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Dance Movement Therapy for
Hypermobile Ehlers Danlos Syndrome and Hypermobility Spectrum Disorders.

Tutor: Iris Bräuninger

Autor: Leonor Yuste Criado

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Universidad Autónoma de Barcelona

TABLE OF CONTENTS

ABSTRACT.....	4
KEYWORDS.....	5
ACKNOWLEDGES.....	5
PRESENTATION.....	5
1. INTRODUCTION.....	6
2. LITERATURE REVIEW.....	8
2.1.Theory Framework of EDS.....	8
2.1.1 Types of EDS and its Evolution in Medicine.....	9
2.1.2 hEDS and HSD.....	13
2.1.3 Physical and Mental Symptoms.....	16
2.2.Body – Mind connection. Embodiment as a Therapeutic Approach.....	22
2.3.Theory Frame of Dance, Movement, and Therapy through History.....	25
2.3.1 Dance.....	25
2.3.2 Movement.....	28
2.3.3 Therapy.....	33
2.4. DMT with Similar Pathologies.....	37
3. METHODS.....	41
4. RESULTS.....	44
5. DISCUSSION	46
6. CONCLUSION.-.....	50
7. ACRONYMS & ILLUSTRATION.....	51
8. REFERENCES.....	53
ANEXO. I, as zebra and DMT.....	71

TABLE OF TABLES

GRAPHIC 1. THE PROCESS.....	5
TABLE 1. EDS TYPES CHART.....	10
TABLE 2. BRIGHTON CRITERIA..	11
TABLE 3. BEIGHTON SCORE CRITERIA.....	12
TABLE 4. THE SPECTRUM OF JOINT HYPERMOBILITY..	14
TABLE 6. TABLE 1 BPQ. Body Awareness.....	18
TABLE 7. TABLE 2 OF THE BPQ. Autonomic Nervous System Reactivity.....	19
TABLE 8. LABAN ANALYSES SYSTEM.....	32
GRAPHIC 2. THE METHODOLOGY GRAPHIC RESEARCH.....	41
ILLUSTRATION 1. ACHILLE MIGET MEDICAL THESIS. PARIS, 1933.....	51
TABLE 5. DIAGNOSTIC CRITERIA FOR hEDS.....	52

ABSTRACT

ENGLISH

The objective of this literature review is to look for the possible benefits of using DMT for hypermobile Ehlers Danlos (hEDS) and Hypermobile Spectrum Disorders (HSD). This research can help create a new theoretical framework in which DMT can be connected to this population as it is with similar populations. There is a gap in the literature review that this work tries to fill. However, further research with this population using DMT will be necessary.

SPANISH

El objetivo de esta revisión de la literatura es buscar los posibles beneficios del uso de DMT para las patologías de hiperlaxitud de Ehlers Danlos (hEDS) y los Trastornos del Espectro de hiperlaxitud (HSD). Esta investigación puede ayudar a crear un nuevo marco teórico en el que DMT se puede conectar a esta población como lo es con poblaciones similares. Hay un vacío en la revisión de la literatura que este trabajo intenta llenar. Sin embargo, será necesaria más investigación con esta población usando DMT. Existe una brecha en la literatura que esta revisión intenta llenar. Serán necesarias más investigaciones con estas poblaciones que usan DMT.

CATALAN

L'objectiu d'aquesta revisió de la literatura és buscar els possibles beneficis de l'ús de DMT per a Ehlers Danlos hiper mòbils (hEDS) i trastorns de l'espectre hiper mòbil (HSD). Aquesta investigació pot ajudar a crear un nou marc teòric en què la DMT es pugui connectar a aquesta població com passa amb poblacions similars. Hi ha un buit en la revisió de la literatura que aquest treball intenta omplir. Tanmateix, caldrà més investigació amb aquesta població que utilitzi DMT. Hi ha un buit en la revisió de la literatura que aquest treball intenta omplir. Tanmateix, caldrà més investigació amb aquesta població que utilitzi DMT.

KEYWORDS

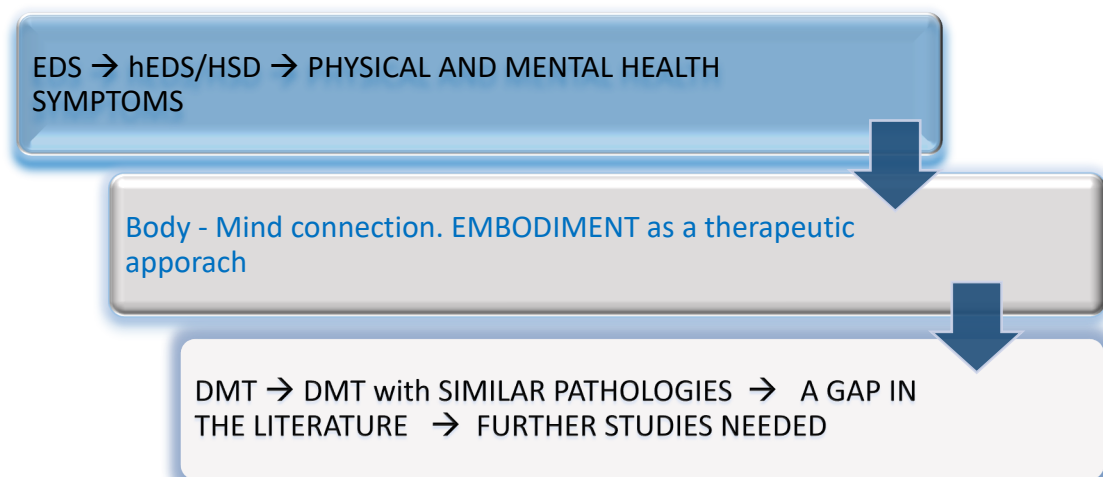
Dance Movement Therapy (DMT). Hypermobile Ehlers Danlos syndrome (hEDS). Hypermobile Spectrum Disorder (HSD).

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To my tutor, Iris Bräuninger, for her wise words, “what can you as Leonor bring to the DMT” That resonated in the deep of my soul and made me swap the focus of my testing, and She went along and believed in my last topic change. To Maria Rosa Fedriani Montero (FEAP) for her understanding, curiosity, and encouragement over these years. To Andrea Ortuño for her constant support and listening. And finally, to Raquel Fusch and Oriol Fuster, the friends that went along with me to get through my degree in London and the master in Barcelona.

PRESENTATION

The process of documenting and researching the links between DMT and EDS started a few years ago. This work is a literature review of this research that looks for hypermobile connective tissue disorders with different symptoms and search for treatments. The process to make this research narrative is shown in the graphic below. I tried to answer how the DMT can help improve people’s lives with hEDS/ HSD?. → Graphic 1. The process



1. INTRODUCTION

The research about Fibromyalgia, Chronic Pain, and Hypermobility started decades ago from cases in my family that later developed in myself being diagnosed with hEDS. In around ten years, doctors in Spain began to call those illnesses part of an Ehlers Danlos Syndrome. It sounded complicated; it was necessary research to understand how some bodies function. Furthermore, in 2014, the Trinity Laban Center's undergraduate degree apported new possibilities of understanding different bodies through the Laban Analysis Movement and somatic techniques and brought the DMT to the equation.

In 2003 Professor Grahame and Rosemary Keer published a book entitled “Hypermobility Syndrome, Recognition and Management for Physiotherapists” after a decade of knowledge in a Joint Hypermobility Syndromes (JHS) clinic. This book provided momentum oh hypermobile disorders clinical recognition and was the first overview of the disorder. Subsequently, in 2010, Grahame and Keer, with Dr Alan Hakim, authored another book with another 30 experts in different medical fields called Hypermobility, Fibromyalgia and Chronic Pain, linking with this book the symptomatology of these pathologies. Alan Hakim studies are one of the main hypermobile pathologies’ references used in this research (Bravo et al., 2010; Hakim, 2010; Hakim, et al., 2017, 2019; Hakim & Grahame, 2004).

Malfait et al. (2017) did a peer review classification of connective disorder defining hypermobile disorders. They differentiated and unified all the hypermobility connective tissue disorders between hEDS and HSD; In the literature, there are different names to them, as the reframe of the connective tissues pathologies are very new. Furthermore, all the hypermobility disorders found with the old nomenclature are included as hEDS/HSD. A year later, in 2018, Antonio Bulbena presented his long research about hypermobility disorders linked with mental health in a TEDtalk and emphasised the necessity of a therapeutic body approach. Antonio Bulbena studies are also one of the primary references cited in this research. Balbuena’s work with the Laban Movement Analysis training I received, it was an opening to research on different body

approaches done in this population. (Bulbena et al., 1992, 1993, 2011, 2014, 2015, 2017; Bulbena-Cabré & Bulbena, 2017, 2018; Pailhez et al., 2009; Remvig et al., 2011).

A gap in the literature showed no research done using DMT in this population. So, a step back had to be done in founding research that supported the idea of DMT as an approach. The use of DMT in Fibromyalgia and Medical Undiagnosed Syndromes and Chronic Pain studies is where the link shows a possible approach to hEDS/HSD patients with DMT. FM and MUS are pathologies that are confused, misdiagnosed, and share unique symptomatology's. (Acasuso-Díaz & Collantes-Estévez, 1998; Bravo et al., 2019; Bojner Horwitz et al., 2006; Fitzcharles & Baum, 2001; Hakim et al., 2010; Payne, 2019; Rahman & Holman, 2010; Revuelta Evrard et al., 2010; Rodríguez Cigaran, 2005).

A lot of medical research links the hEDS/HSD with FM, Chronic Pain and MUS. However, this literature review focuses on similar symptomatology and the DMT techniques used on these populations. Aiming to create a theoretical base that further studies could use. Moreover, this paper helps to understand and acknowledge in a better way hEDS/HSD with the DMT and the urgent necessity of seeing the mental and physical symptoms' connection, and the body and mind as a whole entity.

The literature review is organised by themes, starting with a theoretical frame to understand EDS and hypermobile connective tissues. The development in hEDS/HSD pathologies and symptomatology is essential to understand the use of the body with this population. However, it is necessary to go to similar pathologies to find studies done through DMT in similar populations.

Furthermore, it is needed a theoretical framework of the DMT to understand why there are studies using DMT with other nomenclature, for example, the body-mind approach. And the meaning and background of the Dance, the Movement, and the Therapy in the DMT; is essential as it provides knowledge of the work the DMT does and the purpose of it for a future methodology. Similar pathologies help create a point of view to link them. Finally, a discussion of the result and the variety of possibilities aims to answer this work question: How can the DMT help improve people's lives with hEDS/ HSD?

2. LITERATURE REVIEW

2.1. Theory Framework of EDS.

A syndrome is a set of symptoms of a specific disorder. This syndrome epistemology comes from two different doctors, the Danish physician Edvard Lauritz Ehlers and Henri Alexandre Danlos, a French physicist and dermatologist. Achille Miget and Frédérick Parkes-Weber recognised the EDS between 1933 and 1936 (Hamonet et al., 2016).

Their studies suggested that Edvard Lauritz Ehlers and Henri Alexandre Danlos were the first to present similar cases to the medical society. Clinically identified 123 years ago, the EDS has a unique history, first diagnosed by a dermatologist and later by other rheumatologists and geneticists. It is a simple condition, but difficult to recognise and diagnose (Parapia & Jackson, 2008).

Despite its high frequency, EDS is an underdiagnosed condition due to the lack of knowledge of its clinical presentation (Hamonet et al., 2016). The syndrome is estimated to affect about 1 in 5,000 people worldwide. EDS is a disease caused by mutations in genes involved in the structure and biosynthesis of collagen (Miller & Grosel, 2020). Collagen is a molecule protein that appears in the tissue; around one in four proteins is collagen, making about 7% of the body (Malfait et al., 2017). The abnormal collagen can affect virtually every system in the body.

