patient's life over the past 7 days such as joint instability, impact and severity of pain, pain with activity and life interference (Alsiri, 2023). When implemented the questionnaire has been evaluated positively by physiotherapists and patients on its validity, acceptability, and feasibility (Palmer et al., 2017).

Table of common symptoms of hypermobility

SYMPTOMS OF HYPERMOBILITY	SOURCE
Marfan Syndrome (MFS) This was initially described over a hundred years ago and is one of the first connective tissue disorders classified as a disorder of connective tissue. MFS is a genetic disorder but can also occur from a mutation of a gene that makes fibrillin which results in abnormal connective tissue. Those with the condition tend to be very tall and thin with very long arms, legs, fingers, and toes, they also have extremely flexible joints and abnormally curved spines.	(Pyeritz, 2003).
Joint pain Joint pain often happens in people with HSD/EDS. It can range from being localised to acute and is associated with tendon or soft tissue inflammation, joint degeneration, fragility fractures; or chronically widespread and neuropathic in nature. The development of chronic pain is sometimes a consequence of HSD.	(Hakim A et al., 2010).
Skin laxity, bruise easily, stretch marks	(Pocinki - Joint Hypermobility and Joint Hypermobility Syndrome — The Zebra Network, 2010).

People who have hypermobility have lax skin due to the connective tissue issues, they also bruise very easily and have poor wound healing.	
Subluxation or full dislocation Joint dislocation occurs in almost 75% of hypermobile, EDS people, while instability of all joints is seen the shoulder seems to be the most commonly affected. Although not all unstable joints are hypermobile.	(Broida et al., 2021).
Gastrointestinal problems People with hypermobility suffer various gastrointestinal issues, reflux, IBS, constipation, these can also be exacerbated by any pain medication given.	(Simmonds et al., 2019). (Lam et al., 2023).
Excessive fatigue, disrupted sleep Many people with HSD suffer disrupted sleep due to the chronic pain they are suffering which can lead to chronic fatigue. The disrupted sleep can often be due to pain levels and the body becoming used to inactivity.	(Chopra et al., 2017). (Hakim et al., 2019).
Anxiety HSD is shown to have associations with depression, anxiety and panic attacks. A Meta-analysis of over 4,000 participants suggests that people with JHS that demonstrate anxiety in adulthood are 4.39 times more likely compared with non-hypermobile people.	(Eccles et al., 2022). (Bulbena, 2017).
Proprioception problems Individuals with HSD often have proprioception problems and motor control deficits leading to clumsiness, frequent falls, trips, or bumping into things.	(Simmonds et al., 2019).
Lack of efficacy with anaesthetics Hypermobile individuals experience problems with the efficacy of anaesthetics. They can encounter not only the risk of the anaesthetic being inefficient, but also added risks of bruising, bleeding due to vascular fragility, skin damage and haematomas occurring during surgery. Careless patient positioning can result in brachial plexus	(Wiesmann et al., 2014).

neuropathy, or mask ventilation could cause Temporomandibular joint dysfunction (TMJ) luxation.	
Recurrent headaches People with lax joints are often predisposed to headaches, they often have chronic neck pain which can cause headaches. TMJ problems also cause headaches.	(Chopra et al., 2017).
Fibromyalgia Chronic widespread pain (CWP), which is defined as pain that is present every day for at least three months, is a highly prevalent symptom of fibromyalgia and JHS. Joint pain is a common symptom of both JHS and fibromyalgia, as are sleep disturbances, joint swelling, neurological symptoms, muscle weakness, gastrointestinal problems, pain function and quality of life, subluxations, joint issues like sprains, inadequate wound healing, and migraines. Fibromyalgia is also included in the definition of CWP.	(Fairweather et al.2023; Hakim A et al., 2010).
Infertility and spontaneous miscarriages Pregnant women can have increased risk of preterm premature rupture of membranes, preterm birth, intra uterine foetal growth restriction and cervical compromise.	(Ozdemir et al., 2020). (Pezaro Sally et al., 2021).
Flat feet, high arches Although this observation is not always true and is still being investigated, many individuals with hypermobile EDS have flat or low-arched feet. Ironically, the foot type can also go the opposite way in certain individuals with a Marfanoid body habitus, leading to an extremely stiff high-arched foot.	(Footcare in Hypermobile Ehlers- Danlos Syndrome - The Ehlers Danlos Support UK, 2010)
Lower back pain Several studies have recognised a link between hypermobility and lower back pain, with a greater incidence found in women. This was generally thought to be due to the greater protective muscle mass in men, however another explanation for this could be that	(Eseonu et al., 2021). (Hershkovich et al., 2022)

excessive joint laxity could lead to mechanical overload on the intervertebral disc and facet joints, that accelerate changes that may result in worsening back pain (Eseonu et al., 2021). Joint hypermobility is considered a potential risk for lower back pain and early spine degeneration. JHS was shown to be strongly associated with lower back pain in adolescents, in a study that used candidates who were formally diagnosed by a rheumatologist.	

Pain management

Pain can vary from person to person with hypermobility as can the symptoms and there are various ways to manage that pain whether it is mild or quite severe.

Successful management of chronic pain requires a multidisciplinary approach such as physiotherapy, Cognitive Behavioural Therapy (CBT), and Transcutaneous electrical nerve stimulation (TENS) machines to block pain signals (Chopra et al., 2017).

The Hypermobility Syndromes Association (2023) writes that hot baths/showers, and hot water bottles can be soothing and relaxing, whilst meditation can also have a calming and therefore relaxing effect on the body. Mobilisation techniques can be useful too. In addition, anti-inflammatory drugs (NSAIDS) can be used in gels and sprays and applied directly onto painful joints to relieve symptoms.

Antidepressants can be prescribed as they have can have a relaxing effect on the muscular system. Hydrocortisone injections are used if the patient is having quite a severe painful episode (Chopra et al., 2017).

Types of exercise for hypermobility

A multidisciplinary team must handle hypermobility early on in order to control the disorders that are associated with it (Simmonds & Keer, 2007). According to research (Engelbert et al., 2017), a large number of professionals and therapists are unaware of the condition's prevalence, clinical presentation patterns, or diagnostic criteria. It is currently believed that the best management is by a multidisciplinary, holistic approach that is patient centred, with pacing.Tthis is the patient understanding their limitations and assessing how much activity is right for them and balancing this with rest and recovery, physiotherapy, and exercise (Engelbert et al., 2017).

Patients become exhausted, which ranges in intensity from mild to extreme and they suffer exercise-induced pain. They frequently cease engaging in activities out of fear of falling or suffering further injuries which results in inactivity and deconditioning and further musculoskeletal discomfort. Urinary incontinence is more common in adult women with JHS, which may make them reluctant to exercise (Engelbert et al., 2017).

Exercises for hypermobility are as follows:

Strength training

Strengthening exercises targeting stabilising muscles around hypermobile joints may improve joint support and reduce pain (Palmer et al., 2014). Being stronger can help to reduce the risk of injuries and provide additional support to joints.

Isometric exercises

These also known as static strength training and involve engaging a muscle for a prolonged period of time without moving, such as when performing a plank. Because they are performed in a single position without moving, they will only increase strength in that one particular position. Isometric exercises can be beneficial for hypermobility as they enhance stabilisation (Palmer et al., 2014).

Pilates

Pilates has always attracted those from movement backgrounds, particularly from dance and gymnastics. A lot of individuals who participate in these activities tend to be hypermobile, most of Joseph Pilates clients were dancers as he had earned a reputation for getting them back onto the stage after injury. Pilates is a slowly progressed graded exercise addressing uncontrolled movements through the full range of movement. Pilates was found to be useful for stability, proprioception and strengthening (Darrington S, 2012; Falgueras, 2016).

Stretching

Patients with HSD/hEDS can experience more imbalance than those with normal joint flexibility due to tight muscles tugging on lax joints. While it is generally not recommended to stretch joints in patients with hypermobility, stretching may be useful in certain cases to treat muscle imbalances while keeping the local joint stable. Physical therapists should refrain from applying any kind of stress to a joint that is

already hypermobile. Proprioceptive neuromuscular facilitation (PNF) can help with hypermobility as it can increase muscle strength (Hindle et al., 2012).

Proprioception training

Proprioception is the body's ability to sense position and movement within joints, it enables us to know where limbs are without looking. Proprioception has been shown to be impaired in adults and children with hypermobility in a number of studies (Palmer et al., 2014), with a large number of adults falling and others verbalising a fear of falling. Individuals with hypermobility can undertake proprioception training exercises such as Thai Chi (which has slow controlled movements, good for balance) and standing balance exercises. Using a gym ball / Bosu ball can also help train proprioception (Exercise and Movement for Adults with Hypermobile Ehlers-Danlos Syndrome and Hypermobility Spectrum Disorders – The Ehlers-Danlos Support UK, 2010).

Massage Therapy

It has been found that there is very little support for soft tissue work as a treatment for hypermobility; instead, physiotherapy is the most frequently recommended and accepted form of treatment. Some articles advise having a trained hypermobility physiotherapist work with the patient.

Although there is very limited research, experts suggest that soft tissue release and trigger point therapy can be helpful in reducing pain and this should be introduced into a programme for people with HSD/ hEDS (Simmonds et al., 2019).

The Elhers-Danlos news writes "Massage therapy may help ease symptoms such as muscle tightness and pain". (Elhers-Danlos news February 2021).

The biopsychosocial model

Appendix 6

Communication is crucial because patients with chronic pain often feel angry and frustrated, they believe that others do not understand or believe in their suffering, leading them to assume that it is not genuine, they catastrophise (Hakim et al., 2010). Many JHS patients receive ineffective therapies after receiving multiple diagnoses (Terry et al., 2015), which leaves them feeling disappointed and angry. "There is a complex and often self-perpetuating relationship between pain and emotion"(Fairweather & Mari , 2015 pg 35).

