



#### **EDS ECHO SUMMIT SERIES**

#### PRESENTATION

## Role of physical and occupational therapies in EDS and HSD

#### SPEAKER

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Nothing to disclose





## What is known about physiotherapy for EDS and HSD?

- Physiotherapy is generally accepted as an efficient treatment for musculoskeletal complications of HSD and EDS (Keer et al 2011)
- 63,4% of hEDS patients in physiotherapy reported a positive outcome (Rombaut et al 2011)
- There is **some evidence** that HSD/hEDS can improve with exercise, but there is no convincing evidence for specific **types of exercises** (Palmer et al. 2014, Smith et al. 2013)
- Hypermobile patients can strengthen, but they start at a lower level (Alexander et al. 2019)

Woman, 35 years Diagnosis: Ehlers-Danlos syndrome

- Generalized joint hypermobility
- Delayed gross motor development (walking > age 2 yrs)
- Low impact fractures at thumb and spine (T9 and T11) Recurrent subluxations, sev
- Recurrent tendinopathies (trohanter major)
- Recurrent bursitis at the shoulder
- Chronic widespread pain
- Easy bruising
- Velvety skin
- Hyperextensible skin
- Mild scoliosis
- Pedes plani







#### Pain location, pain sensitivity, pain actuality



- Widespread mss pain, dominant at neck, shoulders, hips and fingers
- Pain on a daily basis (VAS 5 à 7/10)
- Analgesics on a daily basis
  (Gambaran + Zaldiar -> Tradonal Odis + Dafalgan)
- Nociceptive pain + sensitisation

## Laxity/ instability



- Generalized joint hypermobility
- Recurrent subluxations of shoulder, elbows, rib, thumbs, hips and hallux
- Ankle distorsions
- Cervical joint instability (confirmed by fMRI)

The concept of joint stability



The concept of joint stability



#### Consequences of hyperlaxity

Physiological movement – ROM↑ Hypermobility non-physiological movements



#### Consequences of hyperlaxity

Physiological movement – ROM↑ Hypermobility





Angular ROM, translatory movements (joint play), joint laxity tests

- Beighton score: 7/9
- Thumbs: CMC I +++, MPC I ++, IP I ++, no end range resistance
- Wrists: ROM ↑, translations +
- Elbows: translations +
- Shoulders: apprehension relocation test left +, ROM ext – int rotation >180° +
- Hips: SLR > 70°, snapping hip (external)
- Knees: no extreme hyperextension, patellar laxity +/-
- Toes: ROM 个, no end range resistance



The concept of joint stability





Hypermobility/laxity: loose ligaments The concept of joint stability





- The deep muscles lie close to the joint and ligaments.
- When they contract, they pull the head of the joint tightly into the socket. (force closure)
- Thus, these deep muscles "help" the ligaments to hold together and stabilize the joint.



# 'Mobilizers' Superficial muscles Movement **Overloaded** and tense

The concept of joint stability



#### The concept of joint stability



#### Neuromuscular control





- Concerted action of sensory input (proprioception) and motor output
- Continuous monitoring of the position of the joint and adjusting of muscle forces surrounding joints
- → Restore or remain proper joint alignment



To detect typical movement errors related to hypermobility & instability -> overload injuries

- Walking
- Lunges
- Squats
- Unilateral stance en UL squat
- Elevation in scapular plane
- Flexion, extension and rotation Cx
- Flexion from standing position









- Medial deviation knee
- Bad knee control (sway)
- Hip sagging contralateral
- Compensation LFL Lx

 → Indication to strengthen the hip abductors & external rotators, MM. Glutei, and to exercise core stability and motor control

### The concept of joint stability



## The concept of joint stability



## Symptoms and complaints related to hypermobility



#### Muscles

- Muscle tension (typically at neck, low back, ...)
- Triggerpoints with reffered pain



#### Bursa

 Irritation of bursa due to excessive friction



#### Joints

- Joint blockages
- Subluxations, luxations
- Ligament injuries
- Irritation of the joint capsule



#### Tendons

Overuse injuries (Typically at hips, shoulders, knee tendon, fascitis plantaris, ...)