The presentation and severity of EDS range from undetectable or very mild symptoms to severe or even life-threatening diseases. This heterogeneity in expression can make diagnosing EDS a clinical challenge (Miller & Grosel, 2020). Furthermore, the delay in diagnosis worsens the symptomatology. As the study of Claude Hamonet et al. in 2016 shows, it can take on average 23 years after symptoms start to appear to get diagnosed.

· See illustration 1. Achille Miget medical thesis. Paris, 1933.

2.1.1. Types of EDS and their Evolution in Medicine.

In 1977, the first EDS classification was proposed by Barrabas (1967/1972). This classification includes three types: classic, varicose, and arterial. (Hamonet et al., 2016). The vast number of ways EDS manifests can cause many abnormal physical examination findings; therefore, recognising the underlying pathology is difficult to prove (Miller & Grosel, 2020).

Tissue fragility, joint hypermobility, and skin hyperextensibility are the three main symptoms to analyse to diagnose EDS and is a system classification called the Villefranche Nosology (Hamonet et al., 2016).

Features of EDS often overlap with symptoms of other connective tissue disorders, such as joint hypermobility syndromes (JHS), now named HDS, Marfan syndrome, or osteogenesis imperfecta. Nowadays, to confirm EDS diagnosis, a genetic system classification is necessary. Nevertheless, with hEDS, the diagnosis of this condition must remain clinical as it is the only subtype without a straightforward confirmatory genetic test (Miller & Grosel, 2020).

The Beighton score is the most frequent method of diagnosing EDS. It was designed to assess as many people as possible in the 1970s to measure hypermobility in rural Africa and provide indications of hypermobility's propensity in this population (Knight, 2015). The number of joints affected does not necessarily correlate with the number of symptoms experienced in the patients. Therefore, it is need further measures are required in assessing EDS, hEDS and HSD, which is the underlying reason for the Brighton criteria. The Brighton criteria were formalised by Grahame (2000) and designed to capture the multisystemic nature of EDS and hypermobility disorders (Engelbert et al., 2017; Grahame & Jenkins, 1972; Knight, 2015; Tinkle et al., 2017).

In 2017 The International Consortium on Ehlers-Danlos Syndromes and Related Disorders (formed by more than 40 medical specialists in different investigations) created the latest classification, recognising 13 subtypes of EDS. This does show that EDS is a syndrome that the medical world has started to share and study in deep only in the last decades.

They also differentiate hEDS from HSD, which is still a critical issue in diagnostic and developing further treatments (Malfait et al., 2017). Connective tissue is the material in the body

that binds together, supports, and separates different tissues and organs. Found between other tissues everywhere in the body, it provides strength and flexibility and helps perform general functions and specialised services. Connective tissue disorders disrupt these most fundamental processes and structures of the body, so resulting problems can be widespread, in a wide range of severities, and affect areas that might seem otherwise unrelated (The 2017 EDS/HSD Classification, 2017).

Patients with EDS are treated symptomatically because the condition has no known cure. However, no guidelines have been established for managing patients with EDS, and treatment varies significantly among patients (Miller & Grosel, 2020).

Table 1. *EDS Types Chart*

<i>Clinical EDS subtype</i>	<i>Abbreviation</i>	<i>IP</i>	<i>Genetic basis</i>	<i>Protein</i>
1. Classical EDS	cEDS	AD	Major: COL5A1, COL5A1 Rare: COL1A1 c.934C>T, p. (Arg312Cys)	Type V collagen Type I collagen
2. Classical-like EDS	clEDS	AR	TNXB	Tenascin XB
3. Cardiac-valvular	cvEDS	AR	COL1A2 (biallelic mutations that lead to COL1A2NMD & absence of pro α 2(I) collagen chains)	Type I collagen
4. Cardiac-valvular	vEDS	AD	Major: COL3A1, Rare: COL1A1, c.934C>T, p. (Arg312Cys) c.1720C>T, p. (Arg574Cys)	Type III collagen Type I collagen
5. <u>Hypermobile EDS</u>	<u>hEDS</u>	<u>AD</u>	<u>Unknown</u>	<u>Unknown</u>
6. Arthrochalasia EDS	aEDS	AD	COL1A1, COL1A2	Type I collagen
7. Dermatosparaxis EDS	dEDS	AR	ADAMTS2	ADAMTS-2
8. Kyphoscoliotic EDS	kEDS	AR	PLOD1, FKBP14 ZNF469	LH1, FKBP22 ZNF469
9. Brittle Cornea syndrome	BCS	AR	PRDM5	PRDM5
10. Spondylodysplastic EDS	spEDS	AR	B4GALT7 B3GALT6 SLC39A13	β 4GalT7 ZIP13
11. Musculocontractural EDS	mcEDS	AR	CHST14, DSE	D4ST1. DSE Type XII collagen
12. Myopathic EDS	mEDS	AD/	COL12A1	C1r, C1s
13. Periodontal EDS	pEDS	AD	C1R, C1S	

Note IP, inheritance pattern; AD, autosomal dominant; AR, autosomal recessive, NMD, nonsense-mediated mRNA decay. Reference: Ehlers-Danlos Society, T. (n.d.). *These are the Ehlers-Danlos syndrome*. Adapted from <https://www.ehlers-danlos.com/ehlers-danlos-info/>

As shown in the table above, the hEDS genetic conditions are unknown. Meanwhile, the other subtypes can share pathologies, and until the genetic test is not done, the doctors cannot discard any of the subtypes. The probability that some of the collagen proteins of a few subtypes can happen simultaneously is not common, but it can happen. Many other variants present similar pathologies but are unknown and have only been few cases, so they are omitted as they cannot be extrapolated to big patient groups. (Beighton, 1968; Ehlers-Danlos Society, n.d.; Miller & Grosel, 2020; Parapia & Jackson, 2008).

Tabla 2. Brighton Criteria

Patients must meet one combination of the following:	
1.	Two major criteria
2.	One major and two minor criteria
3.	Four minor criteria
4.	Two minor criteria and a first-degree relative (parent/child/sibling) who has been diagnosed with EDS-HT.
Major criteria:	
1.	Beighton score ≥ 4 (if there has been an injury or surgery affecting range of movement, this can be considered historically)
2.	Arthralgia (joint pain) in ≥ 4 joints for ≥ 3 months.
Minor criteria:	
1.	Beighton scores 1-3 (or 0-3 if over 50 years)
2.	Arthralgia in 1-3 joints for \geq three months
3.	Back pain, spondylosis (spinal arthritis) or spondylolisthesis (spinal subluxation) for \geq three months
4.	Dislocating/Subluxation (partial dislocation) $>$ one joint, or the same joint more than once.
5.	– Marfanoid Habitus; a characteristic appearance including being tall, slim, and having long, thin fingers.
6.	– Thin, stretchy skin or abnormal scarring (cigarette paper scarring or easily scarring)
7.	– Droopy eyelids, short-sightedness, double vision.
8.	– Varicose Veins (particularly at a young age)
9.	– Hernia
10.	– Rectal or uterine prolapse

Reference: Myles. (2016) EDS Wellness/Organizational News. Adapted from

<https://edswellness.org/the-brighton-diagnostic-criteria-for-ehlers-danlos-syndrome-eds/>

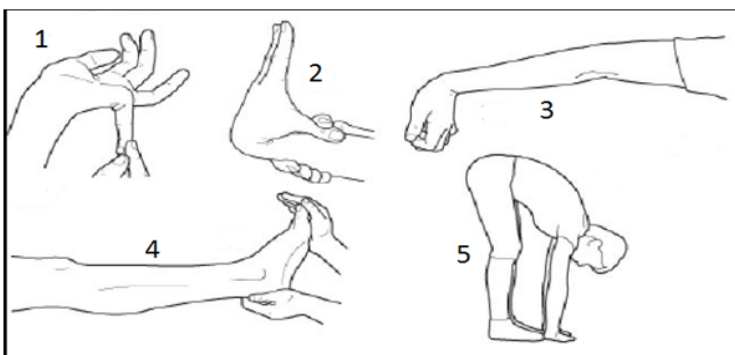
Part of the Brighton Criteria is the Beighton Score described below. It is essential to understand the scores to recognise the commonality of these pathologies.

Tabla 3. Beighton Score

JOINTS	FINDING	POINTS
left little (fifth) finger	Passive dorsiflexion beyond 90°	0 -9
	passive dorsiflexion ≤ 90°	0
right little (fifth) finger	passive dorsiflexion beyond 90°	0
	passive dorsiflexion ≤ 90°	0
left thumb	passive dorsiflexion to the flexor aspect of the forearm	0
	cannot passively dorsiflex thumb to flexor aspect of the forearm	0
right thumb	passive dorsiflexion to the flexor aspect of the forearm	0
	cannot passively dorsiflex thumb to flexor aspect of the forearm	0
left elbow	hyperextends beyond 10°	0
	extends ≤ 10	0
right elbow	hyperextends beyonds 10°	0
	extends ≤ 10	0
left knee	hyperextends beyonds 10°	0
	extends ≤ 10	0
right knee	hyperextends beyonds 10°	0
	extends ≤ 10	0
forward flexion of trunk with knees full extended	palms and hands can rest flat on the floor	0
	palms and hands cannot rest flat on the floor	0

Reference: Vishal (n.d.) Beighton Score Table. *Scridb*. Adapted from <https://www.scribd.com/document/320613795/Beighton-Hypermobili>

Note: Observing the Beighton score scale helps to conceptualise hypermobility.



Reference: Van Horebeek, (n.d.). *Beighton score* [electronic image]. http://www.physio-pedia.com/images/8/82/Beighton_Score.png

2.1.2 hEDS AND HSD

Historically, the diagnosis of hypermobility has not been without controversy and remains a topic of contentious debate among clinicians (Remvig et al., 2011). A hypermobile joint has a greater than average range of movement when measured by eye, or more accurately, with a goniometer. Moreover, medical research consider hypermobility a joint that passively hyperextended over 10 degrees when measured with a goniometer (Grahame & Jenkins, 1972). Generalised joint hypermobility (GJH) is hypermobility of joints without any difficulties or problems with the joints, and most people that have this condition are aware of their hypermobility or being loose-jointed (Aubry-Rozier et al., 2021; Broida et al., 2021; Foley & Bird, 2013; Knight, 2015; Simmonds, 2022; Vera et al., 2020).

The main difference between hEDS and GJH is that GJH is hypermobility but asymptomatic, whereas hEDS and HSD are symptomatic and frequently causes pain (Knight, 2015). Joint Hypermobile syndrome and hEDS appear to describe the same condition even if their classification derives from different clinical perspectives (Hakim et al., 2017; Knight, 2015; Malfait et al., 2017).

The new proposal from the International Consortium on Ehlers-Danlos Syndromes and Related Disorders classification (2017) recognise differences between the joint hypermobile diagnosis with a broad range of varied but related symptoms. Therefore, they introduce the term Hypermobility Spectrum Disorders (HSD) as a group of conditions related to joint hypermobility (JH) to gather what the EDS excludes, including hEDS (Malfait et al., 2017).

Whatever the diagnosis, be it hEDS or HSD, they emphasised that the essence of the different symptomatology and treatments should be as individual as the patient's symptomatology. HSD and hEDS can be equal in severity and both need similar apprehension, as the difference between HSD and hEDS lies in the stricter, more likely hereditary and systemic nature of hEDS, compared

to the HSD; HSD relates to a wide range of musculoskeletal manifestations that can be secondary to the underlying JH (Bulbena-Cabr e & Bulbena, 2018; Knight, 2015; Malfait et al., 2017).

The Beighton score, as mentioned above, is a system to quantify the joint laxity and hypermobility to diagnose HSD. It uses a nine-point system, where the higher the score, the higher the laxity. However, it is different for children, teenagers, or adults because the laxity decreases when we age. The range in young adults is 4-6 in the Beighton score (Armstrong & Greig, 2018; Bockhorn et al., 2021; Malek et al., 2021; Naal et al., 2014; Remvig et al., 2011; Smits-Engelsman et al., 2011).

