



Physiotherapy and Rehabilitation

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Overview

- What is rehabilitation in NMD
- Physiotherapy as a means in rehabilitation
- Recommendations

Rehabilitation

UN declaration, 1994

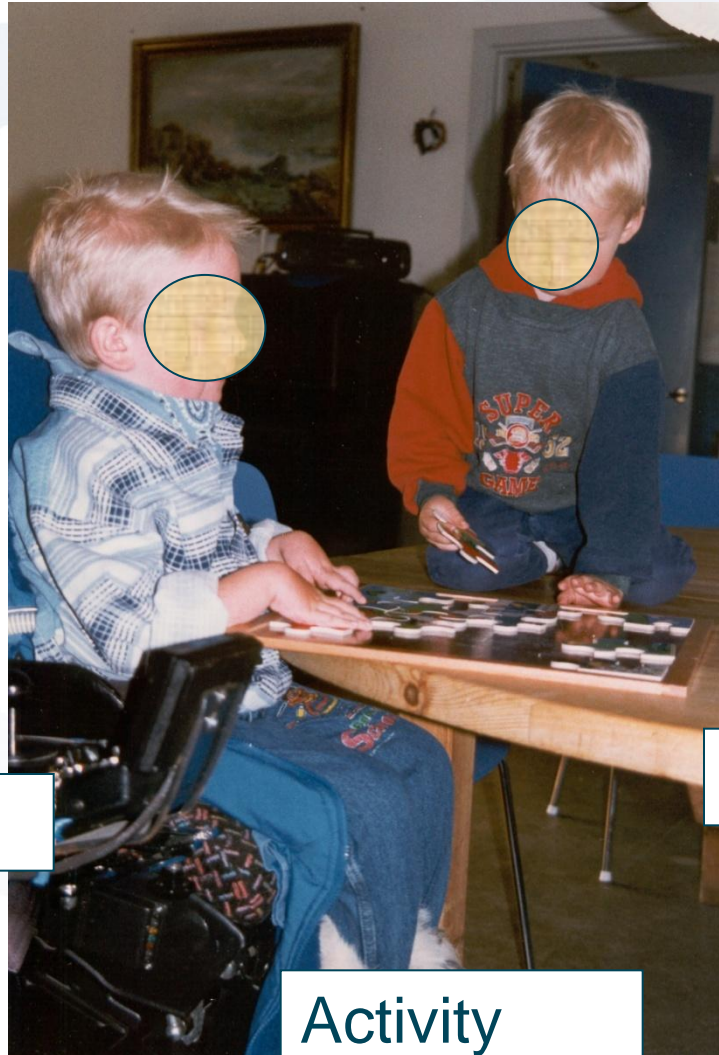
Standard Rules on the Equalization of Opportunities for Persons with Disabilities

Rehabilitation

a process aimed at enabling persons with disabilities to reach and maintain their optimal physical, sensory, intellectual, psychiatric and/or social functional levels,

thus providing them with the tools to change their lives towards a higher level of independence