HSD sufferers frequently refrain from engaging in particular activities out of concern that they will hurt themselves or experience additional pain. This results in worry and anxiety, which in turn fuels further chronic pain (Clark et al., 2023; Bennett, 2020) .

Section 3: METHODS

The study is to evaluate the effects of the Jing method of clinical massage on joint pain in people with Hypermobility. This is within subject design.

Ethical approval was received for the following study from Jing Insitute of Advanced Massage Training. The study was conducted from September through to December 2023.

A group of 6 people were recruited via word of mouth, Facebook, Instagram, a Local Pilates group and an email to all clients on my mailing list. This was done early in September 2023.

All the participants were women aged between 18-45 years, who all had symptoms pertaining to hypermobility and were advised to seek further assistance with aiding these symptoms. 1 person dropped out due to a family crisis before the study started and another person dropped out at the end of the control period due to problems at work. This left four participants for the study.

A follow up session was conducted on week 16 to see how the participants were feeling and to ascertain if there were any long -term benefits from the treatments.

The participants were recruited for a six-week control period with The Bristol Impact of Hypermobility questionnaire (BIOH) (see appendix 1) completed on weeks 1,3 & 5 and on alternate weeks (2,4 & 6) they gave a numeric pain scale rating 1-10. During the intervention period weeks 7-12, the BIOH questionnaire was completed on weeks 7,9,11 and the numeric pain scale on weeks 8, 10 and 12. After the intervention period, participants completed a numeric pain scale in weeks 13,14 and 15 and on week 16 the BIOH to ascertain any longer-term benefits.

The participants attended the researchers clinic to have the study explained to them and consent obtained. There followed a consultation which included medical history and the use of the Beighton scoring criteria to ascertain the level of their hypermobility. Participants needed a score of 4 or more to be included in the study.

For weeks 1-6 the questionnaires were completed to obtain a base level of their pain as this was a within subject's design. During weeks 7-12, the intervention phase, the participants received a 55-minute massage following The Jing Method Chronic Stress and Pain Protocol uses techniques such as cross handed stretches and skin rolling (Full details in appendix 3). Following this, on week 7 the participants were given a recording of The Jing Mindfulness of Breathing: Taking 10 minutes for yourself to use at home for 3 times that week, and then whenever they felt they needed it after that (see Appendix 2). The self care would vary weekly for different areas of the body strengthening.

After each treatment 10 minutes was allocated for self-care strengthening exercises to be demonstrated to the participants and the following day a video of the self-care for that week was sent to the participants detailing the exercises for the participants to refer to (see Appendix 3). These were required to be done 3x weekly and the participants were asked if they had managed to complete the exercises.

The Jing method of Stress and Chronic Pain Protocol was used this encompasses HFMAST. What is HFMAST? This is a fusion of eastern and western techniques (Fairweather & Mari , 2015 pg 5).

H	The use of hot/cold, the use of a heated pad, hot water bottle or hot stones is fantastic for relaxing and warming the soft tissues, desensitising the parasympathetic nervous system and aiding in relaxation.
F	Fascial techniques, the use of direct and indirect fascial techniques, to help with restoring mobility to connective tissue surrounding the muscles and joints.
M	Muscles, treating all the muscles around the affected joint to release trigger points. Trigger points are described by Travell and Simon as a 'highly irritable localised spot of exquisite tenderness in a nodule in a palpable taut band of (skeletal) muscle (Simons et al., 1999) .
A	Treating relevant accupressure points
S	Stretching the use of proprioceptive neuromuscular facilitation (PNF), static and active isolated stretching (AIS) helps increase Range of motion ROM and encourages the client to continue the regime at home.
T	Teach self-care suggestions, within the therapist's scope to help educate the client and enable them to have some tools to help themselves in the long term . These included rehab, self-massage, stretches, breathing exercises Click or tap here to enter text.

The search for articles to support this study has been done using Pubmed and Google Scholar

Section 4: RESULTS

The findings of this study are that overall the participants pain levels decreased with intervention.

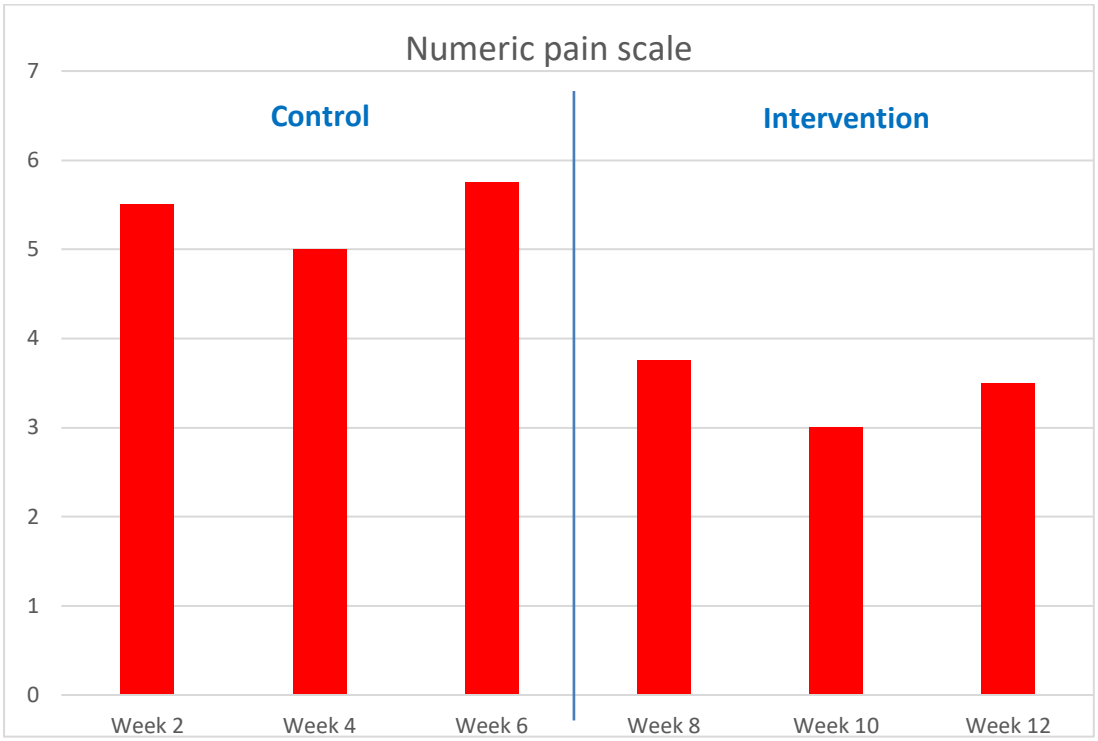
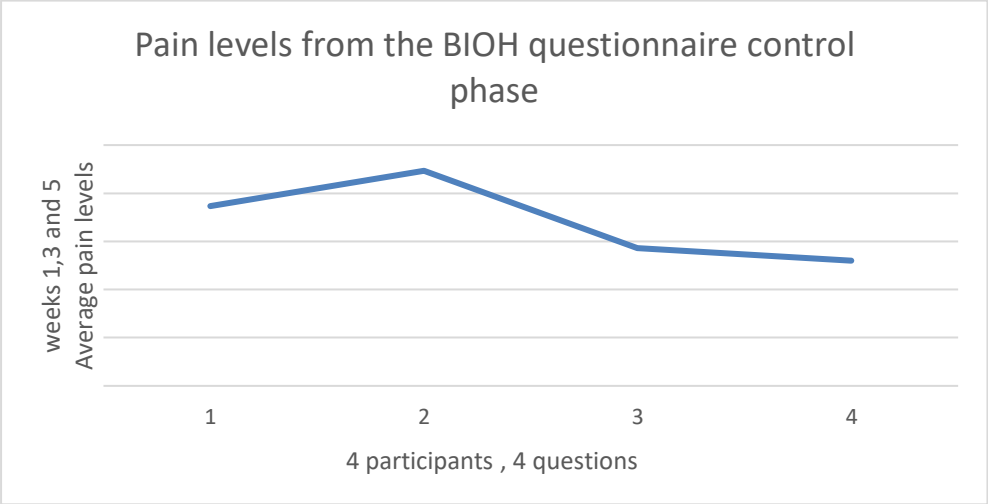


Figure 1 Bar chart demonstrating the recorded numeric pain scale during the control (weeks 2, 4 and 6) and intervention weeks (8,10 and 12)

Figure 1 demonstrates the results obtained from the numeric pain scale questionnaire on a scale of 0-10. The average score given by the participants for each week is shown. The average pain score given across the intervention phase (weeks 8, 10 and 12) was shown to have decreased by 37% in comparison to that given in the control phase (weeks 2, 4 and 6).



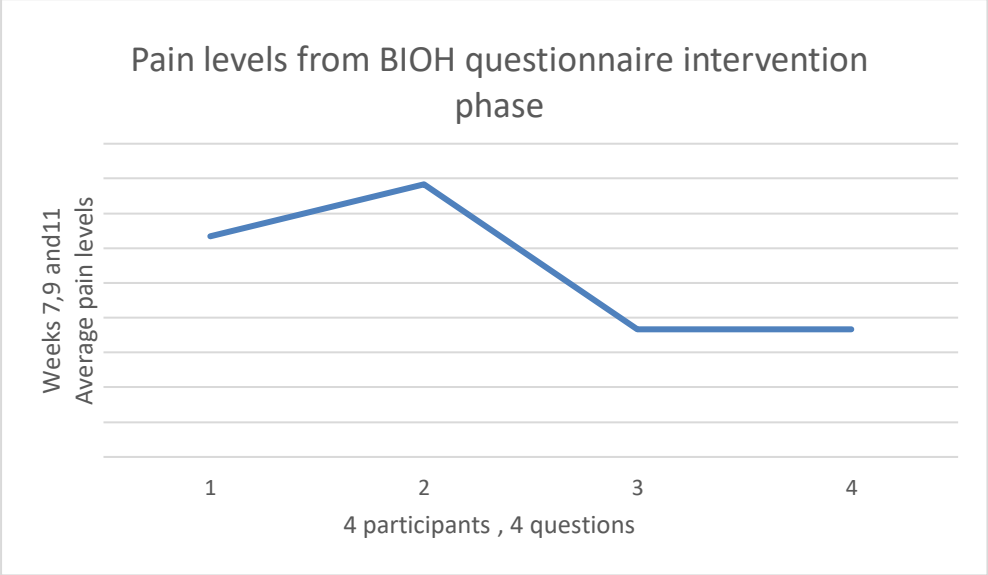


Figure 2 Line graph showing data from the BIOH questionnaire about pain levels. The responses were recorded from 4 specific questions about their pain levels over the last 7 days: 1. Average level of pain, 2. Worst level of pain, 3. Pain when walking and 4. Pain when resting.

