Bright & Early Postural Care:

Considerations for adaptive equipment support in high-risk infants

Series 2: Starting the supported standing journey

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Introductions

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Overview

- What is Early Intervention?
- Learnings from Cerebral Palsy interventions
- Overview of standing frame options
- Indications/precautions/contraindications for standing
- Understanding the importance of carer and MDT collaboration and child centred communication
- Utilising these principles for individual, holistic, child-centred care

What is ‘Early Intervention’?

- Depends on the context:

epi

- Detection, treatment, management? Single therapy or multi – disciplinary?

CPUP

- Early, or On time?

For the purpose of this webinar:

Early intervention: A programme to support postural and motor development in higher risk infants

Development: Skeletal

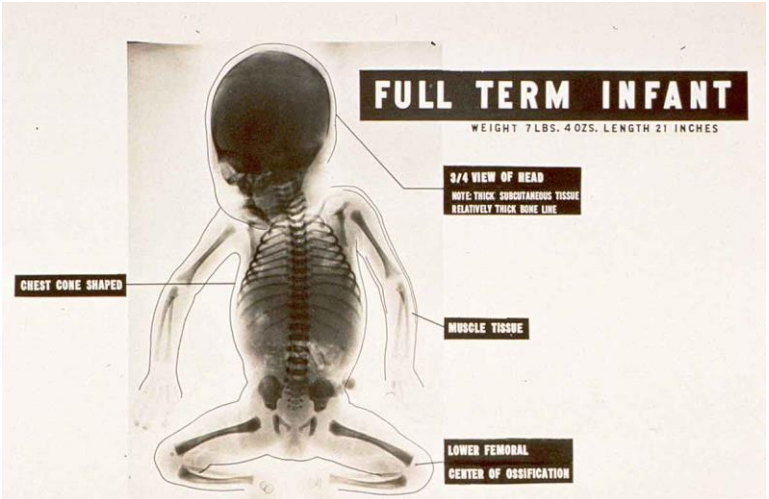
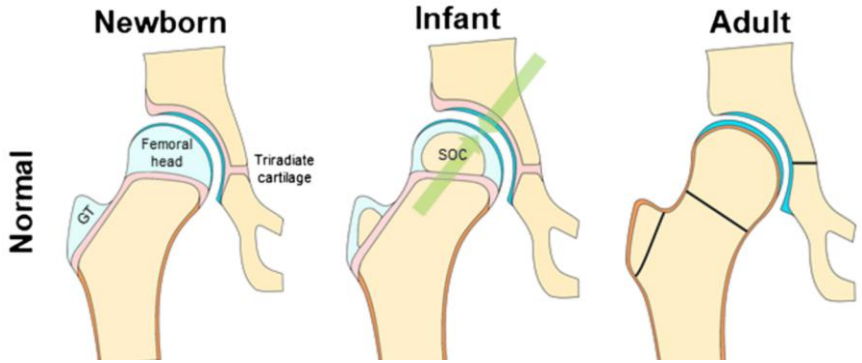
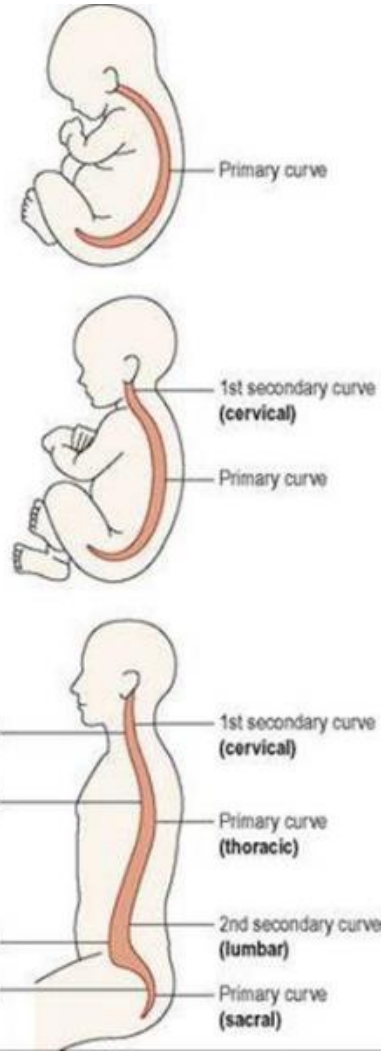
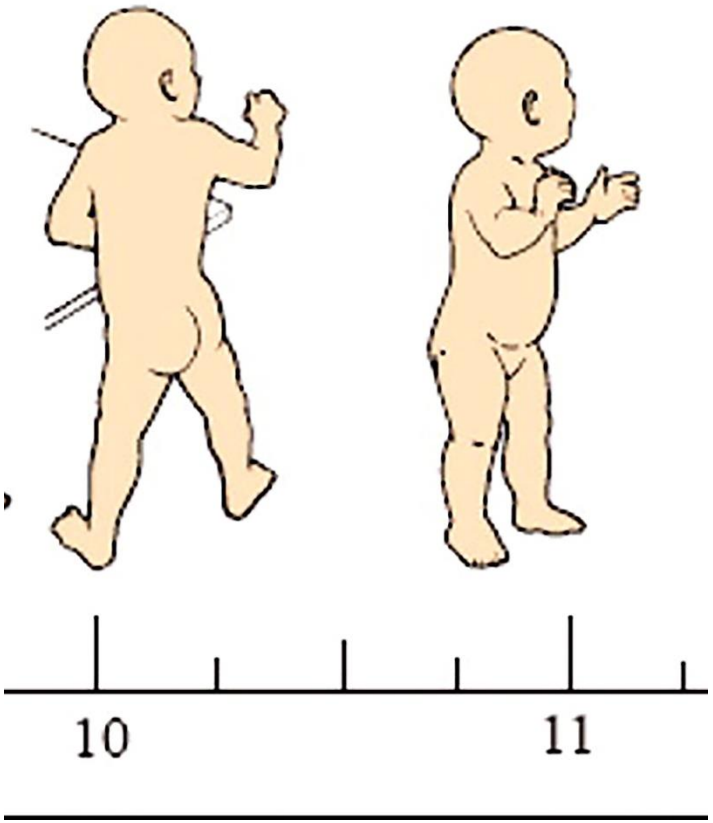