4 | International Classification of Functioning, Disability and Health



Impairment

Participation

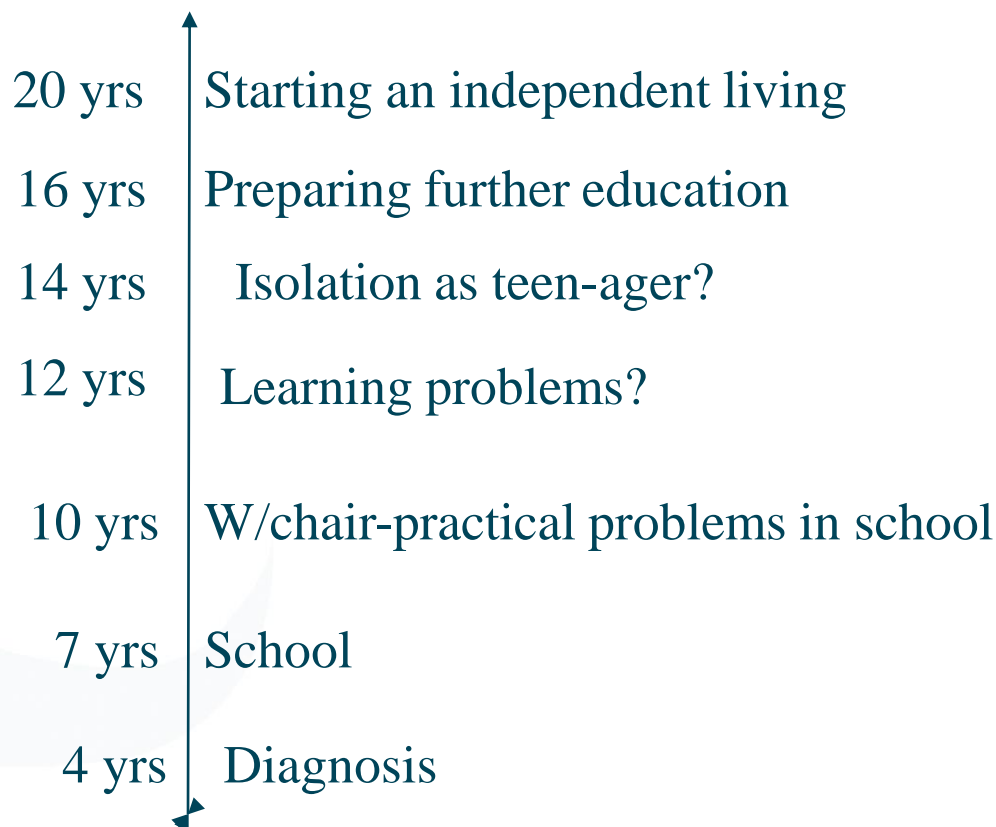
Activity

Rehabilitation as an ongoing process in DMD



20 yrs	Respiratory insufficiency
16 yrs	Difficulty with using arms for eating
14 yrs	Insufficient coughing
12 yrs	Scoliosis
10 yrs	Wheelchair
7 yrs	Difficulty in walking
4 yrs	Diagnosis

Rehabilitation as an ongoing process in DMD



Rehabilitation

- Covers a number of problems
 - Physical
 - Intellectual
 - Emotional and social
 - Environmental

Rehabilitation

- Covers a number of **actors** including the person with NMD and his relatives
 - **Physical** → physiotherapist, occupational therapist, orthopaedic surgeon, orthopaedic engineer, neurologist, paediatrician, GP, speech therapist, nutritionist
 - **Intellectual** → parents, preschool teachers, school teachers, psychologists
 - **Emotional and social** → parents, peers, sisters and brothers, class mates, school teachers, psychologists
 - **Environmental** → occupational therapists, social workers, legislation, politicians,

Aim for intervention

- Maintain or improve muscle strength
- Minimise the development of contractures and scoliosis
- Maximise functional ability

Assessment protocol

Weight, Height

Timetest:

- 10 meter, 6 minutes

Functional test:

- North Star protocol
Brooke upper limb score
EK-scale , when wheelchair

Muscle test:

- Manual muscle test
(Dynamometer –knee , grip)

Joint Motion

Respiratory function

- Forced vital capacity (FVC)/
- Peak Expiratory Flow (PEF)

Physiotherapy as a means to prevent loss of physical function

Physical problems:

▼
Loss of muscle strength
▼
Immobilisation
▼
Inactivity atrophy
▼
Contractures
▼
Scoliosis

Intervention to postpone
and compensate for:

Loss of muscle strength

Fatigue,
Difficulty in moving,
----- breathing, coughing

Contractures

Difficulty standing, sitting, lying
Scoliosis
Deformities, pain

Exercises to prevent loss of muscle strength

- Submaximum, aerobic exercise/activity -
- Overexertion and overwork weakness should be avoided
- High-resistance strength training and eccentric exercise are inappropriate



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Exercises to prevent loss of muscle strength



Exercises to prevent loss of respiratory muscle strength

- Studies show some improvement of muscle strength

No functional improvement like:

- improved cough
- delay of the need of assisted ventilation
- decreased lung infections