The average pain levels recorded by the BIOH questionnaire are demonstrated in figure 2. It shows that the average scores given by participants in relation to their pain levels (questions 1-4) are higher in the control phase (19, 22, 14 and 13 respectively) than the intervention phase (13, 16, 7 and 7 respectively).

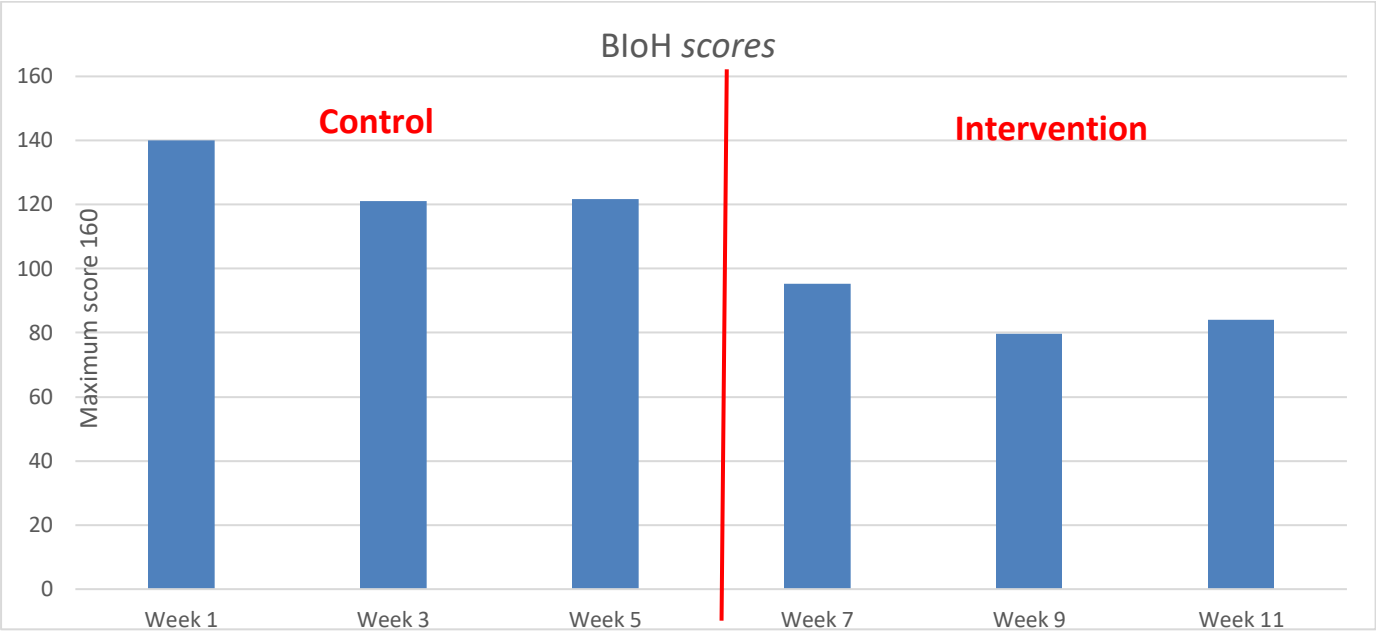


Figure 3 Bar chart demonstrating the recorded scores of the BIOH questionnaire during the control weeks (1, 3 and 5) and intervention weeks (7, 9 and 11).

Figure 3 shows the results obtained from the BIOH questionnaire which asked participants how they felt hypermobility affected their day-to-day life. The average score given by each participant for each week is shown. The average score given across the intervention phase (weeks 7, 9 and 11) was shown to have decreased by 30% in comparison to that given in the control phase (weeks 1, 3 and 5).

Both methods of assessment shown in Figures 1 and 3 show a drop across the first two weeks of the intervention and control periods, which then increases in the final week.

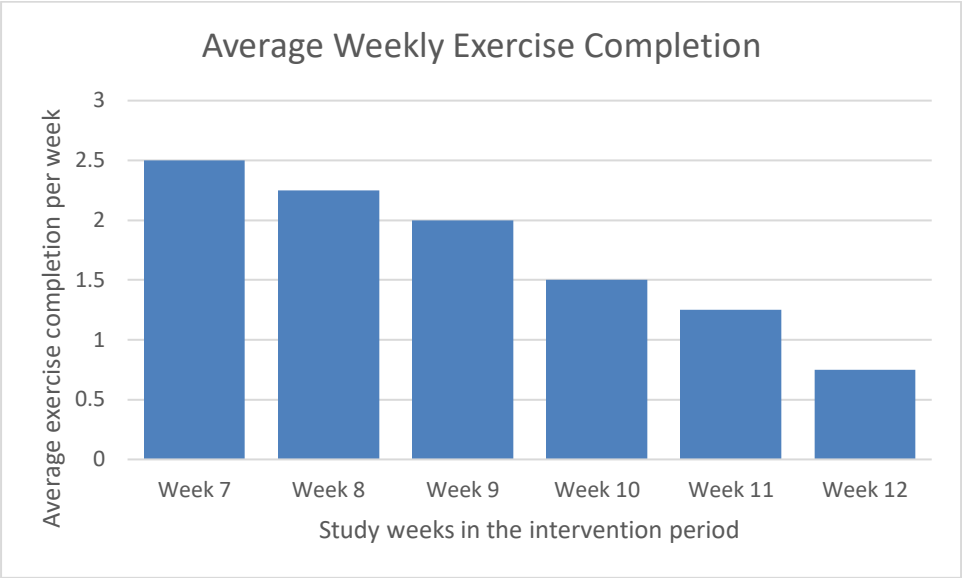


Figure 4 Bar chart demonstrating the average number of times participants completed the exercises given each week of the intervention period.

The number of times the participants completed the exercises shows a steady decline, as demonstrated in figure 4. The highest level of compliance was in week 7 meditation week. All the participants enjoyed this saying it gave them an opportunity to take time for themselves and relax.

Participant feedback during the intervention period indicated that they felt much more confident with activities in their day-to-day life, no one had ever taken an interest or recognised their hypermobility before, so they felt much more supported. The researcher felt that questions 46-48 and 49-55 of the BIOH questionnaire related to the biopsychosocial model (BSP) so conducted further analysis into the responses to these questions (Appendix 4).

The researcher compared week 1 of the control phase and week 7 of the intervention phase, week 3 of the control phase and week 9 of the intervention phase and week 5 of the control phase and week 11 of the intervention phase and then week 16 where there had been no contact for 4 weeks.

For question 46 (see appendix 2) an improvement was seen during each week of the intervention phase in comparison to the control. Whilst question 47 showed a decline across each week of the intervention phase, this did not decrease in comparison to the control phase until week 11. Data from both questions demonstrated an increase in week 16, 4 weeks after the completion of the intervention phase.

Question 48-52 focused on the way the participants felt about themselves and their condition. Across these questions there was a general trend that the score for the intervention week matched or slightly increased from the control during weeks 7 and 9, however by week 11 this had decreased considerably from the score given in week 5 of the control phase. When the BIOH questionnaire was resent on week 16, the scores had increased back towards the levels of the control phase.

Questions 53-55 looked at how the participants felt about the condition of their body. Whilst the BIOH scores decreased across the intervention period, there was no clear trend between the control and intervention phases until the final weeks (5 and 11), where the scores were much lower in the intervention in comparison to the control. Again, the scores had increased by week 16 once the intervention phase had ended.

Section 5: DISCUSSION

The aim of this study was to evaluate whether the Jing Method of chronic stress and pain using HFMAST, helped with joint pain in people with Hypermobility. The findings of the study showed that it was effective.

During the intervention period of the study where a 55-minute massage was given weekly, there was a 37% reduction in pain from the control period recorded in the responses given by participants on the numeric pain scale questionnaire (Figure 1). A similar reduction in pain from the control to intervention phase was shown in figure 2, which demonstrates the average scores from the BIOH questionnaire given by participants in relation to their pain levels. These scores were recorded from 4 specific questions about the participants pain levels over the last 7 days: the level of pain, the worst level of pain, the level of pain when walking and the level of pain when resting.

A Jing therapist is trained to create a good therapeutic alliance with their clients (Fairweather & Mari , 2015 pg 56). They will create a calming and therapeutic massage designed to soothe the parasympathetic nervous system, which consequently helps with chronic pain. Ferreira et al. (2013) described that "the quality of the actions between patients and clinicians predicts the outcome of treatment for a variety of diseases". However, very little evidence has been found in previous studies highlighting the use of massage as a modality for alleviating the chronic pain surrounding Hypermobility.

The table below shows the reasons to get a massage as stated in the following publication (Consumer Views & Use of Massage Therapy | AMTA, 2018).

It shows the positive effects that massage has in reducing pain and how it is beneficial to overall health and wellbeing.

TOP REASONS FOR GETTING A MASSAGE IN 2022	REASONS TO GET A MASSAGE
95% of individuals surveyed viewed massage as being beneficial to overall health and wellbeing.	86% of consumers agree that massage should be considered a form of health care.
94% of individuals surveyed believed that massage can be effective in reducing pain.	60% of massage consumers have used massage for health or medical reason in the 12 months ending 2022
25% of respondant's stating they have used massge for pain relief.	24% of consumers had pain relief/pain management in the last 12 months ending June 2022.