It is essential to know the types of HSD. In the literature, there are different acronyms for them. The studies recently renamed it, and the Consortium of EDS regrouped hypermobile disorders in 2017 (Ehlers-Danlos Society, n.d.-b; Malfait et al., 2017).

Tabla 4. *The Spectrum of Joint Hypermobility*

Type	Beighton score	Musculoskeletal involvement	Notes
symptomatic GJH	Positive	Absent	
Asymptomatic PJH	Usually negative	Absent	JH typically limited to and/or feet
Asymptomatic LJH	Negative	Absent	JH limited to single or body parts
G-HSD	Positive	Present	
P-HSD	Usually negative	Present	JH typically limited to and/or feet
L-HSD	Negative	Present	JH limited to single or body parts
H-HSD	Negative	Present	Historical presence of
hEDS	Positive	Possible	

Reference: Ehlers-Danlos Society, T. (n.d.). *What are the hypermobility spectrum disorders?*

Adapted from <https://www.ehlers-danlos.com/ehlers-danlos-info/>

*See table 5. DIAGNOSTIC CRITERIA FOR hEDS. By the International EDS Society. Pg 52.

2.1.3 Physical and Mental Symptoms in hEDS/HSD.

The delay in diagnosing connective tissue disorders is a problem caused for the lack of knowledge and research in these pathologies. The International EDS Society emphasises the importance of listening to personal patients' trajectories and symptomatology to address the underdiagnosis of connective tissue disorder and understand how it works better.

On the Ehlers-Danlos Society website, there is a department where anyone with EDS or HSD can tell their stories and write them to share with the world. It is not a scientific reference to quote, but it gives a better understanding of what is missing (Malfait et al., 2017). Isobel Knight (2015) uses many references from patient interviews and from her own experience as a hypermobile patient (Knight, 2015).

One of the main problems the patients talk about is the tiredness they feel. Fatigue and exhaustion "are a significant problem for EDS/HSD patients; in a study of 170 adult women with hEDS/HSD, 71 per cent reported that fatigue had a major impact on their lives" (Bravo et al., 2010, chapter 6). Patients with EDS/HSD will experience fatigue and symptomatology of tiredness (Hakim, 2010; Simmonds, 2022). Hypermobility disorders constantly require to just 'be' doubled the expected effort. It creates exhaustion from the continuous extra work that the musculoskeletal system must do to stabilise the body. The reasons underlying EDS/HSD fatigue and exhaustion are poorly recognised and understood (Hakim et al., 2017; Knight, 2015).

Another problem hypermobile people have is poor sleeping quality. It is well known that bodies require sleep to recover, and when a body in pain cannot heal properly, injuries and mental health problems increase. It is a vicious circle (Hakim, 2010; Hakim, et al., 2017; Knight, 2015)

For EDS and HSD people, their joint proprioception can be dangerous, especially at the end range of movement into their hyperextension. A poor sense of proprioception could explain why

the hEDS/HSD people get injured easily as they lack sensation in the joints at the end of the range. (Hakim, 2010; Grahame & Jenkins, 1972; Knight, 2015; Vera et al., 2020)

It can be tough to cope with a medical condition that causes excessive pain, but exercise is vital for management (Hakim, 2010; Garcia-Campayo et al., 2011; Knight, 2015; Evrard et al., 2010); "People with EDS-HT frequently present to physiotherapists and other medical professionals in a deconditioned state and have often reduced activity owing to kinesiophobia (fear of movement)" Knight, 2015 (p. 112). The return to exercise for patients should be done slowly, carefully, and always under medical supervision at the beginning of the process; however, strength training might predominate. It is essential also to work cardiovascular exercise and stretching hypermobile areas (Simmonds & Keer, 2007, 2008).

Furthermore, EDS and HSD patients also present POTS (Postural (orthostatic) Tachycardia Syndrome), different dysregulations of the Autonomic Nervous System (ANS), and Mast Cell Activation Syndrome. Many studies connect these disorders to connective tissue conditions. They usually can go unnoticed for extended periods, helping to grow the anxiety level with the sensation of lack of control over their bodies and everyday life. Some of their symptoms include bowel disorders (nausea and diarrhoea) and problems with the heart rate, temperature, dizziness, and tachycardia (fast heart rate). These symptomatologies can be frequently misdiagnosed and interpreted as anxiety or panic disorders that other studies linked to EDS and HSD (Akin, 2017; Bulbena-Cabr e & Bulbena, 2017; Gensemer et al., 2021; Hakim et al., 2017; Hakim & Grahame, 2004; Inayet et al., 2018; Kanjwal et al., 2009; Knight, 2015; Kohn & Chang, 2020; Riley, 2020; Roma et al., 2018).

Stephen Porges (1993, 2015) developed the Body Perception Questionnaire (BPQ), an instrument to assess subjective experiences of body awareness and autonomic reactivity. Compared to other scales that measure emotional experiences of body perception, the BPQ (based in the Polyvagal Theory that introduced a new perspective relating autonomic function to behaviours) assess body awareness, stress response, autonomic nervous system (ANS) reactivity,

stress style, and health history, so it is a tool of great use in any research concerning the symptomatology of hEDS/HSD (Cabrera et al., 2018; Porges, 1993, 2015; Porges & Lipsitt, 1993).

Below are the two tables of the Body Perception Questionnaire Form, used in many studies with anxiety, depression, connective tissue, fibromyalgia and/or hypermobility.

Table 6.

Table 1 of the BPQ. Body Awareness

Please rate your awareness of each of the characteristics described below. Select the answer that most accurately describes you.

	Never	Occasionally	Sometimes	Usually	Always
1 Swallowing frequently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 An urge to cough to clear my throat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 My mouth being dry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 How fast I am breathing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Watering or tearing of my eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Noises associated with my digestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 A swelling of my body or parts of my body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 An urge to defecate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Muscle tension in my arms and legs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 A bloated feeling because of water retention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 Muscle tension in my face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Goose bumps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Stomach and gut pains	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14 Stomach distension or bloatedness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15 Palms sweating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16 Sweat on my forehead	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17 Tremor in my lips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18 Sweat in my armpits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19 The temperature of my face (ears)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<u>Never</u>	<u>Occasionally</u>	<u>Sometimes</u>	<u>Usually</u>	<u>Always</u>
20 <u>Grinding my teeth</u>	o	o	o	o	o
21 General jitteriness	o	o	o	o	o
22 The hair on the back of my neck "standing up".	o	o	o	o	o
23 Difficulty in focusing	o	o	o	o	o
24 An urge to swallow	o	o	o	o	o
25 How hard my heart is beating	o	o	o	o	o
26 Feeling constipated	o	o	o	o	o

Reference: Porges, S. W. (1993, 2015). Body Perception Questionnaire (BPQ) Manual. Stress: The International Journal on the Biology of Stress. Adapted from
https://static1.squarespace.com/static/5c1d025fb27e390a78569537/t/5ccd9de46e9a7f37d527bbc9/1556979173189/BPQ_Information_and_Scoring_v2_091518.pdf

TABLE 7. Table II of the BPQ. Autonomic Nervous System Reactivity.

The autonomic nervous system is a part of the nervous system that controls cardiovascular, respiratory, digestive, and temperature regulation systems. It is also involved in the experience and expression of emotions. The autonomic nervous system functions differently among people. This scale has been developed to measure how an individual's autonomic nervous system reacts.

<u>Please rate yourself on each of the statements below:</u>					
	<u>Never</u>	<u>Occasionally</u>	<u>Sometimes</u>	<u>Usually</u>	<u>Always</u>
27 I have difficulty coordinating breathing and eating	o	o	o	o	o
28 When I am eating,I have difficulty talking	o	o	o	o	o
29 My heart often beats irregular	o	o	o	o	o
30 When I eat,food feels dry and sticks to my mouth and throat	o	o	o	o	o

Please rate yourself on each of the statements below:

	Never	Occasionally	Sometimes	Usually	Always
31 I feel shortness of breath	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32 I have difficulty coordinating breathing with talking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33 When I eat,I have difficulty coordinating swallowing chewing and/or sucking with breath	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34 I have a persistent cough that interferes with my talking and eating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35 I gaga from the saliva in my mouth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36 I have chest pains.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37 I gag when I eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38 When I talk, I often feel I should cough or swallow the saliva in my mouth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39 When I breathe, I feel like I cannot get enough oxygen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40 I have difficulty controlling my eyes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41 I feel like vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42 I have 'sour' stomach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43 I am constipated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44 I have indigestion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45 After eating I have digestive problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46 I have diarrhea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reference: Porges, S.W. (1993, 2015). Body Perception Questionnaire (BPQ) Manual. Stress: The International Journal on the Biology of Stress. Adapted from https://static1.squarespace.com/static/5c1d025fb27e390a78569537/t/5ccd9de46e9a7f37d527bbc9/1556979173189/BPQ_Information_and_Scoring_v2_091518.pdf

Any therapist reading responses to this questionnaire can both recognise hypermobility issues and other symptoms which patients might consider so common as to be irrelevant. This questionnaire can improve the understanding of the patients.

In 2008 a study by Ercolani et al. into the psychological characteristics of the hypermobile syndrome in pain-free patients found that hypermobile subjects obtained statistically higher mean scores than the healthy group on all nine scales SCL-90R Illness Behavior Questionnaire. The SCL-90R scales measure psychological symptoms. The reason after these results relates to the hEDS/HSD group as they show more awareness of bodily symptoms, as interconnected to self-perceived liabilities (Ercolani et al., 2008). The link between the instability associated with hEDS/HSD and the range of physical symptoms, anxiety, and general psychological distress is crucial, as until now, there is a high percentage of patients have been dismissed as hypochondria and leading to resentment from patients towards the medical profession (Ercolani et al., 2008; Hakim & Grahame, 2004; Keer & Butler, 2010; Knight, 2015).

As evidenced in the studies referenced above, each body can respond in a unique way to the hypermobile spectrum and syndrome. This broad symptomatology reflects the need to develop treatments that approach body and mind together to prevent and heal injuries, postures, exhaustion, fears, and anxiety that can result in depression too. "Frequent pain and joint instability might explain why EDS-HT people do exhibit anxiety" (Knight, 2015 p. 144).

Antonio Bulbena (1988) worked at the Hospital del Mar in Barcelona treating patients with anxiety disorders when he saw his colleague Dr Duró, a rheumatologist at the same Hospital, putting the same "stamp" in his client's file. It was there when he unexpectedly found a genetic link between joint hypermobility syndrome, panic, and anxiety—first described in 1988 at the Hospital del Mar in Barcelona (Bulbena et al., 1992, 1993; Pailhez et al., 2009; Vallejo et al., 1988). Further studies found a high prevalence of panic disorder and agoraphobia diagnoses in hEDS/HSD: approximately 70% of the patients with anxiety disorders compared to 10% in the controls (Bulbena et al., 2017; Bulbena-Cabré & Bulbena, 2017, 2018; García Campayo et al., 2010; Garcia-Campayo et al., 2011; Pailhez et al., 2009).

Andrea Bulbena-Cabré (2017) researched hEDS/HSD and Anxiety disorders. She said that "the JHS usually goes underdiagnosed and its prevalence in the general population remains unknown" (p 30), as well as anxiety disorders that "are often underdiagnosed and untreated. They cause a significant burden to society and data collected in 1990 indicated that the total costs of anxiety disorders in the United States, reached approximately \$46 billion." (Bulbena-Cabré & Bulbena, 2018. p 26).

After 25 years of research on this topic, Bulbena has published more than 50 clinical articles, completed a PhD, undertaken a longitudinal study with 15 years of follow up in the population he treated (Bulbena et al., 2011, 2015); and conducted other less scientific investigation in children, teens, and adults connecting hypermobility to mental health issues. However, Bulbena acknowledges that it is challenging to get this information, as it puts together body and mental problems, which is not easy to get. He emphasises the necessity of listening to the patients and focusing on the treatments more than the labels, suggesting the importance of bringing the body to the mental health treatments. He puts as an example somatic practices, meditation, or yoga (Bulbena et al., 2015; Bulbena-Cabré et al., 2017; Bulbena, 2018).