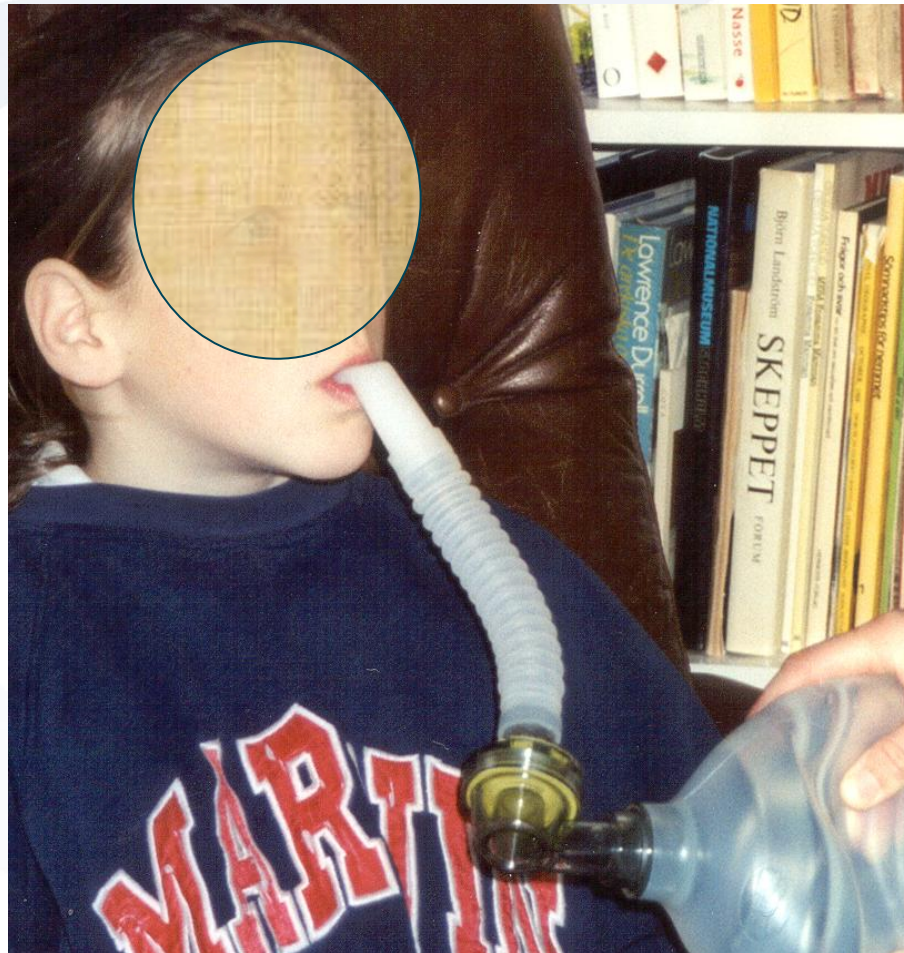
Improve removal of secretions

Use of PEP

Use of CPAP

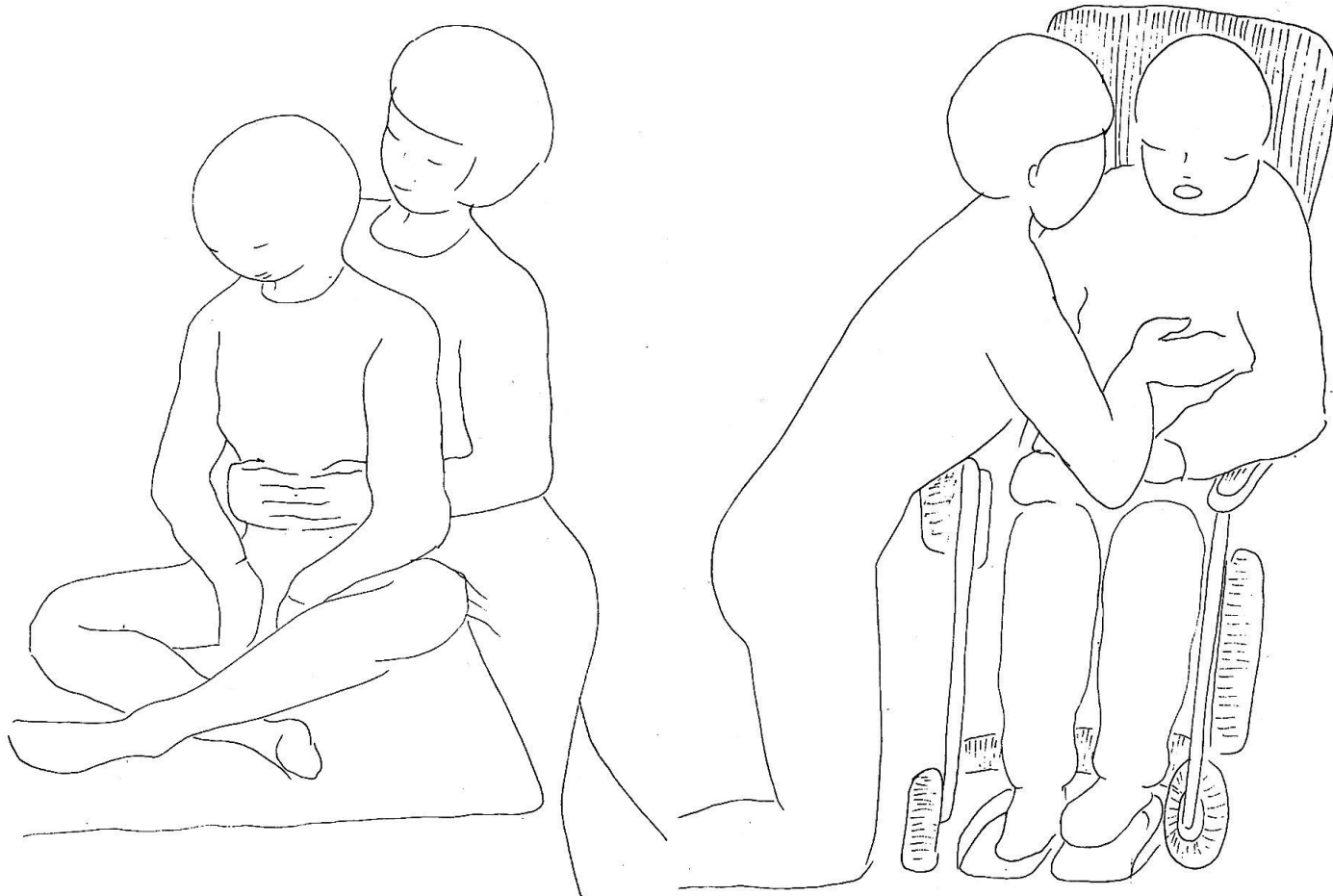


16 | Improve coughing by frog breathing/ air stacking



17 |

Improving coughing by manual pressure