The compliance of participants within the study for the exercise routine was extremely variable (Figure 4) and it was felt that if the participants had adhered to the guidelines around the exercise regimes, then the reduction in pain levels and BIOH scores seen in the study could have been reduced and improved. It has been shown that exercise strengthening the muscles around the joint can give more stability and helps to decrease pain levels (Palmer et al., 2014).

The concept of pacing is also important for patients to understand to alleviate the fatigue that patients with hypermobility can experience. Pacing involves gradually increasing the level of activities. A therapist with a good knowledge of HSD is able to structure an exercise programme including the use of pacing to allow the patient to gain the maximum benefit without excessive fatigue.

People with HSD are less likely to take part in exercise activities out of concern that they will injure themselves or experience further pain. In previous studies it was highlighted that a multidisciplinary team was important to promote a holistic approach that is patient centred with pacing and a structured exercise programme specifically designed for patients with HSD (Engelbert et al., 2017). As Hypermobility spectrum disorder (HSD) is considered a multi-systemic condition, "a multi-disciplinary approach would be the most beneficial approach for treatment" (Darrington S, 2012).

Patients in chronic pain often feel angry and frustrated, especially if they have no diagnosis of a condition. They can feel that others do not believe they are in pain or assume what they are feeling isn't genuine. Urinary incontinence is more common in adult women with HSD, which may make them reluctant to exercise (Engelbert et al., 2017). Many people with HSD receive ineffective therapies after seeing multiple clinicians for their varied problems. Often anxiety, stress and depression are seen as unrelated to more traditional musculoskeletal problems, however these are 4 times more likely for people with HDS (Bennett, 2020).

The study also highlighted how the participants areas of pain stayed the same throughout the weeks of the study (Appendix 5). One participant had a slight variability in their pain areas, all the other participants areas of pain stayed the same for the whole of the study. This section was not counted in the overall scores, but it was interesting to see that the areas of pain stayed the same for each participant apart from participant 2 who had a slight variability, but the pain scales shown by the study in the BIOH questionnaire decreased by 37%.

Participant feedback at intervention sessions indicated a link to the BSP model, so the researcher investigated responses given to questions 46-48 and 49-55 of the BIOH questionnaire which were felt to be related to this model (Appendix 4). These questions were looking at how participants felt about their hypermobility and if it had interfered with their daily activities or their desired level of exercise within the last 7 days. The researcher felt it was important to look at this as "chronic physical problems often go hand in hand with emotional pain and stress" (Fairweather & Mari, 2015 pg 25).

All questions showed a decline in the BIOH scores given throughout the duration of the intervention period, with the final week of the intervention period showing a considerable decrease in comparison to the final week of the control phase. This demonstrated that all participants saw improvements to how their hypermobility interfered with their daily lives, how they felt about the condition of their body and how they felt about themselves and their condition when they were receiving the 55-minute massage. This may be due to the calming effect of massage on the parasympathetic nervous system or the fact that the participants felt nurtured and supported knowing someone was listening to their concerns and trying to help them to overcome the chronic pain that they were feeling. The therapeutic alliance created over the intervention weeks may have allowed their anxiety, frustration, pain and fear about the future to subside during this time.

However by week 16, four weeks after the intervention phase had ended, these scores had increased back to levels seen at the beginning of the intervention period or during the control phase. This showed that the participants had already begun to see an impact on their daily lives, feeling worse about their hypermobility and subsequently could be facing fear about the future. The participants would benefit from ongoing support, maybe a self care or online support group.

None of the participants in this study were diagnosed by a GP, specialist treatment centre or Rheumatologist. After being seen by various healthcare professionals for ongoing musculoskeletal problems, they were noted to have indicators pertaining to hypermobility. They were not given any advice or treatment plan, which triggered feelings of anxiety, fear avoidance and catastrophising. Anxiety, fear avoidance and depression are all key symptoms in Hypermobility (Bennett, 2020). Massage has been shown as an effective therapy for anxiety, stress and depression. In addition to the benefits in reducing anxiety, patients with generalised anxiety disorder (GAD) have also been shown to benefit from massage

to alleviate complaints such as muscle tension, fatigue, chronic pain and insomnia, symptoms which have also been shown to be associated with (HSD) (Sherman et al. 2010).

The results obtained in this study suggest and confirm conclusions from previous studies that there is a general lack of awareness and training in hypermobility for GP's and healthcare professionals (Darrington S, 2012, Kumar & Lenert, 2017). Although more recently specialist centres for hypermobility diagnosis are accessible, such as The London hypermobility unit, The Royal National Orthopaedic unit and the UCL London Department of Rheumatology (in which hypermobility is seen under the umbrella of a rheumatologist). Waiting lists and referral times were however a cause for concern and very geographically limited, although patient satisfaction was high noting that physiotherapists and other healthcare professionals at these centres understood the problems that the patients were having (Bennett, 2020).

Recently efforts have been made to improve recognition of HDS within the GP practices with the publication of an Ehlers-Danlos (ED) toolkit, this provides guides for the GPs around the symptoms and management of Hypermobility and indications for further referral (Bennett, 2020). However, with the varying degrees of referrals, lack of diagnoses and the type of care shown to patients in the studies referenced, it seems that there is unreliable and inconsistent care.

Darrington, (2012) wrote that myofascial release and trigger point therapy, along with the strengthening aspect of a Pilates programme also helped with patients' stability and proprioception. The HFMAST method encompassed in the Jing chronic stress and pain protocol has the above aspects with the addition of the soothing effect of heat, broad work on the muscles, and acupressure points to help with pain, anxiety and insomnia. It also focuses on stretching to help muscle imbalances while keeping the local joint stable and teaching a selfcare model to empower the patient and give them confidence. This multimodality ensures that all aspects of the bio psychosocial model are taken into consideration. HFMAST encompasses the complementary therapy approach that is needed to surround people with Hypermobility spectrum disorder (HSD) this being a multidisciplinary approach, shown by the results of this study and a theme that runs through other literature reviewed (Simmonds & Keer, 2007; Bennett, 2020).

This study, however, has limitations due to the small number of participants. In the future, it would be beneficial to conduct a larger study and take into consideration the need for compliance with an exercise

regime as the strengthening of the muscles around the joints is shown to help with the levels of pain in people with HSD. In addition, more information on how the Biopsychosocial model could be collected to help draw further conclusions about patient experience.

Funding for further research can be obtained from the Ehlers -Danlos Society, these are offered annually, clinical research proposals early in the year and basic science later in the year.

The research findings can advance sports and clinical massage practice by providing evidence based support for the effectiveness of the Jing method specific techniques or approaches. Massage therapists can integrate these findings to tailor treatments more effectively to potentially develop new or better protocols. Providing a self care online group could also help people with hypermobility feel more supported and valued.

Section 6: CONCLUSION

The Jing method of clinical massage presents a complimentary approach for managing joint pain in individuals with Hypermobility. Its emphasis on a personalised treatment and the combination of HFMAST can offer pain relief and stress reduction, benefitting those with joint instability and pain. However, a larger study is needed, and it should be integrated into a multidisciplinary approach so the patient has the best possible treatment and care needed for their level of Hypermobility and any other needs they may have. I feel that providing an online self care group would be beneficial to the participants of my study to continue to support and motivate the need for strengthening the muscles around the joints to help with the reduction of pain.

Section 7: REFERENCES

Alsiri, N. (2023). Open Access Journal of Patient-Reported Outcomes. *Journal of Patient-Reported Outcomes*, *7*, 59. https://doi.org/10.1186/s41687-023-00604-9

Atwell, K., Michael, W., Dubey, J., James, S., Martonffy, A., Anderson, S., Rudin, N., & Schrager, S. (2021). Diagnosis and management of hypermobility spectrum disorders in primary care. In *Journal of the American Board of Family Medicine* (Vol. 34, Issue 4). https://doi.org/10.3122/JABFM.2021.04.200374

Bae, G., Kim, S., Lee, S., Lee, W. Y., & Lim, Y. (2020). Prolotherapy for the patients with chronic musculoskeletal pain: systematic review and meta-analysis. *Anesthesia and Pain Medicine*, *16*(1), 81–95. https://doi.org/10.17085/APM.20078

Bennett, S. E. (2020). *Understanding the psychosocial impact of Joint Hypermobility and Ehlers-Danlos Syndromes*.