Therefore, the correlation between body and mind is highly significant in hypermobile bodies. It is not possible to talk about hypermobile bodies, excluding their mind and mental health. There is much scientific evidence that hypermobile people must be treated holistically, with collagen and connective tissue disorder affecting both body and mind.

2.2 Body-Mind Connection. Embodiment as a Therapeutic Approach

After reviewing the symptomatology of the hEDS/HSD population it is possible to observe the interconnections between the physical symptoms and the mental, and how their body's experiences shape their life perception. Anthropologists, philosophers, psychiatrists, and doctors have researched the relationship between the body and mind. They challenge the dualism in western societies, sustaining that our life implicit knowledge comes from our unconscious body memory, being tacit knowledge (Bremer, 2008; Damasio, 1994, 2001; Farnell, 2012; Fischman,

2005; Fuchs & Schlimme, 2009; Gallagher, 1986,2014; Koch, 2006; Koch & Fischman, 2011 Koch et al., 2013; Lewis, 1995; Niedenthal et al., 2005; Payne et al., 2019; Payne & Brooks, 2020; Sánchez, 2019; Stern et al., 1998). They research the concept of the embodiment as a therapeutic and psychological approach; to purposefully make the unconscious body's ability a source for conscious understanding experience to improve patterns and behaviour.

Nowadays, the definition of the embodiment concept is the inclusion of the vivid body and mind expression. Humans achieve to have a conscious body and a conscious mind connection through an embodied process. This awareness can help the population in particularly challenging body and mind transversal conditions.

Shaun Gallagher (2005) wrote *How the Body Shapes the Mind*, where he researches how awareness of the body influences experience. He worked on embodied and social cognition and the philosophy of psychopathology. "A human being neither "has" nor "is" two bodies; the body as it is lived and the body as it appears in objective observation is the same. The lived body is the physiological body"(Gallagher, 1986. p. 140). He relates the body and mind as the one source of knowledge it is gain through bodily experiences. From birth, movement shapes human capacities for perception and behaviour; knowledge can be gained through observing the movements of others; for example, a newborn can emulate the expression that it sees on another person's face (Gallagher, 2006; Lyons-Ruth et al., 1998; Moore & Yamamoto, 2012).

Gallagher's work helps to approach the implicit relational knowing and its role in the development and psychoanalytic treatment that Karen Lyons-Ruth with the Boston Group exposed to the body embodiment in 1996 (Lyons-Ruth et al., 1998). Implicit relational knowing is a crucial element of the physical practice to feel that it is embody the experience as is encoded in the implicit memory (Gallagher, 1986; Lyons-Ruth et al., 1998; Sáinz, 2017; Stern et al., 1998).

Somatic practices such as mindfulness, yoga, authentic movement, Alexander technique or Feldenkrais base their research on this and are every day more popular in western societies.

Bioenergetics is a specific form of body psychotherapy established in the connections between body and mind founded by Alexander Lowen. It combines body, analysis of movement and relational therapeutic work, based on the premise that the body is the individual (Lowen, 2011; Guest et al., 2019).

A lot of research done in the embodiment concepts and techniques concentrates and acknowledges the unspoken functioning of the body to sense and behave (Merleau-Ponty, 1962; Salmon et al., 1999; Farnell, 1999; Fuchs & Schlimme, 2009; Koch, 2006; Koch et al., 2013; Koch & Fischman, 2011; Koch & Fuchs, 2011; Payne et al., 2019).

One of the ways Dance Movement therapists use to achieve that awareness of the body and get knowledge through the body in a present moment is the feeling of being grounded. "Grounding can be described as one's ability to perceive and to live in 'the here and now' and as one's contact with the ground" (Meekums, 2002 p.64); "To focus on the present means to pay attention to our body through the senses and our breathing (...) Psychologically, grounding can be understood as a person who is present with him/herself, at home in his/her own body/mind" (Hackney, 2003 p. 236).

The concept of lived body that Gallagher use in his research is understood as a background to our experience of the world, organising our pre-reflective sense of self (Bremer, 2008; Gallagher, 1986, 2006, 2014). The use of movement therapy helps to break the dualism between body and mind and improve the awareness of the experience through movement. The embodiment paradigm focuses on the implicit functioning of the body in perception and performance (Merleau-Ponty, 1962; Fuchs & Schlimme, 2009; Gallagher, 1986, 2014; Harrison et al., 2019; Koch et al., 2013; Koch & Fuchs, 2011; Mansilla Sepúlveda et al., 2020; Niedenthal et al., 2005; Sánchez, 2019).

Embodiment and grounding might be viewed as significant aspects of working with hypermobile bodies and minds, as they help to see, and more importantly, feel as a whole and

present. Moreover, basic movement exercises increase the integration of bodily experiences and improve well-being, stability, and connection with the present moment physically, sensorily, emotionally and socially (Bräuninger, 2012; De Tord & Bräuninger, 2015; Meekums, 2002).

It is easy to see that the grounding technique can be achieved by walking through different surfaces (Meekums, 2002. p68) These are things people with hEDS/HSD can do without stigmatisation or feeling threatened or disabled. "Results from an international Internet-based survey with 113 DMT practitioners revealed that nearly half of the therapists use grounding exercises to foster psychological health and stability and work with the Effort weight to increase impulse control" (De Tord & Bräuninger, 2015. p 17). The DMT works the relation between mind and body by working in the concept of embodiment and how it helps unify and gather better unconscious information of the body and the mind, connecting to the space with techniques used by dance movement therapists.

2.3 Theory Frame of Dance, Movement, and Therapy through History

Nowadays, DMT is defined as psychotherapeutic movement to promote emotional, social, cognitive, and physical integration to improve health and well-being (The American Dance Therapy Association, n.d.). Understanding the connection and a proper approach to hEDS/HSD pathologies is relevant. Therefore, a theory frame of where the D, the M and the T come from in the DMT it is needed.

The use of the nomenclature DMT is controversial. DMT is a development from Dance therapy (DT); therefore, many acknowledge and defend the D in DMT. However, others find that the word Dance can be counter-productive due to its association with the word. Furthermore, there is a battle to rename the DMT as DMP (Psychotherapy) as it is done in the UK. With these different opinions, it is relevant to do a theory frame of each to understand and connect them.

2.3.1 Dance

Every human being has experienced dance at some time in his life, sometimes as an actor, and probably many others as a spectator. Much has been said that dance has accompanied man throughout its history. Its origin is lost in time, but it is a universal behaviour of foremost importance in all

cultures. It has a wide variety of objectives, developing in countless ways. [...] dance can be perceived through various channels simultaneously, such as visual, auditory, kinetic activity, proxemic and empathy (Rabago-México, 2012, p.476).

The dance definition that is more suitable for this research is dance as an expression of emotions without choreography or technical steps. Sandra Murcia Gomicia (2017) investigates the therapeutic value of the bodily experience through dance. The psychologist Wolfgang Köhler confirmed anthropoids' circular or elliptical round dance; he deduced humans share the impulse to dance with the primates, inherited through natural selection; this reflection is the most used by the thinkers who have approached the subject of poetry, music, and dance (Gomicia Murcia, 2017).

History and anthropology neglected dance in many ways. Society usually recognise dance as the poor sisters of the arts, mainly because dance is an art of the present moment, and only through paints or literary reviews can it be investigated. More research appeared when the film industry developed in the modern age and captured that present moment forever (Citro & Aschieri, n.d.; Gomicia Murcia, 2017).

A new idea in the dance world starts to emerge with the Renaissance. "With the new feeling of being an individual, of being himself, before being a member of a community, the body becomes the precise border that marks the difference between man and another" (Gomicia Murcia et al., 2017, p.25; Le Breton 2002, p. 45)

In the Renaissance, an exchange of choreographic cultural knowledge between the upper and popular classes happened. Many popular dances were stylised and lost certain mimic characters, and schools of artistic dance were founded (Gomicia Murcia, 2017).

Jean-Georges Noverre, a French dancer and ballet teacher (nowadays the World Dance Day is April 29 because of his birth), had an unfamiliar dance trend as an expression of movement followed by many (Gomicia Murcia., 2017, p. 122). "His description of his ballets and his writings reveal that he was a visionary who predicted the spiritual trends of our present" (Laban, 1993,p15). In her thesis, Sandra Murcia Gomicia (2017) mentions few times the work and words of Rudolph

Laban (1993) when he referred to this transcendental dancer “Noverre was the first to discover that both the ancient peasant dances and the amusements of royalty were unsuitable for the man of the emerging industrial centres.” (Gomicia Murcia, 2017, p.121).

Moreover, philosophers have influenced dance history, determining how they separated body and mind and left dance as the purpose of things instead of a necessity to move and be. The noteworthy development of phenomenology puts an understanding of the human body in the centre of its perception. The phenomenology of dance must be considered fundamental to our understanding of the body (Levin, 2001)

Novack (1990) articulates a body model that was more abstract or objective and more phenomenological. He differentiated between ballet bodies, modern dances, and postwar dances. In ballet bodies, he sees bodies as instruments that must train to comply with the vocabulary of the classical movement; in the modern dances of the decades of 1930/40, he sees the difference where the body is viewed with expressionism where the external move reflects the internal feeling; and the last period, the postwar periods, where the dance was a tool for the depression of those time.

Novack also looks beyond dance theatre to different cultural influences on the body, like rock dance, experimental theatre, and body-based therapies such as the Alexander Technique, yoga, and meditation. “Taking this broader perspective, Novack situates contact-improvisation concerning broader currents of change in the 1960s regarding conceptualisations’ of the body” (Citro & Aschieri, 2012. p 44).

The corporal misalignment, the kinesthetic sensation, and the pleasure of the movement as bases for Modern dance in Europe and the United States become the centre of the novel approach. Isadora Duncan, followed by Ruth Saint-Denis, Martha Graham, y Doris Humphrey, created the new dance techniques and built schools where dance focuses on expression and movement’s inner necessities; from them and their schools came the pioneers of dance therapy (Gomicia Murcia, 2017; Payne, 2003).

Overall, dance as an expression and a practice of power relations and protest, resistance, and complicity, has been the subject of various historical and ethnographic analyses throughout the

years (Reed, 1998). These analyses complicate issues that emerged in early dance politics, particularly in ethnicity, national identity, gender, and, to a lesser extent, class (Citro & Aschieri, 2012; Hanna et al., 1979).

Cave painting demonstrates that humans have danced in circles since the beginning of the times, and it is one of the basics for the DMT using the Chace circle (Meekums, 2002; Karampoul & Panhofer, 2018). Marian Chace (1896-1970), the mother of dance therapy, never considered herself a psychotherapist; her work and further education were closer to psychoanalysis. She developed the setting for a DT or DMT session as known today. Starting with a check-in in a circle where the emphasis is on verbal communication and each member shares with the rest where they are cognitively, emotionally, and physically, followed by movement and closing with the circle again (Meekums, 2002; Gomicia Murcia, 2017)

Elena Karampoul (2018) does a literature review about the use of circles and their processes in dance. She explains how the circle is a powerful symbol resonating with human nature with the elements present in the circle such as mirroring, containment-holding and physical contact; She accentuated and reviewed the relevance between established therapeutic factors in the group analytic therapy and the use of the circle in DMT (Karampoula & Panhofer, 2018).

2.3.2 Movement:

Movement and breath signify the start of life, and it precedes language and thought. Gestures immediately emerge as the means for expressing human needs (Miller, 2012). Again, Sandra Murcia Gomicia (2017) reflects how individual and social experiences not only modify genes and the brain but are also capable of eliminating many of the physical constrictions that our bodies possess (Gomicia Murcia, 2017). She researched the Far East's concept about the body, which surpassed the body-mind dualism that still appears in the West. For example, she has multiple references to The Edwin Smith Surgical Papyrus, an Egyptian medical treatise dating from the 17th-century b.c. In this papyrus, the first writings that explain breathing exercises with a

therapeutic or health purpose. Furthermore, she explains the separation between how the body moves in sports, gymnastics, and dance through history (Feldman & Goodrich, 1999).