18 | Physiotherapy as a means to prevent contractures

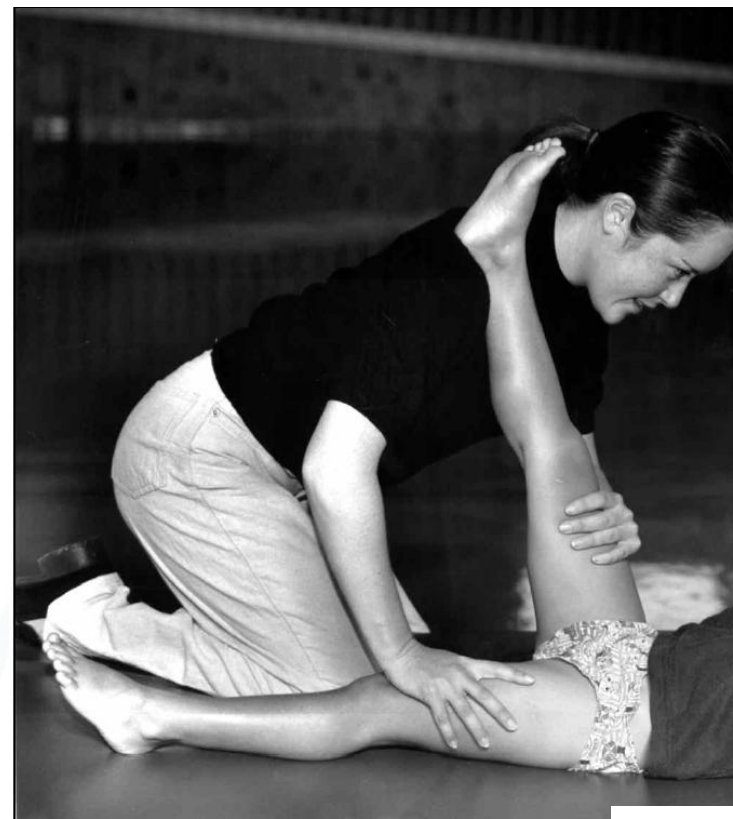
- Studies on preventing contractures are sparse
 - Stretching ?
 - Daily stretching combined with night splints is more effective than daily stretching alone in DMD