Broida, S. E., Sweeney, A. P., Gottschalk, M. B., & Wagner, E. R. (2021). *Management of shoulder instability in hypermobility-type Ehlers-Danlos syndrome*. https://doi.org/10.1016/j.xrrt.2021.03.002

Bulbena, A. (2017). Psychiatric and psychological aspects in the Ehlers-Danlos syndromes; Psychiatric and psychological aspects in the Ehlers-Danlos syndromes. *American Journal of Medical Genetics Part C (Seminars in Medical Genetics)*, *175*, 237–245. https://doi.org/10.1002/ajmg.c.31544

Castori, M., Tinkle, B., Levy, H., Grahame, R., Malfait, F., & Hakim, A. (2017). A framework for the classification of joint hypermobility and related conditions; A framework for the classification of joint hypermobility and related conditions. *American Journal of Medical Genetics Part C (Seminars in Medical Genetics)*, *175*, 148–157. https://doi.org/10.1002/ajmg.c.31539

Chopra, P., Tinkle, B., Hamonet, C., Brock, I., Gompel, A., Bulbena, A., & Francomano, C. (2017). Pain management in the Ehlers–Danlos syndromes. *American Journal of Medical Genetics, Part C: Seminars in Medical Genetics*, *175*(1), 212–219. https://doi.org/10.1002/AJMG.C.31554

Clark, N. L., Johnson, M., Rangan, · Amar, Kottam, L., & Swainston, · Katherine. (2023). *Rheumatology The biopsychosocial impact of hypermobility spectrum disorders in adults: a scoping review*. *43*, 985–1014. https://doi.org/10.1007/s00296-023-05298-2

Consumer Views & Use of Massage Therapy | *AMTA*. (n.d.). Retrieved January 14, 2024, from https://www.amtamassage.org/publications/consumer-views-use-of-massage-therapy/

Darrington S. (2012). *Is soft tissue work and Pilates considered effective when incorporated into a treatment programme for people with Joint Hypermobility Syndrome? What other techniques work and how long do they last?*

Eccles, J. A., Quadt, L., McCarthy, H., Davies, K. A., Bond, R., David, A. S., Harrison, N. A., & Critchley, H. D. (2022). Variant connective tissue (joint hypermobility) and its relevance to

depression and anxiety in adolescents: A cohort-based case-control study. *BMJ Open*, *12*(12). https://doi.org/10.1136/BMJOPEN-2022-066130

Engelbert, R. H. H., Juul-Kristensen, B., Pacey, V., de Wandele, I., Smeenk, S., Woinarosky, N., Sabo, S., Scheper, M. C., Russek, L., & Simmonds, J. V. (2017). The evidence-based rationale for physical therapy treatment of children, adolescents, and adults diagnosed with joint hypermobility syndrome/hypermobile Ehlers Danlos syndrome. *American Journal of Medical Genetics Part C: Seminars in Medical Genetics*, *175*(1), 158–167. https://doi.org/10.1002/AJMG.C.31545

Eseonu, K. C., Payne, K., Ap, G. D., Ward, S., Fakouri, B., & Panchmatia, J. R. (2021). Chronic low back pain occurring in association with hypermobility spectrum disorder and ehlers-danlos syndrome. *International Journal of Spine Surgery*, *15*(3). https://doi.org/10.14444/8067

Exercise and movement for adults with hypermobile Ehlers-Danlos syndrome and hypermobility spectrum disorders – The Ehlers-Danlos Support UK. (n.d.). Retrieved January 5, 2024, from https://www.ehlers-danlos.org/information/exercise-and-movement-for-adults-with-hypermobile-ehlers-danlos-syndrome-and-hypermobility-spectrum-disorders/

Fairweather, D. L., Bruno, K. A., Darakjian, A. A., Bruce, B. K., Gehin, J. M., Kotha, A., Jain, A., Peng, Z., Hodge, D. O., Rozen, T. D., Munipalli, B., Rivera, F. A., Malavet, P. A., & Knight, D. R. T. (2023). High overlap in patients diagnosed with hypermobile Ehlers-Danlos syndrome or hypermobile spectrum disorders with fibromyalgia and 40 self-reported symptoms and comorbidities. *Frontiers in Medicine*, *10*, 1096180. https://doi.org/10.3389/FMED.2023.1096180/BIBTEX

Fairweather Rachel, & Mari Meghan. (2015). *Massage Fusion: The Jing Method for the Treatment of Chronic Pain*.

Falgueras, A. G. (2016). An introduction to Proprioception concept in Pilates and yoga. *British Journal of Medicine and Medical Research*, 1–6.

Footcare in hypermobile Ehlers- Danlos syndrome - The Ehlers danbos supportUK. (n.d.).

Grahame, R. (2013). Joint hypermobility: emerging disease or illness behaviour? *Clinical Medicine (London, England)*, *13 Suppl 6*, s50–s52. https://doi.org/10.7861/CLINMEDICINE.13-6-S50

Hakim A, Keer R, & Grahame R. (2010). *Hypermobility, Fibromyalgia and Chronic Pain* (Hakim A, Keer R, & Grahame R, Eds.). Churchill Livingstone Elsevier.

Hakim Alan, Wandele Inge De, O'Callaghan Chris, Pocinki Alan, & Rowe Peter. (2019). *Chronic Fatigue in Ehlers-Danlos Syndrome Hypermobile Type and Hypermobility Spectrum Disorder (for Non-experts) - The Ehlers Danlos Society*.

Hershkovich, O., Gordon, B., Derazne, E., Tzur, D., Afek, A., & Lotan, R. (2022). Symptomatic Joint Hypermobility Is Associated with Low Back Pain: A National Adolescents Cohort Study. *Journal of Clinical Medicine*, *11*(17). https://doi.org/10.3390/jcm11175105

Hindle, K., Whitcomb, T., Briggs, W., & Hong, J. (2012). Proprioceptive Neuromuscular Facilitation (PNF): Its Mechanisms and Effects on Range of Motion and Muscular Function. *Journal of Human Kinetics*, *31*(1), 105. https://doi.org/10.2478/V10078-012-0011-Y

Kumar, B., & Lenert, P. (2017). Joint Hypermobility Syndrome: Recognizing a Commonly Overlooked Cause of Chronic Pain. *American Journal of Medicine*, *130*(6), 640–647. https://doi.org/10.1016/j.amjmed.2017.02.013

Lam, C., Amarasinghe, G., Zarate-Lopez, N., Fikree, A., Byrne, P., Kiani-Alikhan, S., Gabe, S., & Paine, P. (2023). Gastrointestinal symptoms and nutritional issues in patients with hypermobility disorders: assessment, diagnosis and management Neurogastroenterology. *Gastroenterology*, *14*, 68–77. https://doi.org/10.1136/flgastro-2022-102088

Malek, S., Reinhold, E. J., & Pearce, G. S. (2021). The Beighton Score as a measure of generalised joint hypermobility. In *Rheumatology International* (Vol. 41, Issue 10). https://doi.org/10.1007/s00296-021-04832-4

McNeill Dip Phyty MCSP, W., Jones Pilates Teacher CYQ Level, S., Ipta, P., & Barton CYQ Level, S. P. (2018). *The Pilates client on the hypermobility spectrum*. https://doi.org/10.1016/j.jbmt.2017.12.013

Ozdemir, T. O. D. ;, Atakul, E. ;, Sabanci, T. ;, Turan, S. ;, Pezaro, S. ;, Pearce, G. ;, Reinhold, E., & Library, P. B. (2020). *Hypermobility in Pregnancy and Childbirth Database: EMBASE 2. Understanding hypermobile Ehlers-Danlos syndrome and Hypermobility Spectrum Disorders in the context of childbearing: An international qualitative study*. http://www.library.wmuh.nhs.uk/wp/library/

Pain management | *The HMSA*. (n.d.). Retrieved August 28, 2023, from https://www.hypermobility.org/pain-management

Palmer, S., Bailey, S., Barker, L., Barney, L., & Elliott, A. (2014). The effectiveness of therapeutic exercise for joint hypermobility syndrome: a systematic review. *Physiotherapy*, *100*(3), 220–227. https://doi.org/10.1016/J.PHYSIO.2013.09.002

Palmer, S., Cramp, F., Lewis, R., Gould, G., & Clark, E. M. (2017). Development and initial validation of the Bristol Impact of Hypermobility questionnaire. *Physiotherapy*, *103*(2), 186–192. https://doi.org/10.1016/J.PHYSIO.2016.04.002

Pezaro Sally, Pearce Gemma, & Reinhold Emma. (2021). A clinical update on hypermobile Elhers-Danilo's syndrome during pregnancy, birth and beyond. *BJM*, *29*(9).

Pocinki - Joint Hypermobility and Joint Hypermobility Syndrome — The Zebra Network. (n.d.). Retrieved November 4, 2023, from http://thezebranetwork.org/pagef#

Prolotherapy | *Ehlers-Danlos News*. (n.d.). Retrieved August 28, 2023, from https://ehlersdanlosnews.com/prolotherapy/#

Pyeritz, R. E. (2003). The Marfan Syndrome. *Https://Doi.Org/10.1146/Annurev.Med.51.1.481*, *51*, 481–510. https://doi.org/10.1146/ANNUREV.MED.51.1.481

Sherman, K. J., Ludman, E. J., Cook, A. J., Hawkes, R. J., Roy-Byrne, P. P., Bentley, S., Brooks, M. Z., & Cherkin, D. C. (n.d.). *Effectiveness of Therapeutic Massage for Generalized Anxiety Disorder: A Randomized Controlled Trial*. https://doi.org/10.1002/da.20671

Simmonds, J., Russek, L. N., Stott, P., & Simmonds, J. (2019). Recognizing and Effectively Managing Hypermobility-Related Conditions. In *Physical Therapy* (Vol. 99, Issue 9). https://www.ehlers

Simmonds, J. V. (2022). Masterclass: Hypermobility and hypermobility related disorders. *Musculoskeletal Science and Practice*, *57*. https://doi.org/10.1016/j.msksp.2021.102465

Simmonds, J. V, & Keer, R. J. (2007). Hypermobility and the hypermobility syndrome. *Manual Therapy*, *12*, 298–309. https://doi.org/10.1016/j.math.2007.05.001

Simons, D. G., Travell, J. G., Simons, L. S., & Travell, J. G. (1999). *Travell & Simons' myofascial pain and dysfunction : the trigger point manual*.