Focusing on Occident, thus anthropologists and dance scholars have made significant contributions to the cultural analysis of bodies in motion in the last ten years, situating their studies with broader themes of a social and philosophical theory (Citro, 2010; Farnell, 1994, 1995, 1999; Feld & Novack, 1992; Foster, 1992; Lewis, 1992, 1995). Anthropologists Lewis and Farnell (1994) described how the legacy of Cartesian mind/body dualism permeates the language and categories of embodiment theories, creating boundaries for the analysis of movement (Citro & Aschieri, 2012; Farnell, 1994, 1995; Lewis, 1992).

Novack's work (Feld & Novack, 1992) is relevant again. However, this time focusing on the contact-improvisation technique he created, a modern danced community "sport-art" that focuses on the physical sensations of "touching, leaning, supporting, counterbalancing and falling with other people" (Citro & Aschieri, 2012, p. 94). It changed the concept of dance as just a choreograph, implicating movement and body in a vastly unique way, and helped see other body-movement relationships.

Sánchez Muñoz & Medina Delgado (2018) studied Edmund Husserl, who created phenomenology at the beginning of this [20th] century, an extremely revolutionary and deeply humanistic movement. The pioneers who stood out and understood what Husserl was doing and learned from him were Martin Heidegger, Jean-Paul Sartre, and Maurice Merleau-Ponty (Levin, 2001). Merleau-Ponty had a substantial influence on Marie Chace, and his work was a big impetus to developing Dance Movement Therapy as it is known today (Miller, 2012).

Drid Williams investigated the importance of locating movement in space by examining a "bow" in three systems of movement: tai chi, a Latin mass, and modern ballet. She used the ideas derived from Hertz and Dumont to focus on the cultural meanings of movements and directions, such as up / down, right / left, front / back, and in / out. She used the hierarchy idea of Dumont's structural oppositions and pointed out that the forward and backward movement of western culture correlates with temporal visions of the future and the past; Williams argues that understanding

bodies, spaces, and objects in terms of these structural oppositions is essential to conceptualising human movement as intentional action (Citro, 2012; Grau & Williams, 1995; Williams, 1976, 2009, 2011)

With phenomenology as starting point to integrate body and mind as an entity, and the development of globalisation, which increased the Far East knowledge about the body-mind connection and movements, began to gain more presence. Those combinations were the beginning of the somatic practices in western civilisation (Citro & Aschieri, 2010; Gomicia Murcia, 2017; Nantes, 2020; Sirotkina, 2017; Williams & Best, 1980; Williams 1981).

Occident started discovering the mindfulness, Tai-chi and body-mind connection of the Far East and mixing them with the movement analysis and body techniques. Somatic is the field that studies the soma; it is the body perceived from within by the first-person perception (Citro & Aschieri, 2012; Hanna, 1973, 1990; Hanna & Farnell, 1997). Somatic takes a holistic view of a mind-body relationship and integrates them (Eddy, 2002; Green, 2002; Knight, 2015). Some examples of somatic practices include Body-Mind Centering (BMC), Feldenkrais Method (FM), Alexander Technique (AT), yoga, and Laban Movement Analysis (Eddy, 2002; Knight, 2015).

Bonnie Meekums (2002) described as an allied approach to DMT the BMC (Meekums, 2002; Gomez, 1988) a complex training based on developmental movement and anatomy. BMC is used both to support performance and as a system of therapy (Meekums, 2002, p 5). The article “Alexander technique and Feldenkrais method: a critical overview” (2004) heightens that awareness of “one’s movements” is traceable over more than 1000 years. In the *Yogasutra* by Patanjali written around 200 a.d. the importance of being fully attentive to the state of all one’s muscles, including the muscles to breathe. Applying this same awareness to the body in motion, rather than at rest, is the primary focus of modern movement techniques to re-educated movement patterns such as the Alexander technique and the Feldenkrais method (Jain et al., 2004)

The Alexander principle states that “there are ways of using your body better than certain other ways” (Barlow 1973, p.18; Knight, 2015 p 181). The Feldenkrais Method is a somatically based practice. According to Moshe Feldenkrais, founder of the technique, properly doing it is

hard, as just moving interferes with the somatic experience because it is challenging to concentrate on achievement and simultaneously feel what one is doing (Knight, 2015; Robert Sholl, 2021). In a Feldenkrais class, there is no pressure to do it right. Therefore, the participants experience what is being done, which allows them to learn what will be an optimum movement efficiency (Berardi & Fitt, 1988; Knight, 2015).

Hatha yoga has four principles based on Asanas as postures, Pranayama as breathing techniques, Mudras as hand gestures, and Bandha as meditation; all are a way of being mindfulness, which is to be in the present moment with the own body (Satyananda, 2002).

Laban used to say, “dance is to move as poetry is to prose” (Newlove, 1993 p.13). Towards the end of the last century, Rudolf Laban began to take an interest in all dance forms; he looked for the very roots of active living and believed that the key to unfolding human abilities is to be embedded in the dynamic configurations of dance. He based on the unity of space and movement, and he recognised a natural order in which the energy from within unfolds in space (Newlove & Dalby, 2019). Laban’s work is currently used in a new development to communicate emotions and mental states to robots in a real-time parallel framework (Lourens et al., 2010).

Coming back to movement and the perception of the body through history, the new concept of kinesphere that Laban introduced was fundamental in the development of somatic practices and movement analysis (Chaiklin & Wengrower, 2009).

Jean Newlove (1993) describes it as “The space within our rich, our “personal” space. It is like a “large personal bubble in which we can stretch out in all directions whilst standing in its centre, on one leg” (Newlove, 1993 p.22). If we move away to another part of the room, our kinesphere will travel with us. If someone passes by quite closely, it is possible for kinesphere to overlap momentarily; “anything out of rich is situated in the surrounding “general” space” (Newlove, 1993, p 23).

This concept helped to understand the body in space and its movement. Laban agreed that “modern man had lost much of this spontaneous joy in expressive movement through his

“reflective delusions” which led to a decrease in tactile ability. His stress was now on the more tangible rewards of work and place in society” (Newlove, 1993, p11).

In 1996 Rudolph Laban wrote that “When a person “dances of joy”, he does not do it according to any structure, his movements are not fixed, it is enough to put “charm in the movement” and “joy in the rhythm” to express the feelings through danced movements. “It is absurd to attribute any educational or curative effect to dancing as such”. Suppose the dance has a therapeutic or academic impact. In that case, it will be necessary to conduct a special investigation that explains human nature and the effect of inner impulses on movement behaviour (Panhofers, 2005, p 25; Laban, 1966, p157)

Laban tried to understand how movements, intentions, and instincts work most organically, developing what he called the basis of Laban’s Space Harmony. He used the concepts of Space, Time, Weight, and Flow within the body movement to build his movement analysis that he and his disciples (Warren Lamb, Marion North, and Judith Kestenberg) connected to body language, intention, and emotions. Together, these form the basis of Laban Movement Analysis (LMA) that Bonnie Meekums shows in her book (Meekums, 2002; Chaiklin & Wengrower, 2009; Jean Newlove, 1993; Newlove & Dalby, 2019; Panhofer, 2005)

Table 8. Effort/shape Affinities

Effort	Shape	Psychological function
Flow	Open/close	Emotion and relationship
Time	Forward/backward	Decision
Space	Widen/narrow	Attention
Weight	Upward/downward	Intention

Reference: This table shows the Laban Movement Analysis (LMA) connection with movement and psychological functions (Meekums, 2002, p.32).

After these small reviews of the somatic practices that emerge in the last half of the S. XX, Silvia Citro (2012) reflects on the necessity and relationships “currently woven between

globalisation, religion, and corporeality” (Citro & Aschieri, 2012 p.290). Other authors that support this idea of fast-changing relationships like Paul Virilio (1988), who stated that “due to the incessant flow of images-merchandise and the frenetic speed of transmission in the modern Western world, it would be impossible to stop and register one’s own experience from a temporality of its own” (Citro & Aschieri, 2012, p. 254). It connects with the rise of somatic practices as the necessity to re-evaluate and re-educate body and mind to be more present.

The DMT pioneers started developing techniques to connect with their patients and the new life rhythms and balance between body and mind. Janet Miller, a Mary Whitehouse’s disciple, developed the Authentic Movement technique through spontaneous movement. In 1996, she described the technique as the relationship between the moving self and the witnessing self (Alder, 1996). In the American Journal of Dance therapy article called the Collective Body, she looks to society and sees a whole body as the entire earth. She used her patients' experiences and group sessions to describe this (Alder, 1996).

After her, The Creative Movement, or the Garcia-Plevin Method, based on the practice of Authentic Movement. “In the last 25 years, we have witnessed the development of many disciplines whose focus is on the body and the creative potential of its expressive movement. One way or another, they all seek recovery of the body/mind integration and the restoration of the continuum of body, mind and spirit” (Garcia & Plevin, 2011, p15). Studies show that the search for movement as a therapeutic solution to the fast life rhythms helps strengthen the body-mind connection lacking in western societies (Capello, 2014).

Nevertheless, even after all the research exposed above about the relationship between the body and the mind, technology and life events are surprising our capacity to adapt.

2.3.3. Therapy:

Nowadays, it is understood a treatment intended to relieve or heal a disorder for therapy. Many countable treatments refer to an injury in health over a lengthy period or uncountable that refers to mental health. Today therapy for mental health is standard in western societies, and

there are many types of therapy and alternative therapies. If we go into the anthropology and history of therapy, we can find that the Mesopotamian tables in the Assyrians-Babylonians used for therapeutic purposes heat and massage (Gomicia Murcia, 2017).

Once more, The Edwin Smith Surgical Papyrus stands out for being one of the most ancient known medical treatises, which contain 877 sections on medicine. In them, we find references of music used for therapies relating to women and fertility. Furthermore, breathing techniques therapies designed to cure diseases by singing songs in a certain way. Herófilo, a doctor of Alexandria, regulated the heart rate according to the musical scale. The first written testimony about the therapeutic influence of music on the human body is obtained with the Lahun papyri (Feldman & Goodrich, 1999; Gomicia Murcia, 2017). Therefore, it is observe that using music, rhythms and breath (body) with therapeutical intentions is a resource from some of the oldest civilisations.

Furthermore, therapy focusing on mental health started to be developed in western societies by Freud. Nevertheless, what is essential in this research is the later knowledge of the psychology world brought by the Boston group in 1996. The Boston Change Process Study Group (BCPSG) was created in 1995. It consists of a small group of practising analysts, developmentalists, and analytic theorists, who agree that knowledge from the burgeoning field of recent developmental studies and dynamic systems theory could be used to understand and model a change process in psychodynamic therapy with a therapeutic interaction (Lyons-Ruth et al., 1998; Stern et al., 1998).

Moreover, they propose that interactional processes from birth onward give procedural knowledge regarding how humans do things with others. They call this implicit relational knowing, which differs from the conscious verbalisable understanding and the dynamic unconscious. The unstated relational knowledge of patient and therapist crosses to create an intersubjective area that includes politely precise sensing of each person's patterns of being with others, sensing what the BCPSG calls the real relationship. This inter-subjective domain evolves more complex and articulated with repeated patient-therapist meetings, developing new chances for better legible and adaptive relations (Lyons-Ruth et al., 1998).

During a transactional occasion, they named a moment of meeting. A remarkable dyadic chance concentrates when the two persons accomplish the dual goals of complementary fitted actions and have a new form of reciprocal relation intersubjectively. The BCPSG claims that such moments of meeting redirect the relational anticipations of each partner and allow for new conditions of mechanism and shared experience to communicate and elaborate (Stern et al., 1998).

Stern emphasises the relevance of observing the relational habits in psychoanalytic psychotherapy, opening the therapeutic relationship to acknowledge the lived experience that has not yet been verbalised (Stern et al., 1998).