Image from National Library of Medicine 2023, *reproduced U.S. Department of Labor, Children's Bureau. Infant Growth and Development,* Ca. 1943
https://www.nlm.nih.gov/exhibition/dream-anatomy/index.html?assetPath=section3_slide23





Development: Gross Motor



	mean age (months)
Pull to standing	8
Cruise	10

Reference: WHO Multicentre Growth Reference Study Group. WHO Motor Development Study: Windows of achievement for six gross motor development milestones. Acta Paediatrica Supplement 2006;450:86-95.

Retrieved from: https://cdn.who.int/media/docs/default-source/child-growth/child-growth-standards/indicators/motor-development-milestones/who-motor-development-study-windows-of-achievement-for-six-gross-motor-development-milestones.pdf?sfvrsn=3425c1dc_0

Play

- Play is an integral part of a child's life
- Helps build brain architecture
- Helps develop postural control and gross motor skills
- Encourages family and social interaction

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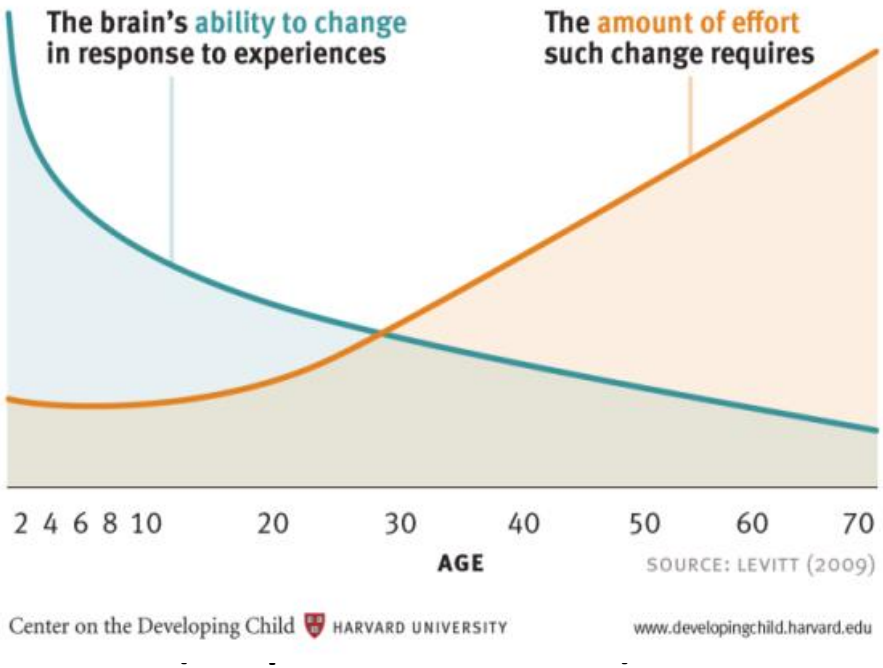
Development: Neuroplasticity