Terry, R. H., Palmer, S. T., Rimes, K. A., Clark, C. J., Simmonds, J. V., & Horwood, J. P. (2015). Living with joint hypermobility syndrome: Patient experiences of diagnosis, referral and self-care. *Family Practice*, *32*(3). https://doi.org/10.1093/fampra/cmv026

Wiesmann, T., Castori, M., Malfait, F., & Wulf, H. (2014). Recommendations for anesthesia and perioperative management in patients with Ehlers-Danlos syndrome(s). *Orphanet Journal of Rare Diseases*, *9*(1), 1–9. https://doi.org/10.1186/S13023-014-0109-5/TABLES/2

Section 8: APPENDICES

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

Jing BTEC Research Ethics Form

BTEC Level 6 – Professional diploma in advanced clinical sports massage

Section 1: to be completed by student

Student's name:	Jayne Drew
BTEC Year-group:	BTEC 2022-24
Date of application:	May 2023
Student email address:	jedrew@blueyonder.co.uk
Title of research project:	Evaluating the effects of the Jing method of clinical massage on joint pain in people with Hypermobility

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?	X	
If yes, does it involve children under 16?		X
If yes, does it involve children under 18?		X
Other vulnerable populations (i.e. mental illness, aged subjects)?		X
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.*		X
Are you planning to use deception?		X
Are you collecting sensitive personal data such as sexuality, mental health data, etc?		X
Does your project make use of a validated questionnaire?	The Beighton score and the	

	Brighton Score	
Does your project make use of a new/adapted questionnaire or semi-structured interview checklist?		X

Section 3:

Where is your research being undertaken? My Clinic is situated in my own home.		
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.	N/A	

Section 4:

How will you recruit subjects for this research study? Word of mouth Facebook Instagram Local Pilates Group Email all clients on mailing list.

Section 5:

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

- All data is held in accordance with The General Data Protection Regulation (GDPR) (EU) 2016/679
- Inform clients on initial sign-up form that their information will not be available to third parties and will not be seen by anyone else other than the researcher.
- The client's names will be replaced by numbers so that they will remain anonymous.
- All data collected will be password protected and stored on a personal computer or stored in a secure filing system.
- All data that is received will be deleted or destroyed as soon as the study is completed.

Section 6:

1. Outline your project procedure.

   - Recruit subject participants to evaluate the effects of the Jing method of clinical massage on joint pain in people with hypermobility.
   - Have initial one to one consultation with participants and establish the extent of hypermobility using the Beighton score. Explain the study and obtain consent.
   - Issue participants with the Bristol impact of hypermobility questionnaire to be completed on week 1,3,5,7,9,11,13 and 16, the interim weeks will be a numeric pain rating scale.
   - Week one to six of the study, there will be no intervention and the questionnaires, and the pain scale will be completed.
   - Week 7-12 will be the intervention weeks and the participants will receive a 55-minute treatment of clinical massage.
   - The intervention stage will be a hands-on treatment using the Jing Method Stress and Chronic Pain Protocol.
   - A meditation will be given to participants on week 1 for them to use after their treatment. Time will be given after the treatment for self -care strengthening exercises. This will consist of self-care strengthening exercises taught to the participants after the treatment, a video will then be sent to the participants after the session detailing the exercises given for the participants to refer to. These will be required to be done 3 x weekly. Each week the participants will be asked if they have completed the exercises.
   - Participants will be required to complete the Bristol score questionnaire and the numeric pain score 7 days after each treatment and prior to the next treatment. A reminder email will be sent to the participants.
   - A numeric pain scale will be sent to the participants on week 13,14 and 15 and the Bristol score questionnaire on week 16 to ascertain any long-term benefits.

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

- The participants will attend an initial consultation at my clinic for no longer than 45 minutes. This will include completing a consent form, providing basic contact details. A detailed consultation including health history and an explanation of what the study will involve for them. Completion of the Beighton score to ascertain the extent of hypermobility.
- Participants are required to complete a detailed questionnaire on weeks 1,3,5,7,9,11,13 and 16, and a weekly numeric questionnaire to establish pain scale for that week on weeks 2,4,6,8,10,12 13,14, and 15 with no intervention and a follow up questionnaire at week 16 to provide an insight into longer term benefits.
- A massage at my clinic weekly from week 6 lasting 55 minutes and a meditation on week 1 to use at home to help with relaxation. Self-care will be given after the session in the form of strengthening exercises building from 5 minutes to 15 minutes if appropriate. These will be taught after the massage session and a video detailing the exercises taught will be sent to the participants the day after the treatment. These will include strengthening exercises appropriate for the group. Each week the participants will be asked if they have completed the exercises.
- 4 weeks after the last treatment at week 16, participants are required to fill out the Bristol impact of hypermobility questionnaire to provide further insight into longer term benefits.

.

Section 7:

What sort of materials or stimuli will your participants be exposed to?		
	YES	**NO**
Questionnaires	X	
Pictures (will you take a photo of participants)		X
Sounds	X	
Words	X	
Other	Meditation	

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

For 'Other' please elaborate:

A meditation for week 1 taken from online Jing resources.
The Jing Chronic Stress and Pain Protocol.
Strengthening exercises between 5-15minutes long, a video recording will be sent the day after the treatment. The participants will be required to do these exercises 3 x weekly.

Section 8:

What sort of people will the subjects be?

To be included in this study the participants will be;

- Adults aged 18-45 who suffer with Hypermobility.
- Have hypermobility as ascertained by completing the form entitled the Beighton score, they must present with a score of 4 or more on this scale.
- People who have had subluxations will not be excluded if this has not been within the last 12 months.

Exclusion Criteria

- Participants with EDS
- Participants with POT
- Participants who have recently had surgery will be excluded.
- Participants above the age of 45
- Participants who have had a subluxation or dislocation within the last 12 months.

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 minimise ethical risk.

- Qualified and insured therapist
- Ensure participants details are kept fully confidential and secure.
- During the consultation process and the hands-on treatments, the researcher will be observant and be aware of the participants well-being and direct them to additional resources if necessary.

.

Section 11

What procedures will you follow in order to guarantee the confidentiality of your participants' data?

- All data is held in accordance with The General Data Protection Regulation (GDPR) (EU) 2016/679
- Inform clients on initial sign-up form that their information will not be available to third parties and will not be seen by anyone else other than the researcher.
- The client's names will be replaced by numbers so that they will remain anonymous.
- All data collected will be password protected and stored on a personal computer or stored in a secure filing system.
- All data that is received will be deleted or destroyed as soon as the study is completed.

Section 12

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

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 X	NO

Student's handwritten signature:

Jayne Drew Jayne E Drew

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

Print Name: JAYNE DREW

Jayne Drew

Date:
8/07/2023

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.

PROJECT TITLE: Evaluating the effects of the Jing method of clinical massage on joint pain in people with Hypermobility

STUDENT NAME: Jayne Drew

STUDY LOCATION: 10, Clifton street, Stourbridge, DY8 3XR

Tel: 07808954246

email: jedrew@blueyonder.co.uk

INFORMATION FOR PARTICIPANTS

Important

Please be advised that any 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?

To be available for an initial consultation and an assessment to ascertain the extent of hypermobility.

To complete a weekly questionnaire over a 12-week period.

To be available for a weekly massage intervention for the last 6 weeks of the research project

To complete the Bristol impact of hypermobility questionnaire to provide further insight into longer term benefits at week 16.

What does the initial consultation and research study involve?

You will attend an initial consultation at my clinic for no longer than 45 minutes. This will include completing a consent form, providing basic contact details, a detailed consultation including health history, explanation of what the study will involve for you. Completion of the Beighton score to ascertain the extent of hypermobility.

Are there any risks involved?

There is a small risk you may feel some muscle soreness from completing the strengthening exercises.

What are the potential benefits to you; the participants?

That you will hopefully, feel more relaxed, have less pain and your joint mobility will feel more comfortable.

How the results of the study will be used

Your data will be mathematically analyzed 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 Jayne Drew 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 Jayne Drew
If you have any further questions, please contact **me** on the telephone number or email address below.

Thank You.
Jayne Drew
Relax and Revive therapies Ltd.
07808954246
jedrew@blueyonder.co.uk

PARTICIPANT CONSENT FORM

Title of study: Evaluating the effects of the Jing method of clinical massage on joint pain in people with Hypermobility

Name of student:

- 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): **Jayne Drew 07808954246** **jedrew@blueyonder.co.uk**	

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 / NO 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 / NO 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 / NO 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 / NO I am confident the participants' confidentiality will be preserved.

YES / NO I consider that any risks involved to the student, the participants, and any third party are minimal.

YES / NO 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: .....

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

PARTICIPANTS LETTER

Jayne Drew
Training

10, Clifton Street, Stourbridge, DY8 3XR

drewiex@me.com

07808954246

JING Advanced Massage

28/29 Bond Street,
Brighton,BN1 1RD

www.jingmassage.com

01273628942

Thank you for showing interest in my study. I appreciate you responding to my call for participants. Let me tell you a little more about what it entails.

I have been a massage therapist for over 13 years. I specialise in the treatment of chronic pain. In my clinic I work with individuals suffering with a range of chronic pain such as Fibromyalgia, Multiple sclerosis, frozen shoulder, osteoarthritis, Plantar fasciitis and pregnant women

In 2020 I embarked on an advanced degree qualification in my field: the BTEC Level 6 in Advanced Clinical and Sports Massage offered by Jing Advanced Massage, the highest level of education a manual therapist can achieve in the UK. It is overseen by experts in the field of Musculoskeletal Pain, Education, Sports Science and Psychology.

As part of our course work, we are given an opportunity to design and carry out a study into the effects of clinical massage wellness programme. I have chosen to investigate Evaluating the effects of the Jing method of clinical massage on joint pain in people with Hypermobility.

If you decide to participate in the study it will begin in September.

The first 6 weeks is all about understanding your pain. We will have an initial 30-minute consultation, where we will talk through the study, I will gather your contact information and introduce you to the Beighton score of hypermobility and the Bristol impact of hypermobility questionnaire.

Then for six weeks every Monday, you will fill out the questionnaire and send it back to me via email. I will send you an email prompt to remind you. Once all that data is gathered and we know what we are dealing with we will endeavour to make a difference.

For the next 6 weeks you will receive a 55-minute treatment of clinical massage, a meditation will be given on the first week for you to use after the treatment, thereafter time will be given after the treatment for self-care strengthening exercises. These will be taught to you after the treatment and a video will be sent to you after the session detailing the exercises for you to refer to. These will be required to be done 3 x weekly and you will be asked how often these have been done.

During these 6 weeks you will still be asked to fill out the questionnaire, the day before the massage I will continue to send you an email prompt

At the end of the study I will ask that we have a feedback meeting where we can discuss what worked for you and what didn't.