The importance of the BCPSG in the development of psychoanalytical work in therapy is essential in the DMT as it is based that the relationship between patient and therapist will allow to create and heal past beliefs, behaviours, and ways of communicating. These changes depend on the therapeutic interaction experience in opposition to the classical psychoanalytic treatment that emphasises the process of change by making the unconscious conscious.

In contrast with what the Boston group proposed, the classical psychoanalytic believes that it must be the analyst who gives explicit information that helps to put into words what is repressed unconsciously (Lyons-Ruth et al., 1998).

Relevant for the DMT process is the work of Donald Winnicott (1896-1971). He explored the relational perspective of the psychoanalyst. He defended that the primary tool for therapy is not the interpretations but adequate bonding and how to create new ways of bonding. From Bowlby (1952), the unconscious of bonding in childhood does have a direct experience in the adulthood being, and it can develop a mental pathologic as those studies show (Dosamantes-Beaudry, 2007; Giacolini, 2021; Sainz Victor Cabré, 2012; van Rosmalen et al., 2020).

Descartes' error (1994) Is a book written by Antonio Damasio that assess Descartes most famous proposition of philosophy history created in 1637: I think, then I exist. Damasio, in his work, proved that Descartes was wrong and that we must feel to think and understand; this is one of the bases that use the DMT because we feel with our bodies (Damasio, 1994).

Thanks to neuroscience, it is proved the necessity of including the body in therapy. Is is mention before how the Egyptians acknowledged, but science is critical to verify facts in western civilisations. One of the fundamental discoveries done until now are mirror neurons. Carol-Lynne Moore and Kaoru Yamamoto (2012) explained how the brain works with mirror neurons and how important it is to observe and be conscious of our bodies and learn from observing others and not by experience (Moore & Yamamoto, 2012).

It is an observation that allows us to benefit from other people's experiences. Humans use mirror neurons to learn everything from our first gestures to agile moves. Studying brain and body function leads to a new understanding of the relationships between sensations, perception, cognition, emotion, and action. Now, different disciplines focus on bodily experience as the basis of thinking and acting. Therefore, the longstanding paradox of body and mind is dissolving (Moore & Yamamoto, 2012).

The international DMT associations agree that the DMT is a psychotherapeutic use of movement within a process that pursues the individual's psychophysical integration (body-mind). Using the artistic medium and method (in this case, dance, and movement) to help address people's emotional or psychological conflicts (ADMTE (n.d.) ADTA (n.d.)).

DMT base its work on the body-mind connection; it works with movement and emotion, the body, and its own language. Moreover, it has its foundations in the research on non-verbal communication and creative processes and psychodynamic psychology and human development with different movement analysis systems. The Spanish dance movement association cites Rena Kornblum (2014). She defences that the DMT is based on the premise that the way we hold, move, and feel in our body, reflects our emotional well-being and how by changes in a movement level can affect total functioning (ADMTE, n.d.).

After the framework and background of the DMT there is better understanding of it. There are studies and case controls on its use in pathologies that connect to the hEDS/HSD symptomatology.

2.4 DMT with Similar Pathologies.

The misdiagnosis of other pathologies is quite common in EDS patients (Knight, 2015; Malfait et al., 2017). Fibromyalgia (FM), Chronic Pain, or somatisation related to anxiety or depression are the most common. This is because symptomatology can be confusing, and all disorders have only been researched in the last decades (Hakim, 2010; Fitzcharles & Baum, 2001; Hermanns-Le T & Ge, 2016; Majore-Dusele et al., 2021; Revuelta Evrard et al., 2010).

Those pathologies are not only being misdiagnosed, but they also can appear in the same patient since they are common in the general population (Fitzcharles & Baum, 2001; Hakim, 2010; Knight, 2015; Revuelta Evrard et al., 2010).

Over 15 years of studies have found clinical signs in the diagnoses of FM, and hEDS/HSD as symptoms of POTS, ANS (autonomic dysfunction) and pan-gastrointestinal disorders, including as mentioned in the symptomatology of hEDS/HSD above abnormal thermoregulation, palpitations, excessive gastric acidity, irritable bowel syndrome (IBS), irritable bladder, restless legs syndrome, bruxism, and sleep disturbance are symptoms found in both patients FM and hEDS/HSD (Fitzcharles & Baum, 2001; Hakim, 2010; Knight, 2015; Rahman & Holman, 2010).

In FM and hEDS/HSD, tight muscles and spasms are due to an inability to switch the muscles off. The sleep disturbance in FM patients suggests that they do not show a standard decreased sympathetic nervous system (fight or flight) between 2 am and 5 am, compared to normal controls (Fitzcharles & Baum, 2001; Rahman & Holman, 2010).

Isobel Knight (2015) wrote that “heightened arousal, vigilance and fear also influence the intensity of anxiety, and post-traumatic stress disorder (PTSD) in the EDS and FM population” (Knight, 2015 p. 121). Moreover, other research that studied the predispose of this population to the autonomic sympathetic nervous system and their arousals to stress and fear showed that “it creates a great response to repetitive painful stimulations that increase the autonomic response over time” (Rahman & Holman, 2010 pp. 64–65).

Helen Payne (2018) researches using a body-mind approach using DMT techniques in populations with no apparent medical diagnosis or so-called MUS (medically unexplained symptoms). Despite the nomenclature, “the recent DSM-5 terms it as somatic symptom disorder (SSD) but is yet to achieve general usage” (Payne & Brooks, 2018, p.1). MUS patients "include a broad spectrum of presentations, difficulty accounting for symptoms based on known pathology" to evade the difficulty of choosing "either an organic or a psychological reason allowing a biopsychosocial treatment to happen” (Payne & Brooks, 2018, p.2). The research done in the U.K. shows that the general mental public health system does not tend to engage with MUS, FM, or EDS population. The connection of the physical symptoms to anxiety or depression is not clear yet in treating these pathologies (Payne & Brooks, 2018).

The DMT recognises and supports its knowledge in nonverbal communication research, such as the role of movement interactions, synchrony concepts and research on individuals' movement behaviour in a group (Davis et al., 1980; Payne & Brooks, 2018). DMT plays an essential role in these pathologies as it is a psychotherapy that uses the body as a language to connect to the patient with successful outcomes. Many studies on how the DMT could be an approach in these patients and pathologies have been done (Bojner Horwitz et al., 2006; Bravo et al., 2019; Federman et al., 2019; Knight, 2015; Lin & Payne, 2021; Payne & Brooks, 2018; Rodríguez Cigaran, 2005).

Sarah Rodríguez Cigaran (2005) did a research thesis on the use of DMT with FM in seven women over seven months that she developed in her practice for almost ten years and described it in the article “bodies’ who talk about pain, FM and DMT” publish in the first book of DMT ever wrote in Spanish. She reflects on the feeling that those patients have with the lack of movement not to express; therefore, they do not feel physical or mental pain. This is related to the hEDS/HSD patients that also represent a fear of movement and acknowledge the mental anxiety that it can cause (Panhofer, 2005; Knight, 2015; Rodríguez Cigaran, 2005).

Moreover, the studies of Helen Payne over the years in the U.K. with the MUS population developing the BodyMind Approach program acknowledge the feeling of being misjustice by the

medical field that EDS patients have. For this reason, the international symbol of the hEDS/HSD patients is a zebra, and they call themselves zebras. Medical students were taught for decades that “When they hear hoofbeats behind them, don’t expect to see a zebra” (Ehlers-Danlos Society (n.d).

In other words, the zebra symbology gives these patients a sense of empowerment in their medical invisibility history. Doctors tend to look for the more common and usual pathology (horses) and misjudge those patients (zebras), as doctors were told not to look for a surprising or different diagnosis; hEDS/HSD and MUS People spend years searching for answers (Lin & Payne, 2021; Payne & Brooks, 2018).

Furthermore, Payne and Brooks (2018) sustained that adopting an embodied approach for MUS symptoms was the most accurate way to give them a tool to self-manage their symptoms, instead of giving them a not well proved or proper treatment or cure. “The BodyMind Approach has been developed from enactive, embodied psychotherapy (dance movement psychotherapy) adapted explicitly as a learning tool for the MUS population [...] TBMA use experiential learning as key to the process of feeling in control” (Payne & Brooks, 2018, p.4).

Chronic Pain is one of the main symptoms of the FM, MUS, and hEDS/HSD population. “Pain can interfere with a person's quality of life and general functioning. People in pain can experience impairments in attention, control, working memory, mental flexibility, problem solving and information processing speed” (Hart et al., 2003, p. 2).

In 2018 the SIC (Societal Impact of Pain) did a Thematic Network on pain impact in Europe. They describe the burden that pain is in our society today. 150 million Europeans suffer from moderate to severe chronic pain (Hart et al., 2003; Majore-Dusele et al., 2021; Societal Impact of Pain, 2018)

The World Health Organization in 2019 made a significant change in the classification of chronic pain as they adopted the new edition of the International Classification of Diseases, 11th revision (ICD-11). It is the first classification with chronic pain as a health condition in its own right (Majore-Dusele et al., 2021).

The new point of view and research on Chronic Pain helped create more research to find different ways to approach and treat chronic pain conditions. A pilot study with 29 patients in the U.K on how a mindful based approach through DMT to chronic headache pain patients showed that it could help with the symptomatology. Nevertheless, it was done in a small group population (Majore-Dusele et al., 2021).

The feeling of not being in control of their bodies or symptoms is familiar in the FM, EDS and MUS populations. The use of DMT tools develop in those studies help the patients to have a feeling of body and mind empowerment and increase resilience to sustain self-management symptoms (Bojner Horwitz et al., 2006; Bravo et al., 2019; Federman et al., 2019; Knight, 2015; Payne & Brooks, 2018).

Therefore, observing other studies of DMT with similar pathologies it is possible to see the potential benefit of the use of DMT for hEDS/HSD patients.

3. METHODS:

Several databases and sources for this literature review were used to ensure high hEDS/HSD and DMT connection standards. First medical articles on EDS and hEDS/HSD were obtained from Dtra Otero, an internist specialist in connective tissue disorders in Madrid's hospital 12 de Octubre. Also, leading EDS associations were consulted for research, such as the Spanish EDS association (ANSEDH), the international society of EDS, the British organisation and the North America association.

Moreover, other databases such as google scholar, ResearchGate, Open access journal, Academia.edu, ScienceDirect, National Library of Medicine (nih.gov), Laban library and archive, the Pennsylvania State University (psu.ed), SpringerLink database, Wiley online library and the Universidad Autonoma de Barcelona database used in the research process.

Second, the reference section for each article or book found was searched to see additional articles using Mendeley as a helpful tool to find those references.

Third, medical educational and psychology journals for around the world were searched, some of them were: Psychosomatics, Current Opinion in Psychiatry, Revista de Humanidades, Journal of Physical Education, Recreation and Dance, The Journal of the Royal Anthropological Institute, American Anthropologist, The Arts in Psychotherapy, American Journal of Medical Genetics, Autonomic Neuroscience: Basic and Clinical, Revista de la Sociedad Española del Dolor, Revista Latinoamericana de Estudios Sobre Cuerpos, Emociones y Sociedad, Annual Review of Anthropology, British Journal of Haematology, General Hospital Psychiatric, Journal of the American Academy of Physician Assistants and/or American Journal of Medical Genetics.

Furthermore, some books, peer research dissertations and thesis were consulted from the Universidad Autonoma de Barcelona, Universidad de Murcia, or Trinity Laban music and dance faculty archive.

Through the review, the most popular methodology used to diagnose people with hEDS/HSD is the Brighton criteria and the International EDS society questionnaire.