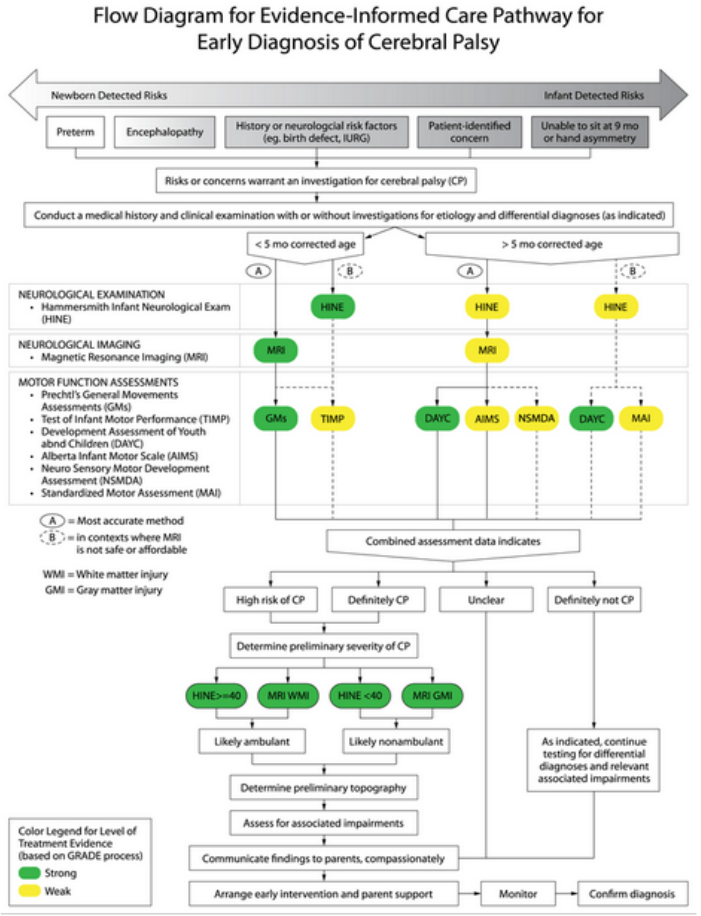
'Infants and children have remarkable brain plasticity and aptitude for learning; taking advantage of this window of opportunity with evidence-based intervention for those with early brain injury maximizes functional outcomes and minimizes complications.' **Morgan et al. 2021**

Developments in Early Diagnosis of Cerebral Palsy

Detection and Diagnosis

- Traditionally, CP has been diagnosed between the ages of 12 and 24 months.
- CP can now potentially diagnosed as early as 3 months corrected gestational age (CGA)

"Early diagnosis begins with a medical history and involves using neuroimaging, standardized neurological, and standardized motor assessments that indicate congruent abnormal findings indicative of cerebral palsy. Clinicians should understand the importance of prompt referral to diagnostic-specific early intervention to optimize infant motor and cognitive plasticity, prevent secondary complications, and enhance caregiver well-being" (Novak et al, 2017)



(Novak et al, 2017 – accessed from American Academy for Cerebral Palsy and Developmental Medicine: https://www.aacpdm.org/publications/care-pathways/early-detection-of-cerebral-palsy)

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Evidence/Guidelines/Clinical Expertise

Benefits of Supported Standing

- Hip stability
- Range of movement
- Reduce spasticity
- Improved alignment
- Bone mineral density
- Pressure relief
- Bladder and bowel
- Light physical exercise

(Paleg et al, 2013, 2021; Verschuren et al., 2014)

Standing Dosage recommendations

Standing programs 5 days per week positively affect:

- Bone mineral density (60 to 90 min per day).
- Hip stability (60 min per day in 30◦ to 60◦ of total bilateral hip abduction).
- Range of motion of hip, knee, and ankle (45 to 60 min per day).
- Spasticity (30 to 45 min per day).