Once my research is published, I will share with you my findings, I have to ask that you don't engage in any other pain-relieving activity including the use of pain medication, without letting me know.

All of your information will be kept strictly confidential. The cost for the six sessions will be £30 per session or if paid in full £150. Please call me with any questions, you may withdraw from the project at any time without notice or explanation.

Thank you again for considering this project, your participation will make a difference to your pain and the pain of many.

Sincerely

Jayne Drew ACMT Advanced Clinical Massage Therapist

THE BEIGHTON SCORING SYSTEM

THE BEIGHTON SCORE

A TOTAL OF 9 POINTS ARE COLLATED FROM 5 MANOVERS COMPRISING:

1. Passive dorsiflexion of the little fingers beyond 90 degrees, 1 point for each hand
   2
2. Passive apposition of the thumbs to the flexor aspects of the forearm, 1 point for each thumb
   2
3. Hyperextension of the elbows beyond 10 degrees, 1 point for each elbow
   1
4. Hyperextension of the knee, beyond 10 degrees, 1 point for each knee
   1
5. Forward flexion of the trunk with the knees fully extended, so that the palms of the hands rest flat on the floor, 1 point.
   1

It is important to note that the Beighton score is not definitive. It only looks at a limited number of joints, and only takes one direction of movement into account. Individuals can have significant , widespread hypermobility but still have a low Beighton score.

BRISTOL IMPACT OF HYPERMOBILITY (BIOH) QUESTIONNAIRE

This questionnaire is designed to ask how hypermobility affects your day to day life. Please answer all of the questions and try not to think too much about your answer.

A. During the past 7 days, have you had pain in any of the following areas

B. We would like to know how often you have experienced pain and fatigue due to hypermobility, during the past 7 days

	Yes	No
Shoulders	☐	☐
Elbows	☐	☐
Wrists	☐	☐
Hands	☐	☐
Hips	☐	☐
Knees	☐	☐
Ankles	☐	☐
Feet	☐	☐
Neck	☐	☐
Back	☐	☐

C. your **average** level of pain during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No pain — Worst imaginable pain

2) your **worst** level of pain during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No pain — Worst imaginable pain

3) how much pain you have had **when walking** during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No pain — Worst imaginable pain

4) how much pain you have had **when resting** during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No pain — Worst imaginable pain

5) your **average** level of fatigue during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No fatigue — Totally exhausted

6) the **effect** fatigue has had on your life during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No effect — Large effect

7) how well you have **coped** with fatigue during the **past 7 days** *Reverse scored (0=10, 1=9, etc)

0 1 2 3 4 5 6 7 8 9 10

Not at all well — Very well

/70

C . Please tick the boxwhich best describes how much, during the past 7 days, hypermobility has affected;

		Not at all[1]	A little[2]	Somewhat[3]	A lot[4]	Completely[5]
8)	the footwear you have worn	☐	☐	☐	☐	☐
9)	the transport you have used	☐	☐	☐	☐	☐

D. How often…

E.		Never[1]	Occasionally[2]	Sometimes[3]	Often[4]	Always[5]
10)	have you had unexpected pain (that was not an expected consequence of something you have done) during the past 7 days?	☐	☐	☐	☐	☐
11)	has your wrist or hand given way, leading you to drop, or nearly drop something during the past 7 days?	☐	☐	☐	☐	☐
12)	has your ankle, knee or hip given way, leading to a stumble or trip during the past 7 days?	☐	☐	☐	☐	☐
13)	have you lost your balance during the past 7 days?	☐	☐	☐	☐	☐
14)	have joints seized up during the past 7 days?	☐	☐	☐	☐	☐
15)	has it felt like a joint has slipped out of place during the past 7 days?	☐	☐	☐	☐	☐
16)	have you had muscle cramps or spasms during the past 7 days?	☐	☐	☐	☐	☐
17)	has your sleep been disturbed due to pain or discomfort during the past 7 days?	☐	☐	☐	☐	☐

E.How much difficulty have you had with the following tasks during the past 7 days due to hypermobility

		Not difficult[1]	A little difficult[2]	Somewhat difficult[3]	Extremely difficult[4]	Completely impossible[5]
18)	Bending or twisting	☐	☐	☐	☐	☐
19)	Squatting	☐	☐	☐	☐	☐
20)	Walking on uneven ground	☐	☐	☐	☐	☐
21)	Carrying a heavy bag, such as a shopping bag	☐	☐	☐	☐	☐
22)	Reaching up to high shelves	☐	☐	☐	☐	☐
23)	Pulling or pushing heavy doors	☐	☐	☐	☐	☐
24)	Opening a tight or new jar	☐	☐	☐	☐	☐

F. How much discomfort would you have had after the following activities during the past 7 days.

		No discomfort[1]	Slightly uncomfortable[2]	Uncomfortable[3]	Painful[4]	Could not do it[5]
28)	Standing up for more than 30 minutes	☐	☐	☐	☐	☐
29)	Sitting in a chair for more than 30 minutes	☐	☐	☐	☐	☐
30)	Standing up after sitting for more than 30 minutes	☐	☐	☐	☐	☐
31)	Climbing several flights of stairs	☐	☐	☐	☐	☐
32)	Going down several flights of stairs	☐	☐	☐	☐	☐
33)	Walking at your own pace for a few miles	☐	☐	☐	☐	☐
34)	Walking briskly for a few miles	☐	☐	☐	☐	☐
35)	Wandering around shops or museums	☐	☐	☐	☐	☐
36)	Bending or twisting	☐	☐	☐	☐	☐
37)	Squatting	☐	☐	☐	☐	☐

/50

G. Please circle the number which best indicates

1)how much you have felt in control of the movement of your body and limbs during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Completely in control — Completely unable to control

39) how accurately you have been able to predict how you might feel in general over the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Always able to predict — Completely unable to predict

40) how frustrated you have felt with hypermobility during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Not at all frustrated — Very frustrated

41) how strong your body and limbs have felt generally over the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Very strong — Extremely weak

42) how 'tight', 'strong', 'held together' your body and limbs have felt generally during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Very tight Extremely loose

43) how able you have felt to control your fatigue in the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Completely in control No control whatsoever

44) how much you have felt in control of your pain in the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Completely in control No control whatsoever

45) how much you have felt in control of your life in the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

Completely in control No control whatsoever

H. Thinking about what you are usually able to do, how much has hypermobilityinterfered with your activities during the past 7 days

46) how much hypermobility has interfered with your daily activities during the **past 7 days**?

0 1 2 3 4 5 6 7 8 9 10

Not at all Unable to do

47) how much difficulty you have had in carrying out your desired level of exercise during the **past 7 days**

0 1 2 3 4 5 6 7 8 9 10

No difficulty Extreme difficulty

/100

I. Please tick the box which bestdescribes your agreement with the following statements

		Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
48)	My body does not feel strong	☐5	☐4	☐3	☐2	☐1
49)	I am concerned about my condition getting worse	☐5	☐4	☐3	☐2	☐1
50)	I feel frustrated with my condition	☐5	☐4	☐3	☐2	☐1
51)	My coordination is poor	☐5	☐4	☐3	☐2	☐1
52)	I feel that I could trip or fall at any time	☐5	☐4	☐3	☐2	☐1
53)	I can control the movement of my limbs	☐1	☐2	☐3	☐4	☐5
54)	I feel that I can remain physically active	☐1	☐2	☐3	☐4	☐5
55)	I feel that I can manage my condition	☐1	☐2	☐3	☐4	☐5

/40

Thank you for taking the time to complete this questionnaire.

Numeric pain scale

Numeric pain scale									
1	2	3	4	5	6	7	8	9	10
Please circle the number that best describes your pain during the past 7 days									

Mindfulness

SHEET 2 Mindfulness

Mindfulness of breathing: taking 10 minutes for yourself

- Sit comfortably on a chair with your back straight, feet uncrossed and flat on the floor, your arms resting on your legs or in your lap on top of one another. Spend a moment to take in your surroundings with a soft focus.
- Now gently close your eyes and tune into the inner environment of your body.
- Become aware of the weight of your body, the contact between your body and the chair, and the sensation of the soles of your feet on the floor. Feel the weight of your hands and your arms resting on
  your legs or lap.
- Take a moment now to notice the sounds around you, both inside and outside the room. You don't need to grab onto or worry about the noises; just let the sounds be.
- Tune into the feeling of the air on your face and body; notice whether you are warm or cool.
- Now bring your attention gently to your breath, noticing where you feel the breath in your body. You don't have to worry about the breath or try and change it, just be aware. You might be able to notice the
  small movements that you don't usually pay attention to; maybe you feel them in your belly or your chest. There are no rights or wrongs, you are just gently observing. Follow the in breath and the out breath with your full attention, like the waves of the sea ebbing and flowing.
- After the next breath out just notice the slight pause, the stopping and the stillness before the next breath in. Just notice the quality and the rhythm of the pause and let the next breath in come when it
  wants to, almost like the breath is breathing you. You may find that as you notice the pause it naturally becomes longer.
- You may find it helpful to count the breaths.
- As you feel the rising sensation of the in breath you count 1.
- As you feel the falling sensation of the out breath you count 2 just silently to yourself.
- And you continue counting in that way up to 10: so it's 1 with the rise of the breath and 2 with the fall, 3 with the rise and continuing this way up to the count of 10. When you reach 10 just stop and start again at
  1. Just try that 2 or 3 times through.
- Again, it doesn't matter if the mind wanders, it's quite normal, but as soon as you've noticed it has wandered, gently bring it back to the act of counting the breaths: stopping at 10 and starting again at 1.
- When you are ready, just bring your attention back to your body. Notice the physical sensation of your body pressing against the chair and then your feet resting on the floor and your hands and arms resting
  on your legs. Notice the sounds inside and outside the room and any obvious tastes, smells and sensations, so bringing yourself back to your senses and back to your immediate environment.
- In your own time bring yourself back into the room and open your eyes again.