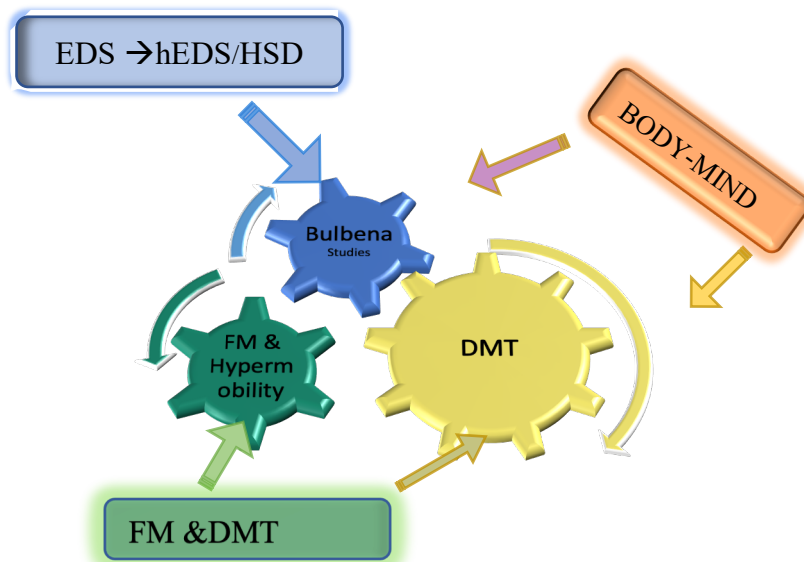
However, the mental health methodology is still being researched, and the primary studies are the ones done by Antonio Bulbena since 1988 to today. He is the one that linked hypermobility and connective tissue disorders pathologies to mental health disorders, and he stated the necessity of an embodied approach for this population. Nevertheless, the concept of embodiment and grounding with relational psychoanalyses methodologies are the most popular in the DMT with patients of similar pathologies.

The main keywords used in the databases to do this review were EDS, hEDS, HSD, DMT, embodiment, somatic therapies, anxiety, hypermobility, dance anthropology, fibromyalgia, chronic pain, Body-mind; alone or combined by y (and) or (o) both in Spanish and English, being the last one the most used in the studies.

The strength of this review is founded on the studies done in similar pathologies to hEDS/HSD and the studies done that propose a body and mind connection and the use of somatic to treat anxiety and hypermobility population.

The review's weakness is that there are no scientific case studies or theory proposals in this population treated with DMT. However, there are few physiotherapies approaches using embodiment and somatic practices techniques for hEDS/HSD; despite this, those references are not included as they lack a psychotherapy background. Furthermore, the existing methodologies could further research methodology in this population.

The graphic below shows how I did other research from the main articles or studies. It has been a process of going back to information to find new research linking the main works.



This research was done during the Covid -19 pandemic and due to the restrictions it was not possible to propose an intervention. Further approach to these population using DMT and the result of this research will be needed with an intention to be developed in a methodology.

4. RESULTS:

This literature review aims to find an answer to How the DMT can help improve people's lives with hEDS/ HSD? In the process I found the relevance that the studies done of a therapeutic approach from the body to hypermobility pathologies have for mental and physical symptomatology. (Bulbena et al., 1993; Bulbena-Cabré & Bulbena, 2018; Garcia-Campayo et al., 2011).

After the research, using the graphic above, we could draw a line that relates hEDS/HSD to FM and DMT and the BodyMind connection that regroup and connect all the studies revised.

The relation between body and mind has been demonstrated in different studies. There are writings about embodied therapies with medical and healing outcomes in the Edwin Smith Surgical Papyrus in the 17th-century b.c. to the latest new research that neuroscience has brought us with the mirror neurons. Even if the body-mind relation has always been integrated into other cultures, western societies have a dualism that needs to be confronted by science (Feldman & Goodrich, 1999; Moore & Yamamoto, 2012).

Studies demonstrating a beneficial outcome to patients using the DMT in similar pathologies to hEDS/HSD are crucial to establishing a further connection (Bojner Horwitz et al., 2006; Federman et al., 2019; Payne & Brooks, 2018; Rodríguez Cigaran, 2005). Reviewing the history before those pathologies to understand the similarities and the misdiagnose between them help to connect and give a perspective of what they are essential to mention (Fitzcharles & Baum, 2001; Hakim, 2010; Hakim & Grahame, 2004; Hamonet et al., n.d.; Knight, 2015; Payne & Brooks, 2018; Rahman & Holman, 2010; Revuelta Evrard et al., 2010; Simmonds, 2022).

The link established between those pathologies with the literature review help to answer the question of what this review could apport to the DMT world. The MUS and FM patients' studies showed that DMT helps populations with similar pathologies as hEDS/HSD.

Nevertheless, the gap in the research only shows a new possibility of the use of the DMT in other similar populations, and further case studies and other research could scientifically prove this.

This gap found in the research is the main reason for this literature review. The process of including and excluding references was done focusing on how it could answer the question: How can the DMT help improve people's lives with hEDS/ HSD?

5. DISCUSSION

To answer the questions: How the DMT can help improve people's lives with hEDS/ HSD? A connection between the DMT and the hEDS/HSD pathologies was established. To establish that this connection is essential to know the background of both the EDS and connective tissues disorders and the Dance Movement Therapy trajectory.

There are literature and studies that show the connection between body and mind and a long history of good outcomes using movement, rhythms, and somatic therapies to improve well-being. The amount of literature on this topic is much more than the one shown here. However, to use only what connected better with the hypermobile pathologies and the DMT was fundamental to select and reference the main literature.

It is imperative that with the studies shown above, we recognise the necessity of a bodily approach to mental health. Furthermore, the increasing research done in unknown pathologies shows the connection between a few of them. For example, now will be difficult to talk about hypermobility without mentioning the anxiety or how much chronic pain affects more people every day. Nevertheless, the link between MUS patients, FM and hEDS/HSD was established over ten years ago (Hakim, 2010), even if it is unknown or not well recognised for the general population. Those pathologies have been overlooked for a long time, but the studies show that they are an increasing problem in western societies.

The dualism between body and mind is very inherited in our society. A sense of banality, a misunderstood concept of dance, and the importance of embodying movement taking for granted is a heavy package that the DMT carries.

Fighting these misconceptions and beliefs can be a lifetime of struggle for the therapist. However, patients with hEDS/EDS have also encountered a lifetime of battles to be acknowledged and diagnosed. This common point can be a starting point of communication between patients and therapists. The resilience in both scenarios benefits the DM therapist to acknowledge the individuality and particularity of hEDS/HSD patients without questioning the patient's symptoms.

The patients are open to the new approach as there is no right therapy or recommended solution for them in the medical field.

The use of DMT in some of these pathologies started to find answers where the patients did not have them. We have not been taught how to recognise our body presence and feelings, even if studies show that it is an implicit knowledge that we can use as a tool to improve quality of life (Koch & Fuchs, 2011).

DMT and the use of its techniques as Grounding can help to increase and create empathy and activate memories and emotions (De Tord & Bräuninger, 2015; Levy, 1995). Moreover, depression and anxiety patients showed a satisfactory response to movement in rhythm. Making the DMT resourceful psychotherapy for these populations (Bulbena-Cabré & Bulbena, 2018; García Medrano & Panhofer, 2019; Garcia-Campayo et al., 2011; Karkou et al., 2019; Meekums et al., 2015; Peters, 2012; Revuelta Evrard et al., 2010).

Sarah Rodríguez Cigaran (2005) explains this concept in her long research in DMT for the FM population. One of the main points that she defends is that DMT works in patients by bringing them closer to their bodies as it transmits the essential concept that we are our bodies (Rodríguez Cigaran, 2005).

The DMT uses body movement analysis to help understand their patient's movements qualities. The quality of the movements we constantly perform talk about who we are, and they express our feelings and intentions to draw our character finally. Consequently, we frequently encounter in non-verbal expression a possibility to realise how we are, how we manage others and how we connect to the world around us. From this conception, a new relationship with the body creates the possibility of sense something more than physical pain.

Within the psychotherapeutic framework, DMT tries to achieve that the person can be or re-create itself by introducing new movements that communicate how we feel we are and how we would desire to be. In that space, we discover, integrate, and decide what to accomplish with that knowledge about ourselves. Therefore, DMT is a form of psychotherapy that incorporates and

emphasises the body, its movement, expression, and emotion (Farnell, 1995; Feldman, 2016; Gomicia Murcia, 2017; Jean Newlove, 1993; Meekums, 2002; Miller, 2012; Panhofer, 2005; Payne, 2003; Peters, 2012; Sarah Rodríguez Cigaran, 2005).

Helen Payne has done a lifelong work in DMT and how to help the population with no apparent symptomatology. She develops what is called the BodyMind Approach. It is based on DMT, but as we mentioned before, the DMT name can be confusing or mistrusted by institutions or the patients themselves. Therefore, it is essential in the finding of research in DMT to similar pathologies to be open to studies reframing DMT. Antonio Bulbena also emphasises the difficulty in the medical field to talk about body and mind as one entity.

That MUS patient recognizes that the only option they have left in the public health is Cognitive Behaviour Therapy (CBT) to treat the accompanying depression and anxiety which does not address the symptom. The patient likely rationalises their anxiety/depression due to the symptom distress rather than its cause. Because of the stigma, it can feel frightening to the patient to be referred for psychological treatment. It may feel to them that the medics are saying it is “all in your head” and that pain is not their body experience (Payne & Brooks, 2018).

As shown in the studies, embodied social cognition is the best way to approach patients with unclear physical symptomatology and anxiety and depression as “nothing is solely in the head, the head (brain) is part of the body” (Payne & Brooks, 2018, p. 3).

According to the enactive stance, the mind cannot be understood as separated from the body, and actions and movements perform essential in meaning-making. Through our movement, we enact a world of meaning and self-generate our identity in the process (Galbusera & Fuchs, 2013).

The necessity of keeping our body and movements present is a challenge that even after all the research known and the evidence of past societies and other cultures, the western institutions have not applied it yet, and many consider it unnecessary. These studies done over the years using

DMT or its bases to approach people with anxiety, depression and with bodies that suffer and are unpredictable bodies with pain have shown successful outcomes.

Moreover, how the psychiatry's research done by Bulbena supports the involvement of the body and somatic techniques in the treatment of Hypermobility patients helps to keep the idea that embodied therapy can be a potential solution.

With the divergence between nomenclature and history, we need neuroscience to support the DMT work. The recent discovery of mirror neurons and the increasing interest in somatic practices is a resource that the Dance Movement Therapy community should use. At the same time, the hypermobile populations start to be seen more like patients and less like just bendy people.

Further research with this population is needed; we could set an initial framework to use the DMT with hEDS/HSD using the theoretical background. Moreover, establishing the individuality of the DMT approach, as each person movement quality is unique and the particularity of each patient with hEDS/HSD pathologies, could be a starting point for further developments.

A lot of research can be found, but it can be overwhelming to use all of them. I believe the work of Antonio Bulbena, Helen Payne, and Sarah Rodriguez must be in consideration to develop a method to approach DMT to hEDS/HSD. They all have been researching and developing their work for over ten years. They defend the necessity of an embodied approach for pathologies with anxiety, hypermobility, and other related and unknown symptoms.

6. CONCLUSION

With the research done and my own experience as DMT and hEDS, I believe that a therapeutic approach from the body to hypermobility pathologies will be relevant. The DMT could help improve the lives of people with hEDS and HSD. Further pilot studies should be done to develop the right approach. However, as the literature shows, hEDS/HSD can vary significantly from patient to patient; even if there is a pilot or frame method to work with these pathologies, we must acknowledge the singularity.

Moreover, DMT and its use of the patient's movement vocabulary helps to make this method more individualised for each patient. That, in a way, is what is needed in a pathology that has not been well recognised. Patients need to be seen and acknowledged in their own bodies. Like FM patients, they need to accomplish being in their bodies and creating new movements or learning to identify and move their chaotic, loose joined bodies.

Furthermore, a lot of research links dance and other high intense movement training and techniques with hypermobility and anxiety disorders. This link is not mentioned in this work as it was discarded because it would shift the main aim of the research. However, if further investigation is done, it will appear in many studies the link between DMT and dancers and dancers and hypermobility.