- Very specific goals focussed only on the body.
- No maximum amount of time identified in literature
- How often do we prescribe '60 minutes day, 5 times per week'?
- Authors also advise promotion of Activity, Participation, Social Inclusion

(Paleg et al, 2013)

Expert Consensus/International Guidelines for Cerebral Palsy – Hip Health

22	Musculoskeletal	Conditional	For	Regular use of standing equipment for positioning	We suggest regular use of standing equipment for positioning as part of an active intervention program, to potentially decrease hip migration percentage and maintain hip abduction range of motion.[89-91]	Children with or at high risk of CP and risk of hip dysplasia, at the age when weight-bearing in standing would begin in children who are non-weight bearing

(Morgan et al, 2021)

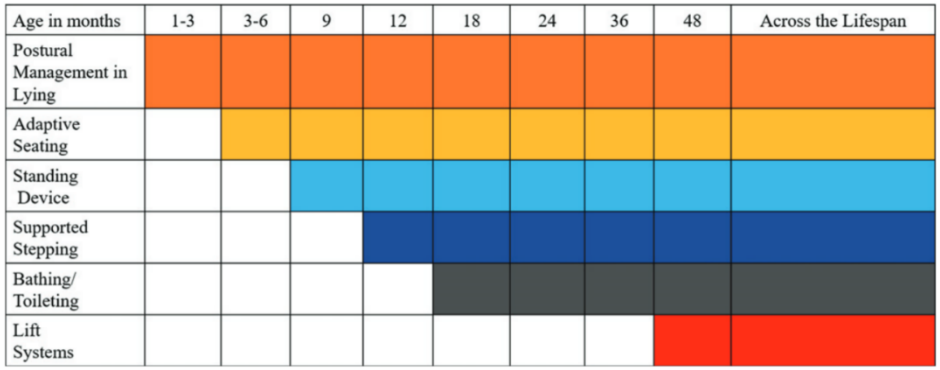

Fig. 1. Recommended schedule of interventions.

Paleg & Livingstone, 2022)

Holistic benefits of supported standing

- Development of skills
- Communication, respiratory, visual (Goodwin et al., 2018)
- Facilitate activity and participation (McClean et al, 2022)
- Exploration of environment
- Play
- Sensory feedback
- Learning
- Interaction and socialisation
- Fun/enjoyment

Which Standing Frame do we choose?

Prone/Upright Standers

- Can help develop head and trunk control
- A more independent transfer into equipment
- Lower limb and trunk stretching
- More optimal amount of weightbearing through lower limbs
- Prone angle can useful for developing upper trunk and head control
- Participation

Supine Standers

- Usually provides more head and upper trunk support
- Requires a mechanical hoist for transfer as child gets older
- Often more features for deformity/contracture support
- A slower progression from into standing if required
- Generally a more supportive way of standing: GMFCS level V

Multi-position Standers

- Allow for multiple positional changes
- Alternative exploration/veiwpoint of environment
- Allow for varying ways to participate
- Alternative proprioceptive feedback
- Options for progression in ability (or regression)
- Potentially support multi-faceted goals better
- Could be suitable for multi-use environments

Individualised Prescription

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Starting the Journey

The F Words

The ICF Framework and the F-Words

Body Structure and Function

Everyone needs to stay fit and healthy, including me! Help me find ways to keep fit.

Fitness

Activity

I might do things differently but I CAN do them. How I do it is not important. Please let me try!

Function

Participation

Having friends is important. Please give me opportunities to make friends with my peers.

Friends

Environmental Factors

They know me best and I trust them to do what's best for me. Listen to them. Talk to them. Hear them. Respect them.

Family

Personal Factors

Life is about having fun. Please help me do the activities that I find the most fun.

Fun

Future

I will grow up one day, so please find ways for me to develop independence and be included in my community.

For more information visit the F-words Knowledge Hub:
www.canchild.ca/f-words

CanChild

1) World Health Organization. (2001) *International Classification of Functioning, Disability and Health (ICF)*
2) Rosenbaum P & Gorter JW. (2012). The 'F-words' in childhood disability: I swear this is how we should think! *Child Care Health Dev*; 38.