#### Nerves

- Irritation of the nerve sheath with reffered pain
- Less frequent: real nerve damage



#### **Gross motor development**

- Delayed gross motor skills
- Clumsiness

## **Need for physiotherapy!**

## How should the physiotherapy sessions look like?



## Consequences of general tissue fragility for physiotherapy

- Many manual therapy techniques and exercises can be selected for patients with EDS/HSD
- **BUT** should be individually adapted according to the patient's load capacity
  - Degree of hyperlaxity/joint instability
  - Degree of general tissue fragility
  - Pain sensitivity
  - Others: neurological problems, osteoarthritis, previous surgery,...





## Manual therapy



Instable joints (lux/sublux) Central sensitisation

#### Manual therapy: case



Instable joints (lux/sublux) Central sensitisation

+ muscular techniques: triggerpoints, gentle stretching, dry needling

## Exercise therapy

#### 1. Motor control exercises

- Stabilisation training: core stability and joint stability
- Movement control training





#### Exercise therapy

#### 2. Muscle strength exercises

• M. Gluteus Medius + external rotators hip; M. Quadriceps; M. Gluteus Maximus



ER hip with theraband + bridging (hip ER, Qceps, hip ext)



Heel push-up (hip ABD)



Squat with theraband (Q-ceps, hip ABD+ ER)

#### 3. Stretching exercises

- e.g. M. Hamstrings, Mm. hip adductors, M. Iliopsoas, M. Pectoralis minor
- Discouraged: if meant to increase an already hypermobile ROM
- Allowed: to diminish muscle tone and to maintain/restore the length of muscles
- Care: not to overstretch!
- ! + necessary to train the stabilizing muscles



## Exercise therapy

#### 4. Condition training



## A reduced load capacity !

- $\rightarrow$  Increased risk for trauma, overuse lesions and inflammation
- $\rightarrow$  Delayed recovery from exercise
- $\rightarrow$  Very slow progress hampered by setbacks and flare-ups



**Exercise therapy: prudence and patience** 

- Start slow, go slow
- Vary the exercise mode (avoid too many repetitive movements)
- Spread the exercises
- Progress only when success on the current level

## Which types of exercises are good and which ones not?

#### 1. End range with external load

#### 2. Too large range of motion







#### 3. Open chain







#### 4. High impacts

(e.g. jumps, plyometrics, running)





1. Mid-range control



#### 2. Approximation:

• Close chain / semi-closed chain exercises / body support



#### 2. Approximation:

• Abduction/external rotation or isometric external rotation







#### **Progression:**

- Limb movements over a small ROM → larger ROMs
- Closed chain → semi-closed chain → open chain (if possible)
- No disturbing elements → add 'destabilizing' elements
- Low load → high load
- Bilateral/symmetric  $\rightarrow$  unilateral/asymmetric movements

#### Hydrotherapy

Many benefits of exercising in water:

- no load on the joints
- no abrupt accelerations or sudden movements
- support of the extremities by buoyancy  $\rightarrow$  some OCE are feasible



## Sports









Cyclic mid-range movements without high peak forces





Balance and movement control







Certain devices in the gym (CCE)









High impact sports











Sports which aggravate joint hypermobility





Certain devices in the gym (OCE)



- Pilates: often too burdensome -> individual selection
- Recommended: Tai chi, electric cycling, swimming



Example

## Education: joint protection



- Educate how to look after their joints
  - Be aware of potentially harmful postures and avoid them
  - Avoid hanging/resting in "locked" position for prolonged periods
- Reduce time spent on repetitive activities
- Do not entertain friends and schoolmates with a show of hyperflexibility

## Taping, splinting and bracing

- Positive effects:
  - Joint protection
  - Improve healing
  - Mechanical stability and proprioception
  - Improve alignment of joints

#### Tape



Joint mobility  $\downarrow$ : patella, wrist and elbow Proprioception  $\uparrow$ : scapula, shoulder, lumbar spine

#### **Braces**

- During acute, excessive pain episodes
- During healing after trauma
- During specific intensive tasks/situation
- During night (prevention subluxation)





#### Silverringsplints





- Brace CMC I
- SRS MCP I + IP I
- Sportbrace wrist (during night) + neutral wrist position



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#### Writing aids

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## Thank you!

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