The connections found in this research process and the amount of work still needed to concrete, and use the DMT in those populations were mind-blowing. Moreover, due to the overburdened vision of wester dualism society and the paternalise vision of the body, movement, and dance, the new generation of DM therapists have to research for new outcomes in different populations. It is well known that outcasts find sense between themselves.

7. ACRONYMS

ANS autonomic nervous system

ANSED Asociación Nacional del Síndrome de Ehlers Danlos (Spain)

AT Alexander Technique

BCPSG The Boston Change Process Study Group

GJH Generic Joint Hypermobility

BMC Body-Mind Centering

BPQ Body Perception Questionnaire

CBT Cognitive Behaviour Therapy

DMT Danza Movement Therapy – Danza Movimiento Terapia

DSM-5 Diagnostic and Statistical Manual of Mental Disorders, 5th Edition

EDS Ehlers Danlos Syndrome

EFIC the European Pain Federation

FM Feldenkrais Method

FM Fibromyalgia

hEDS Hypermobile Ehlers Danlos Syndrome

HSD Hypermobility Spectrum Disorders

ICD-11 International Statistical Classification of Diseases and Related Health Problems

JH Joint Hypermobility

LMA Laban Movement Analysis

NHS National Health System (UK)

SIP Societal Impact of Pain

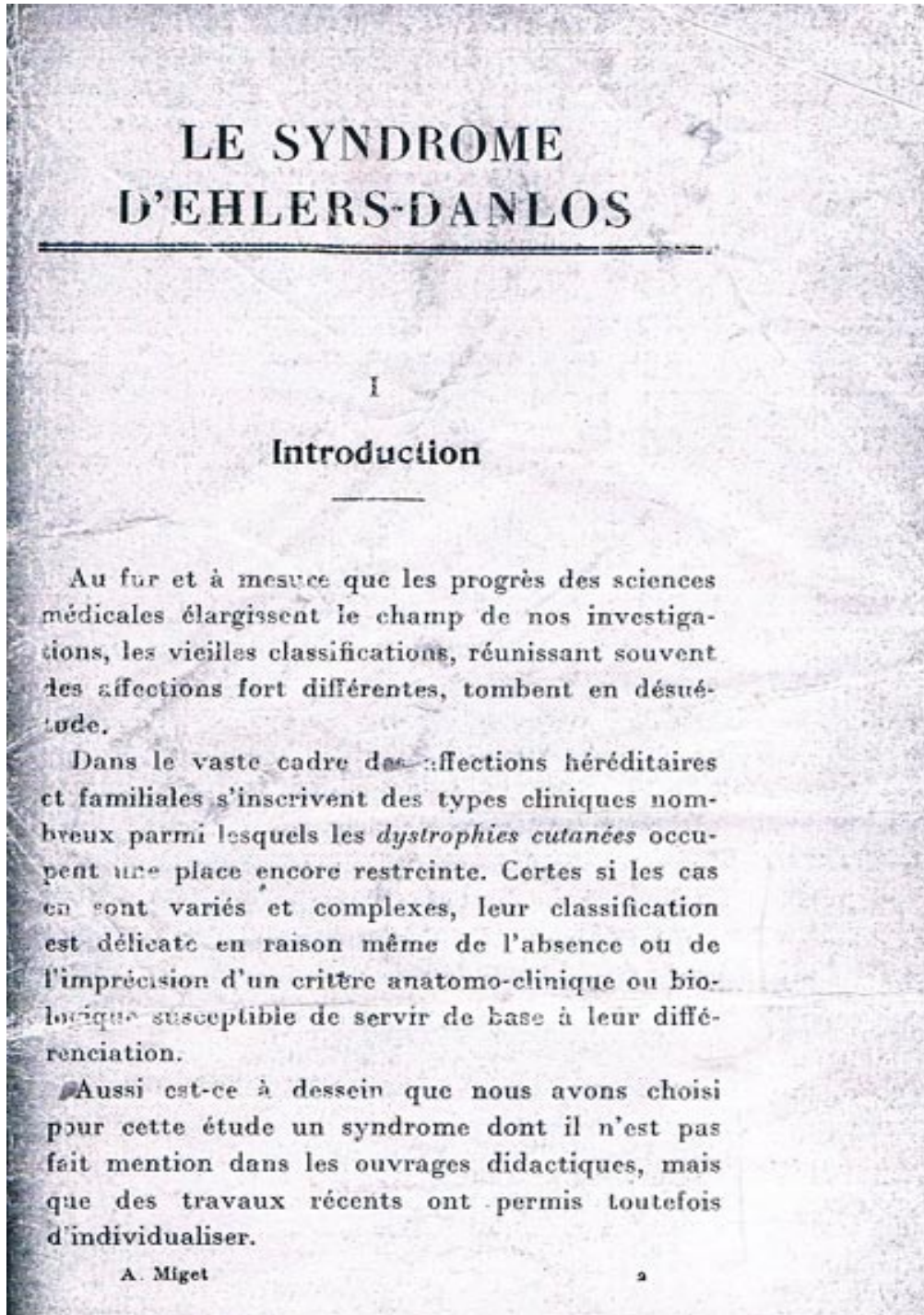
SSD Somatic symptom disorder

POTS Postural (orthostatic) Tachycardia Syndrome

PTSD post-traumatic stress disorder

ILLUSTRATION

Illustration 1. ACHILLE MIGET MED 1933.



Note: Hamonet et. al (2016) Historia del Síndrome de Ehlers-Danlos-Tschernogobowl /. Cuadernos de Neuropsicología. Volumen 10. p17-31. Ilustration p. 3

TABLE 5. *Diagnostic Criteria for hEDS*

Diagnostic Criteria for Hypermobile Ehlers-Danlos Syndrome (hEDS)

This diagnostic checklist is for doctors across all disciplines to be able to diagnose EDS



Patient name: _____ DOB: _____ DOV: _____ Evaluator: _____

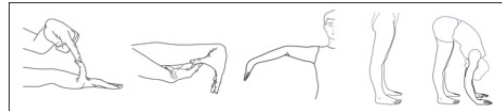
The clinical diagnosis of hypermobile EDS needs the simultaneous presence of all criteria, 1 **and** 2 **and** 3.

CRITERION 1 – Generalized Joint Hypermobility

One of the following selected:

- ≥6 pre-pubertal children and adolescents
- ≥5 pubertal men and women to age 50
- ≥4 men and women over the age of 50

Beighton Score: ____/9



If Beighton Score is one point below age- and sex-specific cut off, two or more of the following must also be selected to meet criterion:

- Can you now (or could you ever) place your hands flat on the floor without bending your knees?
- Can you now (or could you ever) bend your thumb to touch your forearm?
- As a child, did you amuse your friends by contorting your body into strange shapes or could you do the splits?
- As a child or teenager, did your shoulder or kneecap dislocate on more than one occasion?
- Do you consider yourself "double jointed"?

CRITERION 2 – Two or more of the following features (A, B, or C) must be present

Feature A (five must be present)

- Unusually soft or velvety skin
- Mild skin hyperextensibility
- Unexplained striae distensae or rubae at the back, groins, thighs, breasts and/or abdomen in adolescents, men or pre-pubertal women without a history of significant gain or loss of body fat or weight
- Bilateral piezogenic papules of the heel
- Recurrent or multiple abdominal hernia(s)
- Atrophic scarring involving at least two sites and without the formation of truly papyraceous and/or hemosideric scars as seen in classical EDS
- Pelvic floor, rectal, and/or uterine prolapse in children, men or nulliparous women without a history of morbid obesity or other known predisposing medical condition
- Dental crowding and high or narrow palate
- Arachnodactyly, as defined in one or more of the following:
 - (i) positive wrist sign (Walker sign) on both sides, (ii) positive thumb sign (Steinberg sign) on both sides
- Arm span-to-height ratio ≥1.05
- Mitral valve prolapse (MVP) mild or greater based on strict echocardiographic criteria
- Aortic root dilatation with Z-score >+2

Feature A total: ____/12

Feature B

- Positive family history; one or more first-degree relatives independently meeting the current criteria for hEDS

Feature C (must have at least one)

- Musculoskeletal pain in two or more limbs, recurring daily for at least 3 months
- Chronic, widespread pain for ≥3 months
- Recurrent joint dislocations or frank joint instability, in the absence of trauma

CRITERION 3 – All of the following prerequisites MUST be met

1. Absence of unusual skin fragility, which should prompt consideration of other types of EDS
2. Exclusion of other heritable and acquired connective tissue disorders, including autoimmune rheumatologic conditions. In patients with an acquired CTD (e.g. Lupus, Rheumatoid Arthritis, etc.), additional diagnosis of hEDS requires meeting both Features A and B of Criterion 2. Feature C of Criterion 2 (chronic pain and/or instability) cannot be counted toward a diagnosis of hEDS in this situation.
3. Exclusion of alternative diagnoses that may also include joint hypermobility by means of hypotonia and/or connective tissue laxity. Alternative diagnoses and diagnostic categories include, but are not limited to, neuromuscular disorders (e.g. Bethlem myopathy), other hereditary disorders of the connective tissue (e.g. other types of EDS, Loays-Dietz syndrome, Marfan syndrome), and skeletal dysplasias (e.g. osteogenesis imperfecta). Exclusion of these considerations may be based upon history, physical examination, and/or molecular genetic testing, as indicated.

Diagnosis: _____

v9

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ANEXO

My experience:

I am a zebra, and I am proud of it. Moreover, I am a mover. Many investigations have been done on how hypermobility can disadvantage dancers in their training. Still, I was lucky enough to find the right teachers in my path that helped me recognise my movement patterns.

I have been told that I started to show symptomatology when I was six years old. However, I did not connect to it as a painful thing. Therefore, I used the hypermobility range of joints as a playful way to move my body. Nevertheless, age does not forgive, even more, if I have had intensive physical training. The curiosity and the necessity to search for answers and understanding brought me to the DMT.

For me, the diagnosis and the studies done through the years mean a new way of understanding my body. I believe acknowledging helps to bring further studies and possible treatments. Also, the feeling of being part of something and not only being treated like an outcast drive my research for answers.

Something similar happens with being a DMT and the social panic of breaking the boundaries of western dualism and the idea of the dance/movement therapy approach. To be a zebra has helped me become a better DM therapist as I do deep research in my body movement vocabulary every day, and to have a conscious embody experience is a pattern I have been developing for a long time. Furthermore, it helps not to fall into clichés and social conceptions.

It has been demonstrated that speaking a different language changes the brain structure and ways of thinking, being more open mind. I believe it is the same with body language.

There is no correct answer to why dancers started to use movement, music, and embodiment as a therapeutic approach. Still, in my own experience, this comes as dancers have been trained to talk different languages with their bodies.

I have exposed all those things as hEDS symptoms, and I researched them to find answers and understand how my body and mind work. In my experiences, I connect to many of the symptomatology.

It is a process, I know it will never end as I change and my body changes with me each day, but those changes are the ones that keep me embodied and grounded, present in the now and connected with my conscious body and mind.

Since childhood, I have been a mover and an observer of my body and my mind, introvertly and extrovert. It is an implicit knowledge that, with intense study and research, it has become my expertise and a tool to be able to connect with other people.

I trust that after this research, further studies will be done. Deep research on the involvement of the body-mind connection in hypermobile people and anxiety disorders from the Dance movement therapy approach will be needed using the help of neuroscience and the work done by many Dance Movement therapists.

And after the research and my own background, I would like to close this paper with two references that have marked my understanding of hEDS/HSD and how to approach it from DMT.

Antonio Bulbena refers to hypermobile anxiety patients as WORRIER-WARRIORS for their resilient capacity. (Bulbena, 2018. TEDtalk)

Clarissa Pinkola Estés, the Jungian psychoanalyst, said that in her book, women who run with wolves, I could relate to all the skin problems hypermobile people can have. "A scar is stronger than skin." (Estés Pinkola, 2019 pp. 563).