20 | Physiotherapy as a means to prevent contractures

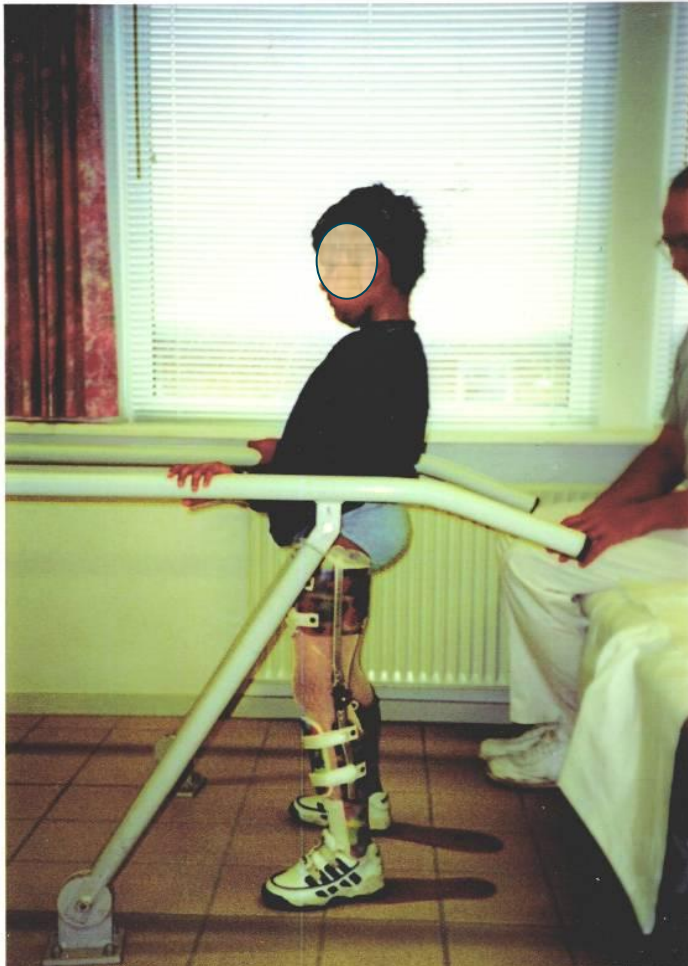
stretching



MANUAL HAMSTRING STRETCH

21 |

Standing as a means to prevent contractures/scoliosis

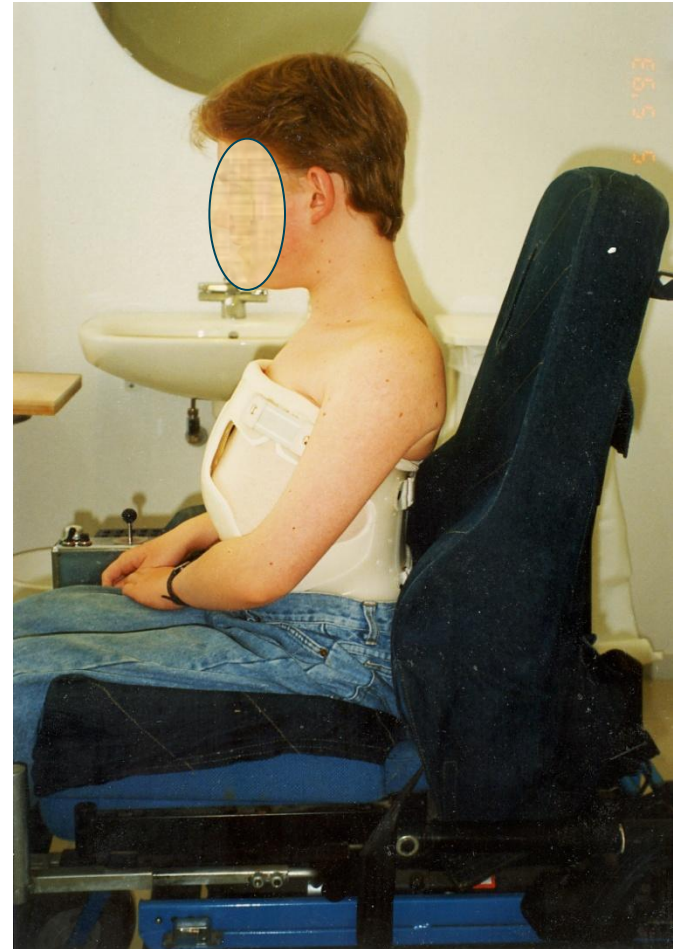


22 | Scoliosis in DMD

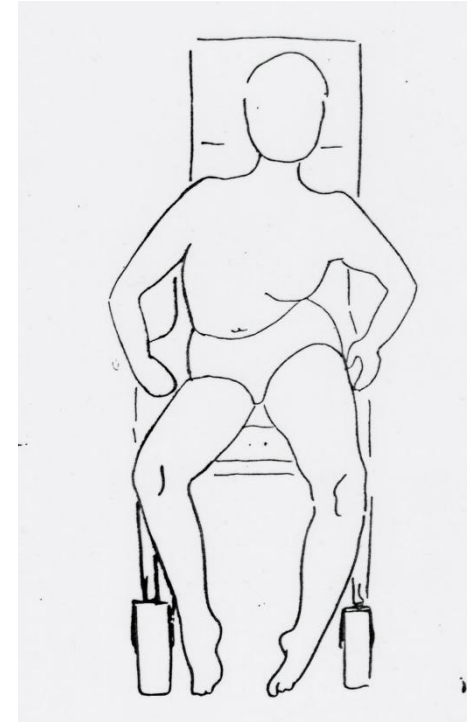
- collapse of the spine
- insufficient breathing in sitting position
- difficulty in balancing in sitting