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Indications for starting supported standing in infants

- Evident gross motor delay and predicted delay in standing
- Unable to stand independently at typical developmental window
- Limited weightbearing through lower limbs
- Hip stability considerations
- Tone management and range of movement maintenance
- 24-hour postural care plan
- Skill development
- To encourage participation and inclusion with peers and family

Precautions and Contraindications

- Consent not given
- Fractures (unless medical clearance has been given)
- Medically unstable
- Significant pain
- Extreme fatigue
- Behaviour and Safety
- Postural hypotension
- Seizure Activity
- Contractures
- Hip instability
- Post Orthopaedic Surgery (Medical clearance and post op instructions)

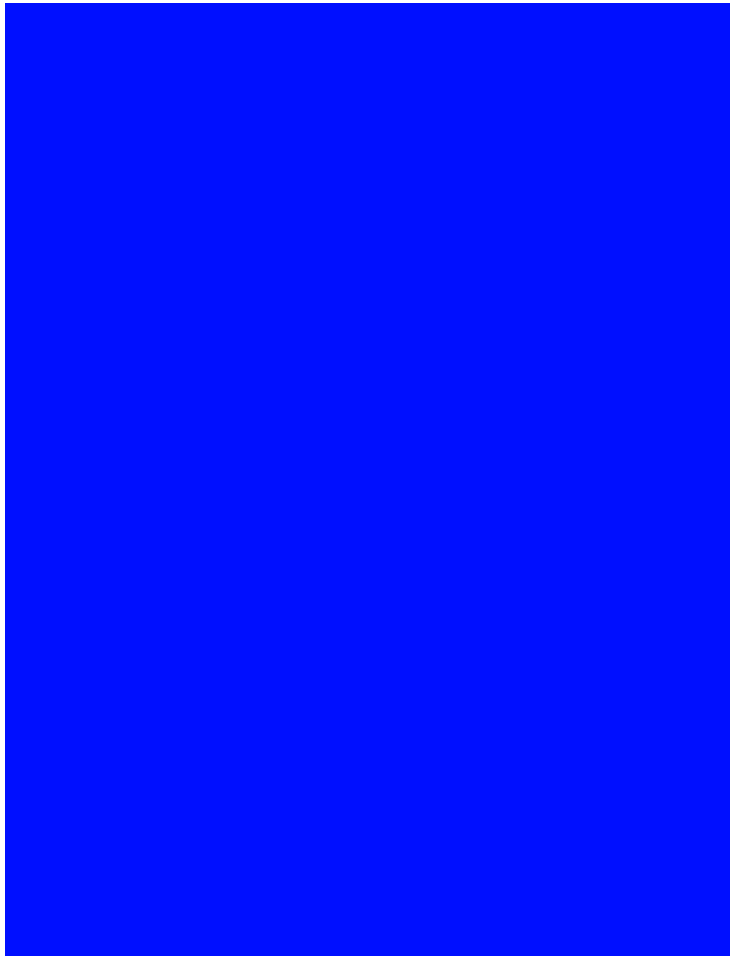
Factors to consider

- Age and gross motor milestones
- Head control
- Trunk Control
- Current transfer ability
- Orthotics
- Potential development and prognosis
- Behaviour
- Carer and child goals
- Utilising guidelines holistically
- Growth
- Where is it going to be used?
- Who is going to use it?
- Other equipment within the carer environment
- F-Words!

MDT Collaboration

The Significance of Communication

- Have we jointly set goals with the family/carers?
- Are the goals child-centered?
- Any focus on participation, activity and home/nursery?
- Have we demonstrated the benefits of the standing system that AREN'T focused on body structure/impairment?
- Carer's understanding of why you are trying a standing frame
- Listen!!
- Empathise!