Appendix 2

Massage routine :Stress and chronic pain protocol

Week 7

Heat and preparatory work over drape prone,

Shu points.

Fascial work, Cross handed stretches over back , leaning in with forearms, skin rolling, apply wax and single forearm effleurage to the back.

Power effleurage with hot stones.

Hot stone effleurage to the backs of arms and legs.

Turn client to supine, stone placement.

MFR trasnsverse plane release, MFR solar plexus transeverse plane release.

Fascial leg pulls, fascial arm pulls.

Working the conception vessel.

Neck work, deep work to the posterior neck

Facial massage, head massage.

The first week was slightly different to the following weeks as none of the participants had experienced massage before.

Weeks 8-12

Heat and preparatory work over drape prone,

Shu points.

Fascial work, Cross handed stretches over back , leaning in with forearms, skin rolling, apply wax and single forearm effleurage to the back.

Power effleurage with hot stones.

Trigger point work if necessary

Deep forearm work.

Hot stone effleurage to the backs of arms and legs.

Turn client to supine, stone placement.

MFR trasnsverse plane release, MFR solar plexus transeverse plane release.

Fascial leg pulls, fascial arm pulls.

Trigger point work where necessary

Working the conception vessel.

Neck work, deep work to the posterior neck

Facial massage, head massage.

Appendix 3

WEEKS 8-12 Strengthening exercises
Week 8

Ankle stability, push foot against a yoga block hold for 10 seconds for 5 times, put other foot on top of the foot, push lower foot up against upper foot for a count of 10 for 5 times. Push the outside of the foot against the yoga block or firm object and hold for a count of 10 , for 5 times. Put the yoga block between the feet and and push against the block for 10 seconds for 5 times. These exercises are designed to build up the strength around the ankle so it is more stable. These need to be completed 3 times this week

Week 9

Knee, straight leg lifts, sit on the floor legs straight out in front of you lift the right leg off the floorhold for the count of 3, then lower to the starting position. Repeat 10 times, then do the same with the left leg. Do these twice a day , 3 times this week.

Week 10

Hip, put a belt just above the knees on the thigh area, put your feet flat and then push out into the belt to activate the outside of the hip and glute area, push out into the belt, like you are opening up like a butterfly for 5 seconds 10 times. Then put a ball or yoga block inbetween the thighs and push into it, hold for 5 seconds 10 times , this will activate the inside of the thigh and the adducter muscles.

Week 11

Shoulder, put a towel between your shoulder and your side of your right arm, arm out in front of you for an internal rotation strengthening exercise. Put your other fist into the palm of your hand and push your right hand into your left but your left hand is stopping it moving. Hold for a count of 10.

Then take your left hand to the outside of your right hand and push the right hand into the left hand again stopping it moving.hold for a count of 10.

Drop your towel, put your left hand in front of your right hand as if you are punching forward, push your fist into the left hand which stops it moving . Hold for a count of 10.

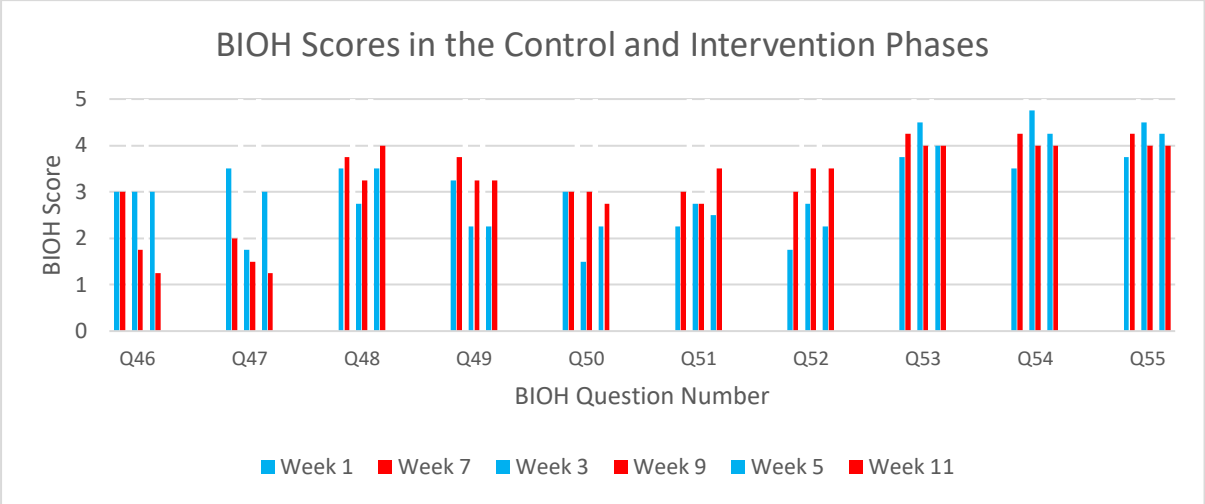
Now we are doing a backward motion, take your left hand and cup it around your elbow and push your arm backwards. Hold for a count of 10.

Week 12

Neck, hold a band behind your head and push your head into the band while holding the band for resistance, hold for a count of 10 and repeat 5 times.

These exercises were demonstrated to the participants after the massage and a video recording sent via Whatsapp the following day for them to refer to.

Appendix 4



This was to show the results relating to the biopysosocial model, pertaining to sections H and I in the BIOH scoring system.

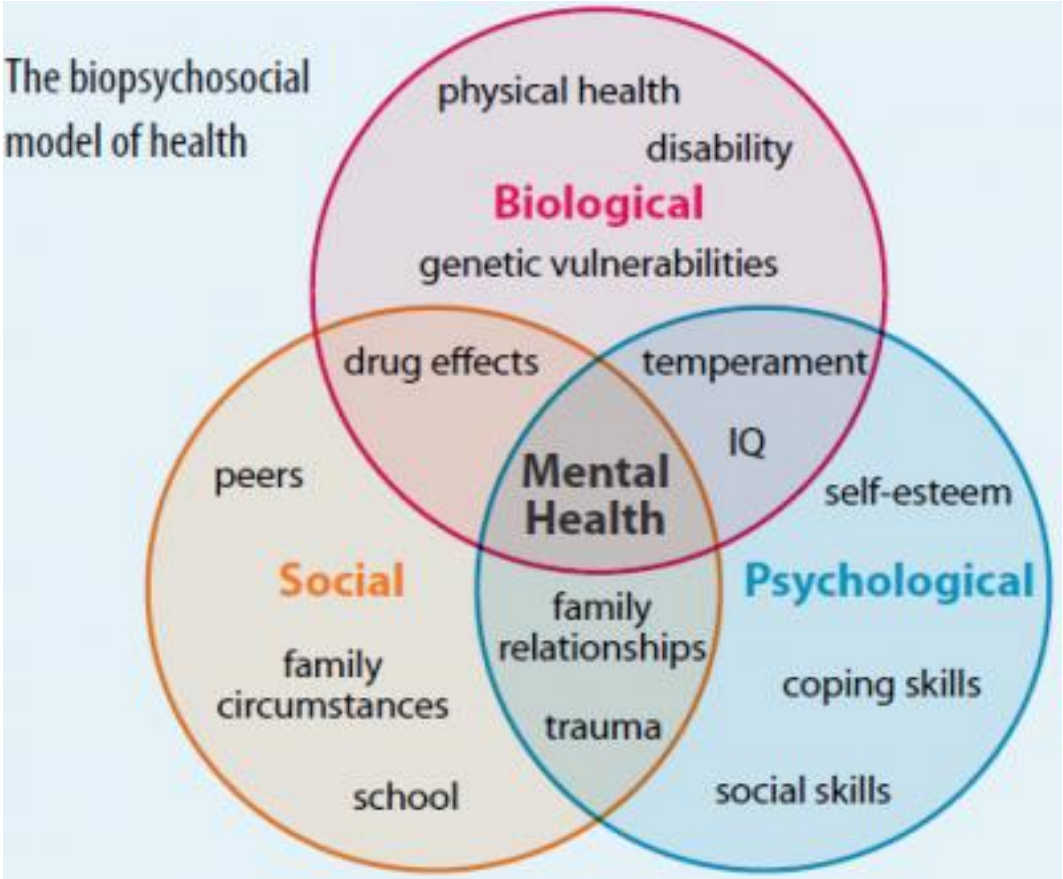
Appendix 5

Table 6 chart to show consistency of participants areas of pain

Table to show areas of participants pain						
	Wk 1	Wk3	Wk5	Wk7	Wk9	Wk11
Shoulders	P2 P4	P2 P4	P2 P4	P2 P4	P2 P4	P2 P4
Elbows	P2 P3	P2 P3	P3	P3	P3	P3
Wrists						
Hands	P4	P4	P4	P4	P4 P2	P4
Hips	P4	P4	P2 P4	P2 P4	P2 P4	P2 P4
Knees	P2 P3 P4	P2 P3 P4	P2 P3 P4	P2 P3 P4	P2 P3 P4	P2 P3 P4
Ankles	P2	P2	P2	P2	P2	P2
Feet	P1 P2 P3	P1 P2 P3	P1 P2 P3	P1 P2 P3	P1 P2 P3	P1 P2 P3
Neck	P2	P2	P2	P2	P2	P2
Back	P1 P2	P1 P2	P1 P2	P1 P2	P1 P2	P1 P2

All participants showed consistency in the areas of pain across their bodies, with the exception of participant 2. Figure 6 shows that participant 2 had pain in her elbows on weeks 1 and 3, but this was not identified in the final control week (week 5) or any of the intervention weeks (7, 9 and 11). On week 9 she also experienced pain in her hands.

Appendix 6


The biopsychosocial model of health
physical health
disability
Biological
genetic vulnerabilities
drug effects
temperament
IQ
peers
Mental Health
self-esteem
Social
Psychological
family relationships
family circumstances
coping skills
trauma
school
social skills