23 | Spinal braces can load respiratory muscles and reduce lung volumes



Seating has to be considered



25 | Improving sitting posture in wheelchair



Seating - Purpose

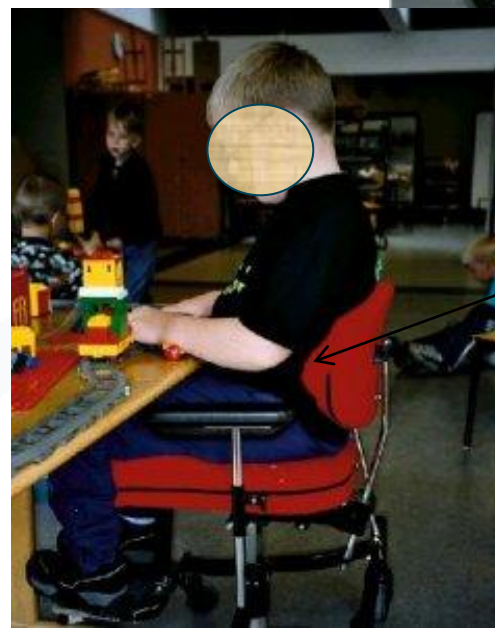
Achieve best possible
function and activity

Avoid secondary
problems and strain of
the body

Comfort

General principles

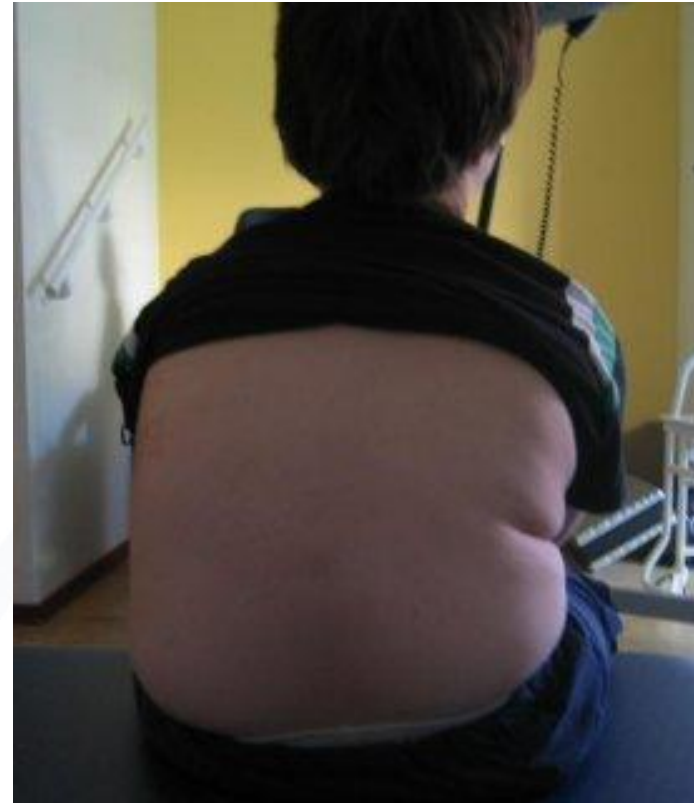
- Symmetry in the frontal level and when moving
- Symmetry of the pelvis
- Lordosis
- Frequent change of position



Equalize the pelvis



Lateral body support



Recommendations

- International care recommendations for DMD /Lancet
- Physiotherapy and occupational therapy in DMD Scandinavian consensus
www.rcfm.dk /

- Maintain physical activity
- Prevention of contractures
- Respiratory and other aids introduced before needed

Recommendations

Physiotherapy

- monitor progression , advice on intervention and aids
- Exercises, stretching, activities should as far as possible be integrated in daily activities
- should not take time from intellectual and social activities
- Research in rehabilitation is important to ensure that we don't waste the time with useless treatment but that the right treatment/support/technical aid/ is given at the right time

Thank you for listening !