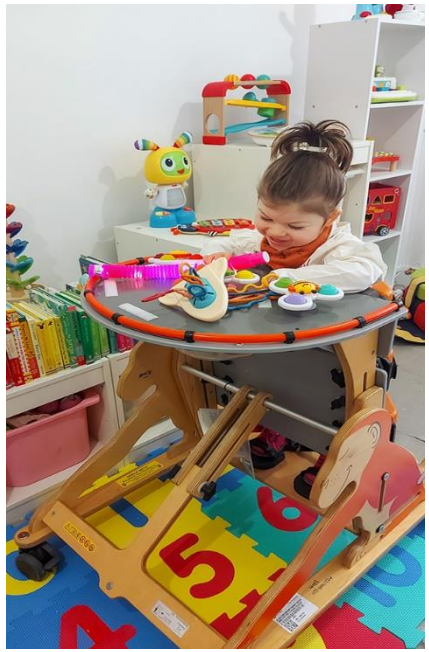


Begin Gradually

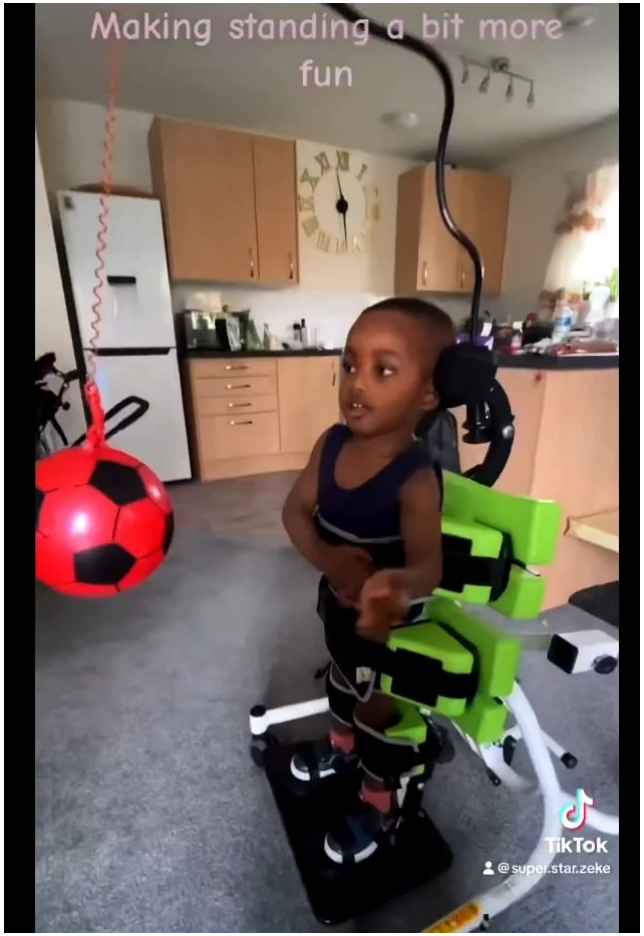
- Take time to build tolerance, understanding, routine, engagement, assess impact on body.
- Carers need time, education and support.
- Assessment and prescription is not always perfect first time! Don't be scared to re-evaluate and re-assess.
- Ultimate dosage should consider Body Structure and Function/Fitness goals, but most important goals to child and carer are most often Activity and Participation related.

Make it fun!

- Do we routinely just assess and prescribe the standing frame for static posture?
- Do we use a standing frame as part of therapy sessions?
- Do we show how it can be used for play, exploration, interaction?



Carers/Family have the best ideas!



Jenx and Jiraffe Standing Assessment Toolkit

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Standing Frame Assessment Toolkit

Knowledge & Know-How

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Standing Frame Assessment Form

Any recent investigations?:

Medication and treatment:

Child/carer expectations or concerns:

Key Questions	Yes	No		Yes	No
Any current fractures?	☐	☐	Lower limb or spinal orthotics?	☐	☐
Any history of fractures?	☐	☐	Severe lower limb contractures?	☐	☐
Known osteoporosis?	☐	☐	Pressure care concerns or injuries?	☐	☐
Seizures?	☐	☐	Currently unwell?	☐	☐
History of extreme fatigue?	☐	☐	Hip stability concerns?	☐	☐
History of pain?	☐	☐	Any recent surgery? (e.g. Adductor Psoas Tenotomy, SDR, Gastrostomy, Tracheostomy)	☐	☐
Any history of fainting?	☐	☐			
Postural blood pressure concerns?	☐	☐			

Knowledge & Know-How

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Standing Frame Assessment Form

Sensation and sensory needs:

Behaviour:

Current transfer ability:

Environment:

Any previous standing frame use? supine/prone/multiposition/dynamic etc Yes ☐ No ☐

If yes, known type: i.e. brand.

Successes/difficulties with previous standing frame, and what led to re-assessment?:

Knowledge

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