REHAB MANAGEMENT OF JOINT HYPERMOBILITY

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In Motion Therapy, Montrose
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OBJECTIVES

Participants will be able to:

- Identify joint hypermobility syndromes via the Beighton Scale
- Learn when to refer non-benign joint hypermobile individuals for further testing
- Develop a home program consisting of specific exercises, patient education related to awareness of posture & activity modification
- Review and modify if appropriate, an existing exercise program
HYPERMOBILITY DEFINITION

- An increase in range of movement due to looseness in connective tissues, especially ligaments (Keer, 2011)

- Benign joint hypermobility syndrome: generalized joint laxity with musculoskeletal complaints in the absence of genetic, musculoskeletal, or rheumatic disorders.

- Genetic form: Inherited genetic trait determined by a person’s connective tissue protein matrix genes (Grahame, 2008) and can exist by itself or be a part of a more complex diagnosis.
Beighton Scale

Give yourself 1 point for each of the manoeuvres you can do, up to a maximum of 9 points.

Can you bend your thumb back onto the front of your forearm?

Can you put your hands flat on the floor with your knees straight?

Can you bend your knee backwards?

Can you bend your elbow backwards?

Can you bend your little finger up at 90° (right angles) to the back of your hand?

Ehlers-Danlos Support UK

Registered Charity 1157027

www.ehlers-danlos.org
T: 020 8736 5604
Beighton Scale

-Hypermobility is clinically and objectively determined by 4 of 9 points (1 point per maneuver per right or left side)

-This scale is NOT used to rate genetic disorders such as Marfan’s or Ehlers-Danlos Syndromes (EDS has 13 subtypes)
SYMPTOMS OF HYPERMOBILITY

- Patients report discomfort from stiffness and positively like stretching.

- Can be symptomless apart from hypermobility.

- Tip of the iceberg?: there is a series of other symptoms (cardiovascular, skin, mucosal, fascial, nervous system, dysmorphism) that result from hypermobility, these should be evaluated for a diagnosis of hypermobility spectrum disorders if complaints are more than just musculoskeletal.

- The tendency for hypermobile individuals to rest at end range and regularly use their joints in a locked position is thought to be an attempt to improve stability (Simmonds, 2008).

- Dislike sustained postures (sitting, standing) or too much activity.
DIFFERENTIAL DIAGNOSIS

- Acquired forms of hypermobility exist (training such as dance, martial arts, yoga, etc.).

- Rheumatologic disease (in kids, JRA and hip dysplasia), inflammatory or degenerative diseases, CRPS, fibromyalgia, hypothyroid and other endocrine or collagen diseases must be ruled out.

- **Opportunity for PT/OT/ATCs to help screen for non-benign hypermobility which require referral to appropriate physician (PCP, rheumatologist, genetics clinic).
In a survey of patients with hypermobility, “Participants highlighted a range of impacts of JHS, incorporating physical, social and psychological domains. Respondents described difficult journeys to diagnosis, and feeling unsupported and misunderstood by their peers and healthcare professionals.” (Palmer et al, 2019)
CONNECTIVE TISSUE DISORDERS (IN CHILDREN)

- Ehlers Danlos syndrome: A clinically and genetically heterogenous group of connective tissue disorders caused by mutations in genes associated with collagen synthesis or caused by a mutation in the collagen gene or protein that processes collagen. Prevalence in US 1:10,000.

- Marfan’s syndrome: A genetic connective tissue disease resulting in musculoskeletal, cardiovascular, respiratory, ophthalmologic and integumentary compromise, dx via Ghent criteria, with or without family hx. Prevalence in US 1-2:10,000. Physical characteristics: long limbs, face.
**What is Marfan Syndrome?**

It is an inherent disorder that affects the connective tissues in the body. Marfan syndrome is caused by the proteins in the connective tissues.

**Signs and Symptoms of Marfan Syndrome**

- Disproportionately long legs, arms, toes and fingers
- Extremely tall and slender build
- Long, narrow face
- High arched neck and crowded teeth
- Indented or protruding sternum
- Dislocated lenses of the eyes
- High pressure in the eye
- Cystic changes in the lungs
- Flexible joints
- Flat feet
- Curved spine
- Abnormal heart sounds

*For More Information: Visit: www.epainassist.com*
NEED FOR REFERRAL IN MARFAN SYNDROME!

Underdiagnosed by orthopedists and pediatricians.

Can decrease life expectancy if left untreated!

Requires specialist and additional diagnostics to r/o:

- Aortic dilatation
- Aortic dissection
- Aortic valve prolapse
- Ocular lens dislocation
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<tr>
<th>Current Classification</th>
<th>Clinical Presentation</th>
<th>Prior Classification</th>
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<tr>
<td>Classic</td>
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<td>Current Classification</td>
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<tr>
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<tr>
<td>Arthrochalasia</td>
<td>EDS VII A</td>
<td>Severe joint hypermobility</td>
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<td>EDS VII B</td>
<td>Joint Subluxations, Congenital hip dislocation, Skin hyperextensibility, Tissue fragility</td>
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<td>Dermatosparaxis</td>
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<td>Severe skin fragility, Decreased skin elasticity, Easily bruised Hernias</td>
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<td>Premature rupture of fetal membranes</td>
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<td></td>
<td>EDS VIII</td>
<td>Classic features? and periodontic disease</td>
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<td>Mild classic features, MVP, joint instability</td>
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<td>EDS, progerioid form</td>
<td>Classic features, occipital horns,</td>
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Resource:

- Education on hypermobility spectrum disorders and their management
- Free webinars for patients, providers and families
- Helpline, support groups
- Intended audience is for individuals with hypermobility of a genetic cause, but general principles can apply to acquired hypermobility as well

EHLERS-DANLOS.COM
HYPERMOBILITY, IF SYMPTOMATIC, CAN BE DUE TO:

- Trauma
- Pain hypersensitivity (chronic pain state)
- Altered proprioception
- Muscle weakness/imbalance
- Malalignment, flat feet, scoliosis, etc., resulting some or all of the above
SYMPTOMS DUE TO TRAUMA

- Macrotrauma: dislocations, subluxations, and surrounding soft tissue damage (ligaments, tendons, muscles). Typical history is of multiple sprains, strains, tendinitis, etc.

- Microtrauma: leads to persistent pain and possibly early joint degeneration. Examples: overuse syndromes, chondromalacia, low bone mineral density
SYMPTOMS DUE TO CHRONIC PAIN

- Occasionally, pain is due to trauma (subluxation, dislocation)


- Deconditioned state due to reduced physical activity due to longstanding pain (Simmonds, 2010).
PAIN DUE TO ALTERED PROPRIOCEPTION

- Inaccurate sense of where the body is in space and how much effort is needed for movement
- Muscle imbalances
- Tendency to “hang out” at end ranges: genu recurvatum, lumbar lordosis, etc.
- Deconditioning
REHAB EVAL FOCUS

- **Subjective exam:**
  - hx multiple sprains, strains, tendonitis, overuse, subluxations?

- **Objective exam:**
  - plumb line posture (do they “hang” on their ligaments), ROM (calves and HS typically tight)
  - strength testing especially core, balance, proprioception
  - Passive and accessory joint play testing
TREATMENT:

- Pain science education (train/change your brain). Physical activities without fear, activity modification and pacing.
- Identify and correct aberrant movement patterns especially with sports
- Core strengthening is key to improved extremity function (From a golf swing to cleaning the kitchen)
- Joint protection education, taping, bracing, orthotics, other adaptive equipment (OT) if indicated
TREATMENT GUIDELINES

- Early stage: Home program including nature of their condition, pain management plan, spine/proximal joint stabilization, awareness of joint position/postures, breathing and relaxation exercises, weight control, avoid high impact activities, low environmental temps. Promote regular aerobic fitness.

- Middle stage: global and peripheral muscle strength, endurance, controlled flexibility training, water exercise, low level cardiovascular training (walking land or water).

- Late stage: increase functional CV exercise, progress muscle strength/endurance (weight, resistance bands)

- Final stage: long term fitness management (pilates, yoga, tai chi, feldenkrais, qi gong, etc).
TREATMENT GUIDELINES

- Typically a minimum of 3 rehab sessions (initial eval, follow up to the eval, then follow up after patient has been able to implement their program) as hypermobility is more of a lifestyle modification.

- May require short term rehab to assist with pain/tightness complaints, or overuse syndromes that may occur. Consider home TENS, regular massages, etc for long term self-maintenance of symptoms.
TREATMENT:

- Posture education: avoid “hanging” on ligaments, recurvatum, no “party tricks”, correct pes planus (orthotics)

- Stretching: Varus heel calf stretch, isolated hamstring stretch any tight muscles, watch neutral joint positioning to restore normal ROM

- Dry needling: effective in early rehab to decrease “weak muscle tightness” until muscles get stronger. Not a long term solution.

- Proprioception exercises and balance training is usually more effective than high force plyometric exercises like running. Example: half kneel ball toss

- Pelvic/bladder dysfunction (incontinence?) treatment if present.
STRENGTHENING: TREATMENT

- Water exercise is a great choice! Avoid over-stretching
- Targeted strengthening especially in midranges
- lats, back extensors, lower abs, obliques, rhomboid, serratus, mid/low traps
- squats, lunges, proprioception, balance
- elastic bands, weights, Swiss ball
PRECAUTIONS

- Excessive fatigue: promote rest intervals, hydration, do not eliminate activity
- Sports: no high contact sports (football, lacrosse, hockey).
- Sports requiring flexibility may be limited?
- Swimming: if hypermobile shoulder symptoms, breast stroke may be best choice
OTHER CONSIDERATIONS

Pregnancy, breast feeding:

Relaxin can exacerbate hypermobility symptoms so activity may need to be more modified
1. What is the Beighton score cutoff that identifies hypermobility? (answer: 4/9)

2. Name at least 2 conditions whose symptoms are joint hypermobility and require further MD referral? (answer: Marfans, EDS, RA, and more)

3. T or F: Patient education and lifestyle modification are an important initial discussion in individuals with hypermobility.
QUESTIONS?

- Thank you!
REFERENCES

- Carlson M. BJHS, course notes 2018.
- ehlers-danlos.com
- Liebrand A., Dillenno M., Connective Tissue Disorders in Children: Evaluation and Treatment on land and in the Water, course notes CSM 2011.